

THE MAGDALENIAN IN EUROPE DEMOGRAPHY, REGIONAL GROUPS.

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The regional differences in the Magdalenian in Europe exist almost exclusively during the Upper Magdalenian, from the beginning of the Bölling period (or the extreme end of Dryas I). For the Badegoulian (in its restricted meaning, Bosselin and Djindjian 1989), we know only one site to the North of the Loire, another isolated one to the North of the Massif Central, and two others in the Upper Loire Valley (fig. 1). In the lower Magdalenian, only the Aquitaine and two places in Languedoc are represented. In the middle Magdalenian (including the "Magdalénien à navettes", Allain et alii 1985, but excluding the Bölling period), there were, again, only 3 sites to the North of the Massif Central (and Maszycka in Poland). In spite of some bold attempts of synthesis (Kozłowski 1985), the present state of our knowledge is not sufficient to let us make clear, except for Périgord, what is a matter of chronology and what depends on regional differences in the Magdalenian before the Bölling period. Consequently we cannot determine whether separate typological facies co-existed or not, whether they were bound to geographical areas or not, or possibly to autonomous human groups.

The Upper Magdalenian (Bölling and Dryas II) was richer in sites because the climate then allowed expansion into areas which had been too cold before. Recent research in various areas has led to the dating of reference sites and to detailed description of finds; therefore we have good opportunities for synthesis, though we have also to take account of sites for which we cannot be sure to what stages they belonged between the end of Dryas I and the beginning of Alleröd.

THE BELGO-PARISIAN GROUP

At the present time, to the North of the Loire (fig. 2), we have recorded 22 sites grouped to the South-East of Paris and 14 in the Ardenne, plus a few isolated sites, very different in nature and value : Gouy (a cave with engravings), Verberie (a riverside camp) and St. Mihiel (a camp at the foot of a rock). Gouy and St. Mihiel

may have been left by Magdalenians belonging to other groups. Belloy-sur-Somme and Hallines were left by non-Magdalenian groups (Schmider 1982, Kobuciewicz 1983) as well as Kanne and Sweykhuizen (*contra* Vermeersch 1988). The emptiness of the "Champagne crayeuse" is total, probably for ecological reasons (Rozoy 1986, 1988, 1989 d), but the empty area spread far beyond the chalky plain. In fact the occupied parts consisted of small areas which were made favourable by a wide diversification in biotopes; this variety of biotopes is usually tied to steep slopes, which allow hunting all through the year, such as in Cantabric Spain (Straus 1986).

A link between the two areas, separated by more than 200 km, seems to be quite certain. The Magdalenians carried materials originating in the Paris area to the Ardenne (Otte 1984 a). The retouched tools in both areas are similar in quality and quantity (Rozoy 1988 b). The sites in the Ardenne and in the Loing valley were left, therefore, by the same persons, going from the Loing to the Ardenne and vice versa. The sites in the Rhineland, around Gönnersdorf (Bosinski 1978, 1988), though they were near the Ardenne (120 km), belonged to another group of peoples, for there is nothing common in materials, typology is different, and so is the art (Rozoy 1988 b) : in the Ardenne they did not draw female figures and, in the Rhineland, some pieces of ornament were the same as those in the Southern part of Germany, others (and flint) came from the Baltic area.

The Paris sub-group was concentrated around the Loing valley and in the Seine and Yonne mid valleys. In that area where there are no caves, the sites are open-air sites; most of them are on river-sides, but "Les Beauregards", which is the richest one (more than 15 000 retouched tools attested), is on the plateau (not very high), on siliceous sands. In this group, in the same sandstone area, there are also two decorated caves of uncertain date and in the Morvan (Arcy-sur-Cure) there are three dwelling-caves (without miniature art) and two decorated caves.

That sub-group yielded far more tools than the Ardenne sites (Rozoy 1988b, 1989b), and this indicates a larger population, or, more exactly, a larger number of days when the sites

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were used, either by a denser settlement or by the same persons staying there for more time and/or more often. If we consider that there is a direct relationship between the number of retouched flints and the intensity of human presence, the latter would have been at least 5 times more important in the South-East of Paris than in the Ardenne (Rozoy 1989b).

Art remains are very rare in the Parisian group, this is most surprising : there are only the 2 or 3 drawings in Cépo-y-La-Pierre-aux-Fées (Allain 1976), one horse-head in Pincevent, and a few signs on "bâtons percés", also in Pincevent. Even if we add the three heads on reindeer antlers in St. Mihiel (we do not know whether they belong to this group or to the neighbouring one), we are very far from the number of finds in the Ardenne (Rozoy 1988b, 1990) where there are 41 realistic figures (fig. 3) and 53 signs (fig.4), plus numerous parallel lines (fig. 5, Rozoy 1990).

Disproportion is obvious, the Ardenne produces nearly the total evidence in art and sign. One could not rely on the 17 wall figures in Gouy, near Rouen, nor even on those in the "Grotte du Cheval" in Arcy-sur-Cure, as they may belong to another human group. The lack of wall paintings in the Ardenne seems to depend on a cultural choice for miniature art on stone plaquettes, which is the case in Cépo-y. For F. Audouze (1987, 1989), the great rarity of art evidence in the Paris Basin group shows its autonomy in comparison with the Ardenne. This view would suggest that the hunters ought to have performed identical activities everywhere and in all seasons, but we know that it was not the case.

As it seems impossible that Roc-La-Tour I, which is the main site for art, was occupied in winter (very likely there was a snow-drift behind the rock), it has been assumed as a hypothesis that the Magdalenians came to the Ardenne only in summer and correlatively that they practised art as a summer activity (Rozoy 1989a). Occupation in summer has been confirmed by the study of the reindeer antlers (Patou 1989), which were those of females, shed in May-June, at Chaleux, Vaucelles, Le Coléoptère and other sites (Dewez 1989). They are of poor quality and in other regions the Magdalenians preferred to use antlers from males, which were shed in winter. The use of antlers from females shows that the hunters were not in the Ardenne in winter. As for the season when art was practised, it has to be confirmed (or ruled out) by more numerous indications. We can already remark that there is no art in the "Grotte des Eglises" in

Ussat, Ariège (Clottes et Simonnet 1979). It was shown that people stayed there at the beginning of winter. This is a starting point.

MAGDALENIAN DEMOGRAPHY

Calculating the carrying capacity of the territory, on the basis of the food which was actually eaten, is the best way to estimate the prehistoric populations. But that is not possible for the French Magdalenian because we do not know the natural density of the species which have disappeared (Aurochs, Mammoth, European bison) and even of those which have now migrated (Reindeer).

It is possible to escape this problem if we consider as bases the estimates which had been made for the Epipalaeolithic (Mesolithic) (Rozoy 1978, p. 1064-1066 and 1105-1109) : with 4 deer and 2 wild pigs per km², the maximal slaughter of 1 animal out of 6, a meat proportion of 60 %, taking account of waste, of fish and of plants, which were rarely used, and of average needs of 2 500 cal. a day per person, we find more or less 150 000 available food intakes. But the actual population follows the maximum carrying capacity only so far, because of its large fluctuations, and an estimate of 50 000 inhabitants in France seems to be a likely number for the Epipalaeolithic in the Boreal times.

What remains to do now is to go further back from the Epipalaeolithic (Mesolithic) to the Magdalenian. The basis is the number and importance of the sites, with many problems : the Magdalenian sites are far denser than the Epipalaeolithic ones, the lithic assemblages of both periods do not correspond to the same uses, and because of the craze for armatures in the Tardenoisian there is an expansive increase of the number of the retouched tools at some times and places (Rozoy 1978, p. 53-55 and 964). The number of Epipalaeolithic sites is far higher than that of the Magdalenian sites (Rozoy 1985). It is more difficult to find out the latter (there is not the convenience of armatures). Epipalaeolithic is known everywhere in France, on the scale of a French "canton" or even of a French "commune", whereas the Magdalenians occupied only one part of the land.

Finally we may suggest a ratio of 1 to 5 or 1 to 6 (on behalf of the Epipalaeolithic) for the total populations of both periods. We can thus arrive to an estimation of 8000 to 10 000 persons in France (including children) in the Upper Magdalenian, a number which has to be discussed and adapted in terms of sub-periods and areas

inside the culture. For Europe we may estimate the whole Magdalenian population to 18 000 - 20 000 persons. This statement is fairly coherent with those which were suggested by F. Bordes (1969) for France : 50 000 at the best, and by Ambroise-Rendu (1967) : 50 000, and for the whole planet by E.S. Deewey (1960) : 3 to 4 millions, but it is far lower than the number that D. de Sonneville-Bordes (1969) used very cautiously (200 000 to 300 000 in France).

DENSITY IN THE MAGDALENIAN ACCORDING TO PERIODS

It has been postulated that there was strong demographic expansion in the South-West for the Magdalenian VI, because of the large number of sites and of the abundance of flint there. For F. Bordes (1969) it may have been caused by the invention of the bow. Indeed, when there is no outside reason (no improvement in climate conditions, but the contrary), the mover of such expansion must be inside society : one or several technical inventions may increase the population rather quickly, the social transformation being slower. In that case, the invention of the bow would lead, for more than a thousand years, to the trend towards the Epipalaeolithic (Mesolithic). The density of population then would become at least five times greater, because of the then higher temperature.

The demographic rise in the Magdalenian VI might not really have existed though. J.M. Bouvier (1988) obtained a C-14 dating for the lowest part of the Magdalenian VI layer in La Madeleine. This period might have been 3 times longer than the Magdalenian V. Therefore it is quite normal that it gives richer layers and a greater amount of sites. More research in the whole South-West would give further information.

No demographic rise can be perceived (on the contrary) during the Dryas II in Belgium an Rhineland, where the most important sites have recently been dated to the Bölling : at the end of that period for Gönnersdorf and for the lower layer in Andernach (Bosinski 1978, 1988), at the beginning of the period for Chaleux (Otte 1986) and probably for Roc-La-Tour I too (Rozoy 1988b), at the Alleröd for the Upper layer in Andernach. During Dryas II, and probably also during Dryas I, the Ardenne plateau used to be bare ground without any kind of vegetation or game, life (rather mean) having found refuge in the lower parts of valleys : it is quite possible that the hunters did not come to the Ardenne, and made their summer hunting expeditions to the Morvan

instead of Belgium. Then the Gönnersdorf hunters might have stayed in South Germany (the stays in Gönnersdorf used to take place in summer as well as in winter, Bosinski 1988, but that was at the end of Bölling).

For the Northern part of France, the beginning of Etiolles might have been at the end of Dryas I, but the site might have been used (26 occupation layers for 3,50 m) for 3 more periods : less cold, then cold, then milder again (Taborin 1979, 1983, 1988, 1989). We may consider them as Dryas I, Prebölling, then the end of Dryas I and the beginning Bölling; that interpretation is more coherent with the results obtained by C-14, thermoluminescence (Valladas 1980) and typology, than to consider that it lasted on to Dryas II and beyond. Pincevent (habitation 1) would be at the end of Bölling, Pincevent (section 36) at the beginning of Dryas II and Marsangy at the limit between Dryas II and Alleröd (Schmider 1985, 1987). J.M. Cordy (1985), indeed, ascribed all the Magdalenian sites of this area to Dryas II, because of the well marked predominance of reindeer in food remains, but that may have been the result of a cultural choice; this opinion is also inconsistent with the presence of Mammoth in Etiolles and with the C-14 and thermoluminescence datings. The presence of backed points in Marsangy, and their absence in the other sites near Paris, show quite neatly a long stretch of time.

In the present state of the available data, and because bones were not preserved in the richest sites (Les Beaugards), it is not possible to distinguish with validity the various settlements in the sub-periods for the Paris Basin, and we have to consider as a whole the demography of all the Magdalenian of Bölling and Dryas II for this area. Anyway, it was never proved, and it is even quite unlikely, that there was a demographic rise in the Paris Basin at the same time as it was said to have existed in the S.W.

The increase of population in the S.W. at the Magdalenian VI (supposing it did exist) cannot have corresponded to a retreat of the hunters during the Dryas II which was a very cold period. Indeed, such movement of population would have led to changes in industry (lithic and others), which we do not perceive : for example the introduction to the S.W. of the large quantities of borers which the inhabitants of the Paris Basin used to make (sometimes more borers than burins !). A more acute study of the differentiation of areas might but lead to state

more precisely about such facts, whichever way they might be slanted.

THE REGIONAL GROUPS IN THE MAGDALENIAN

For the Middle and Upper Magdalenian in France, we can see six distinct population groups. These groups are shown on the map (fig. 6), separated by bare areas, or areas which were not much used: the most systematic surveys do not fill up these areas, the new sites are almost always discovered in already filled areas. It is no longer possible to ascribe those blanks to a lack in research. There is one group in the Pyrénées, one in Périgord, one in Massif Central, one on either side of the lower course of the Rhône, one in the Rhône-Alpes region, and the Paris Basin group, which stretches to the Ardenne and covers a surface two or three times larger than that occupied by each of the others.

One cannot exclude that two (or several) of these groups of sites have been left by the same men and women: such is the case for the group in the South-East of Paris and the one in the Ardenne, maybe also for the Périgord and the small Vienne group, which have common features in ornaments. But differences in details (more especially in lithic typology) more often suggest they are distinct groups: in all the Massif Central sites we found very high rates of backed bladelets (around 70%), on the other hand in the South-West these rates are quite varied. The "parrot-bill burin" is known in the Périgord only, with only one (unpublished) piece in the Pyrénées at La Vache (Clottes 1988). For the Provence-Languedoc group the typological affinities (which does not mean a similarity) are to the Périgord Magdalenian, whereas the sites in the Rhône-Alpes area, which are nearer, are quite different. And the Gönnersdorf burins are made on truncated blades (Bosinski 1983) whereas in the Ardenne they are dihedral ones, and other differences corroborate this.

The geographical structure of each group reproduces that of the whole: there are agglomerations of sites, a few km (and sometimes less) apart, and between them (fig. 7) there are bare areas which are not always due to material obstacles. The Magdalenians would occupy some areas and would raid the others only briefly and rarely. Sometimes they left aside areas which the Aurignacians or the Solutreans had occupied before, in ecological circumstances which (for us) seem analogous, and they visited places which their ancestors had left completely (fig. 8). The same disparity is to be found between the

Aurignacians and the Solutreans: it was a general feature in the Upper Palaeolithic: they did not use the whole area.

The situation is the same in the rest of Europe: four geographical groups (at least) are present in the East (Hahn 1979, Feustel 1979, Vencl 1979) and there are also isolated sites. In Spain the Cantabric group, with 43 sites, can be divided easily into 3 parts, separated with blanks (L.G. Straus, 1986, divided it more precisely into 6 local subgroups). One of these blanks is more than 50 km broad, the other one is smaller: it is the same thing as in the Rhône-Alpes area or between the Périgord group and the Vienne group. There are also sites in the Spanish Mediterranean area, which may seem to be isolated ones (50 to 100 km far from one another). There has been very recent research (Fullola 1983, Cacho 1989), as for the two Portuguese sites, and we can suppose that there is certainly another group (maybe two) in S.E. Spain; we must wait for more information.

As seen above, we know at least 16 geographical site groups for the Upper Magdalenian, with 622 sites (8 groups in France and Belgium with 392 sites, including decorated caves, and 8 concentrations with 230 sites outside the French speaking area). There are (at least) 36 isolated sites (18 in France and 18 abroad). The whole of them may correspond to 12 to 15 distinct human groups, certainly related and keeping friendly intercourse, proved by the unity of Magdalenian culture. It would be profitable if all these specificities could be pinpointed to confirm or deny the autonomy of each of these groups, and the nature and intensity of the exchanges between them.

To recognize the regional groups, we must use all the information at our disposal: that implies that all the searchers will have to work in cooperation in the future. The typology of lithic industry (for quality and quantity) is fundamental, but it should not be the only criterium. We must take account of the styles of the debitage and of the tools, of the materials they used or carried, the wear traces, the bone industry, ornaments and art, and maybe also of the animals they ate or the types of settlements. One or two type-fossils are not enough to make a technical facies nor to recognize a human group, there must be convergence of common features belonging to several fields. Such convergence is always encountered inside well defined geographical limits in which there is only one facies within a given time. The difficulty is to distinguish between the chronological facies

(which are co-existing in a same area), those coming from regional differences, and varieties linked with diverse activities.

INTERREGIONAL AND INTERCULTURAL PHENOMENA

Among the areas there are technical and other similarities, such as in art which make us sure of the unity of the whole and of its autonomy with regard to the neighbouring contemporary cultures (Creswellian, Otte 1984b, Hambourgian, Salpétrian, Epigravettian....). Some very useful or much appreciated tool or ornament types spread quickly far beyond the group which invented them. Therefore, at the same time some neighbouring groups used some very defined tools; this proves the existence of long-distance links (and also, but not so strongly, even beyond the limits of the culture). The similarity is much more evident in that they are more elaborated objects, for example the "navettes" (Allain 1985) at the end of Dryas I, or the harpoons, later. It may be the same for ornaments and art. The other artifacts are more or less similar, but not identical.

For example Y. Taborin (1987) writes that some shells were carried quite commonly over 200 km, and often more than that, up to 400 km, but the "faluns de Touraine" were not carried to the Périgord, though they were not far from there (200 km). On the other hand, the Vienne group used the same shells as in Périgord, the whole of them coming mainly from the Atlantic Ocean 200 km off; a fossil from Aquitaine was also found in St. Marcel (Indre). It seems that the Pyrénées were a distinct group, maybe even two groups, each one using their own resources in shells. Y. Taborin shows thus that the Society of Upper Palaeolithic was far more structured than we used to think. But there were also exchanges from one area to another, particularly for the (rare) shells coming from the Mediterranean Sea, and it is not easy to distinguish what belonged to a definite human group and what came from exchanging. Besides, there had certainly been some flux of persons from one group to another, though human relations, and more precisely marriages, were probably at least 80 % inside each regional group (Constandse-Westermann and Newell 1984, 1986).

As for A. Sieveking (1986) concerning the aesthetic witnesses, she shows similarities on far longer distances than supposed by environmental conditions (through travel made necessary by material living). Then that might be linked to facts mainly cultural. The difficulty

then consists in distinguishing what belongs to distinct groups and what is due to interregional or intercultural contacts.

UNEVEN DISTRIBUTION OF POPULATION

The composition of groups is not balanced : for the Bölling-Dryas II period, including decorated caves, and in number of sites, there is a very high preponderance in the South-West, with 142 definite sites in Périgord-Quercy and 87 in the Pyrénées, but 59 in the Massif Central and only 23 in Provence-Languedoc, 28 in Rhône-Alpes, 36 for the Paris Basin and Ardenne group. But we should take the importance of sites into consideration : the Beaugards, with 15 000 retouched tools, versus 2 900 in Chaleux, 1 600 in Roc-La-Tour I and 93 in Le Frontal (5 000 in Gönnersdorf). And some sites in the S.E. where we have to count in hundreds of thousands, if not in millions (Gare de Couze)! Decorated caves very often provide no tools, but they give information for the importance of the concerned area. The advance in the S.W., especially in Périgord, is particularly well marked.

The distribution of the 8 000 or 10 000 human beings in France was certainly not equal in the 6 areas. Each regional group may have consisted of 1 500 to 2 500 persons (including children), distributed into 30 to 50 bands of 50 to 60 persons (this number is suggested in connection with the way of hunting and the remains of camp-sites). The numbers in the regional groups would then be comparable with those found for the Epipalaeolithic cultures (Rozoy 1978). The difference is due mainly to the far larger surface occupied by each Magdalenian regional group : something like 50 000 to 200 000 km² versus 10 000 to 30 000 for the Epipalaeolithic.

But if we take in consideration the surfaces used effectively (those where there are groups of sites), the difference is much less important : the Pyrenean group covers only 35 000 km², and moreover it appears there might have been two ethnographical units there. The Périgord-Quercy group, probably double or triple, covers indeed only 30 000 km² (35 000 with the Vienne group). The Franco-Belgian group, which seems the most important one considering the possible surface (200 000 km²), but which used only 10 000 + 5 000 km² in a continuous fashion, would have been among the smallest ones in population, considering the low number of sites we know : probably scarcely 1 000 persons, the same, besides, as for the Provence and Rhône-Alpes groups.

R.R. Newell and Tr. Constandse-Westermann (1984, 1986, 1988) explain that it is not safe to count on less than 800 persons to insure the perennity of a group (they rely upon groups which were endogam up to 80 %, which appears to have been the case for the prehistoric groups, if we trust the genetic distribution of determined characters). This perennity stress is probably the cause of the limit in the occupied land : if they are scattered on too large a surface, the cohesion and even the survival of the members of a regional group become risky. F. Audouze (1988) thinks that the small Paris Basin groups, which ventured to too difficult an area, have probably disappeared when there was some crisis. Whether they disappeared or not, the strong limits of the used territories were an answer to that danger.

The difference with the Epipalaeolithic would then consist mainly in the quasi-vacuity of a large part of the land, which was only visited quickly and scarcely from a really crowded basis. The population density in the used parts would be analogous in both periods. We know indeed, after Elton (1950), that the biomass of herbivores does not increase much as one goes south, the forest putting an important part of vegetal biomass out of reach for animals.

Though they were established independantly, these evaluations quite agree with those established by L.G. Straus (1986) for Cantabric Spain, where it is possible to estimate the carrying capacity of the land, because the game was mainly deer and ibex, and these still exist. For the Eastern Asturias, L.G. Straus concludes "8 to 10 bands of 25 persons", that is 200 to 250 persons, on a territory of 1 250 km², which corresponds to 2 000 - 2 500 persons for a regional autonomous group, actually occupying a surface of 12 000 to 15 000 km² in the most Southern areas. L.G. Straus relies on the classical number of 25 persons in one band, a number much influenced by the sub-present "primitives" who were pushed into remote deserts. But this does not change anything to a global estimation of the population. Fewer people in the Paris Basin is a likely hypothesis based on the small number of sites, and also in accordance with an animal density we can presume lower in a colder area.

These 1 000 human beings in the Paris Basin may have been divided into 15 or 20 bands of 50 to 60 persons, and one or two bands may have come to the Ardenne in summer for hunting; the Ardenne would have been left unoccupied in winter.

Very likely the Périgord group was the largest one : at least 2 000 or 2 500 persons; beyond these numbers, we must consider a bipartition (from ethnographical examples). And we may suppose there were two or several distinct human groups in Périgord and Quercy, with neighbouring territories (the occupied surface is twice the predicted basis for one regional group). We can also question about the small Magdalenian group in the Vienne valley, which is separated from the Périgord one by a blank 50 km wide. These geographical inequalities are other important elements of difference from the Epipalaeolithic when, as far as we know, the population was distributed equally all over the territory.

These are only rough estimates, some basis for discussion. The bands of sub-present hunters know an endless flux, ever changing their numbers and their composition, which seems quite likely for the Prehistoric men having a similar way of life. This flux explains cohesion in regional groups, as well as the diffusion of inventions. We have also to take account of the likely gathering of bands in favourable seasons. I think our colleagues may be interested in discussing these propositions.

ABSTRACT

The Magdalenians spread largely in Europe only in the Bölling and Dryas II. The sites are concentrated in some 16 small areas, and a few isolated sites. Compared to Epipalaeolithic and to Cantabria, the population may be estimated to 18 000 - 20 000 persons, distributed into 12 to 15 distinct unequal groups, 7 of them in France (Pyrénées, Périgord-Quercy (double), Massif Central, Provence-Languedoc, Rhône-Alpes, Pincevent-Ardenne), two or three in Spain (Cantabria and Mediterranean coast) and 3 in the East (Schwaebische Alb, Thüringen and Bohemia-Moravia). The Rhineland sites (Gönnersdorf) and the sites in the plain situated North of the Ardenne could be linked with the Thüringen or Schwäbische Alb groups. The Pincevent group, which seems to have visited the Ardenne in Summer only, would have been one of the less numerous : around 1 000 persons, versus 1 500 to 2 500 in other groups. These related regional groups are quite comparable to later Epipalaeolithic cultures, but they used (because of a necessity of cohesion) only a part of the territory (15 000 to 30 000 km²), choosing very steep slopes richer in game.

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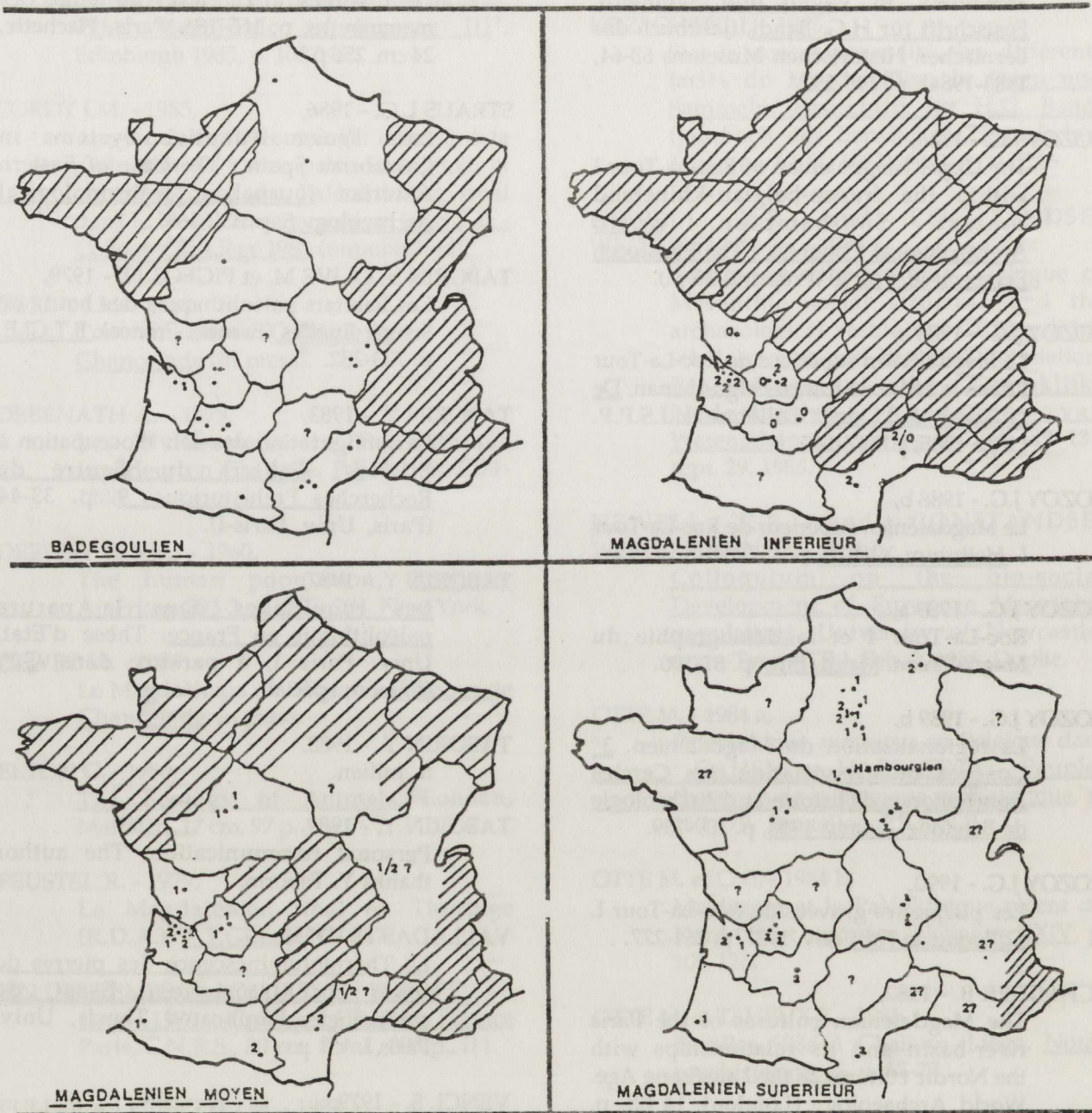


Fig. 1 - Periods of Magdalenian frequentation.
from Bosselin and Djindjian (1989).

Numbers 1 and 2 indicate two variants in the Magdalenian lithic industry. The Upper Magdalenian only, corresponding to the Périgord Magdalenian IV, V and VI, has a large distribution. The small striped area in the South-East was occupied by other cultures.

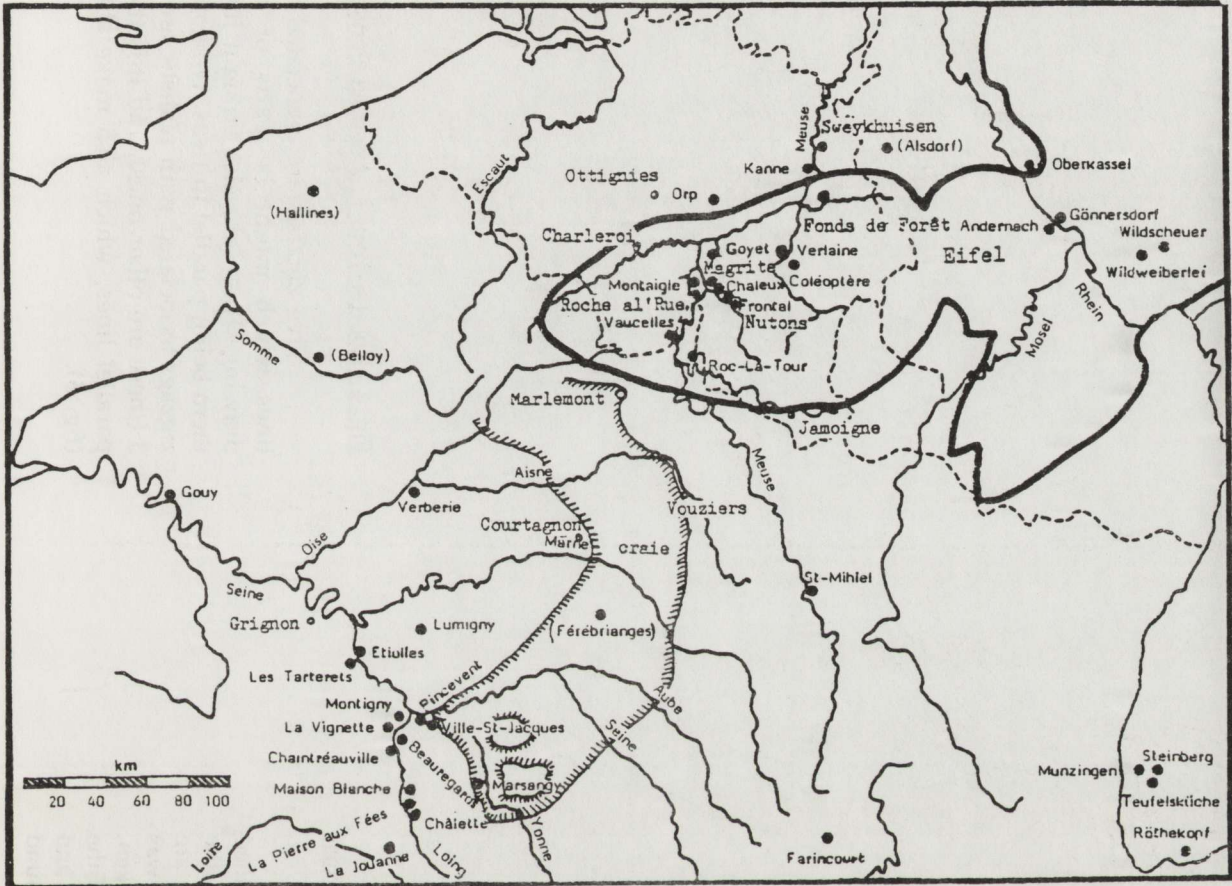


Fig. 2 - The Upper Magdalenian to the North of the Loire.

The heavy line indicates the limit of the primary massif (Ardenne and Rhineland) which is cut deeply. The striped line indicates the limit of chalk. The sites in the South-East of Paris are also on deeply cut ground. Blank circles : places where materials were extracted.

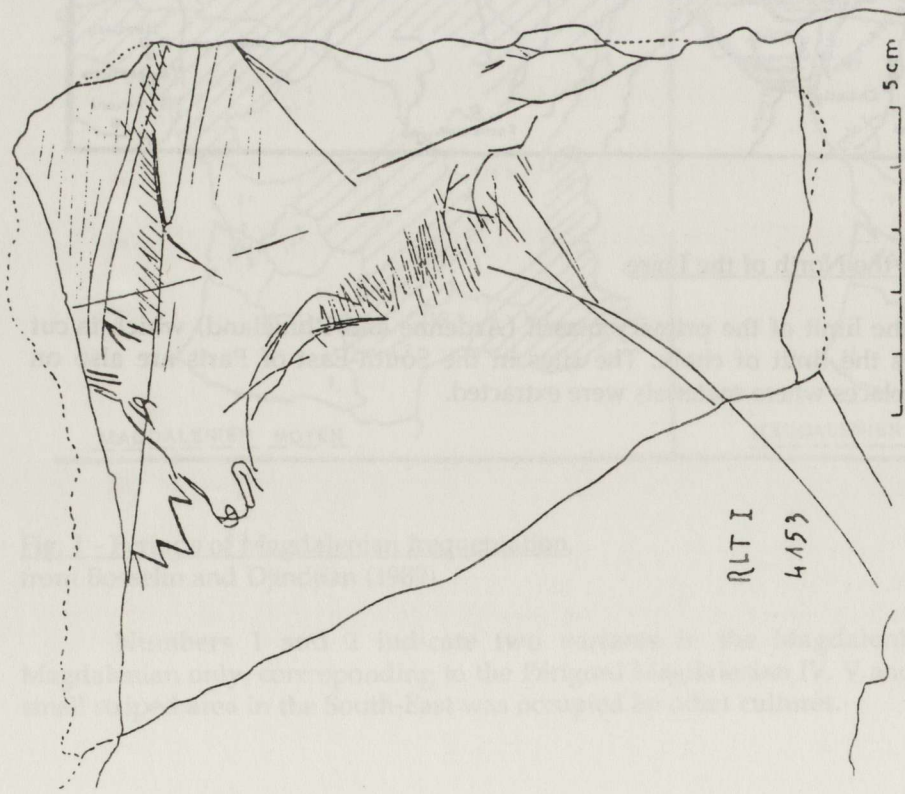


Fig. 3 - Roc-La-Tour I : Engraved wolf on schist (transcription : C. Rozoy).

The plate (40 x 40 x 1,5 cm) was smoothed before being engraved (not indicated on the transcription). The horizontal lines, which are more acute, were drawn after the animal was drawn, but not after the plate was broken, certainly on purpose. The zigzag in front of the head is an abstract design (compare to fig. 4) and the two by two parallel lines are also found (among others) on the plaquette on fig. 5.

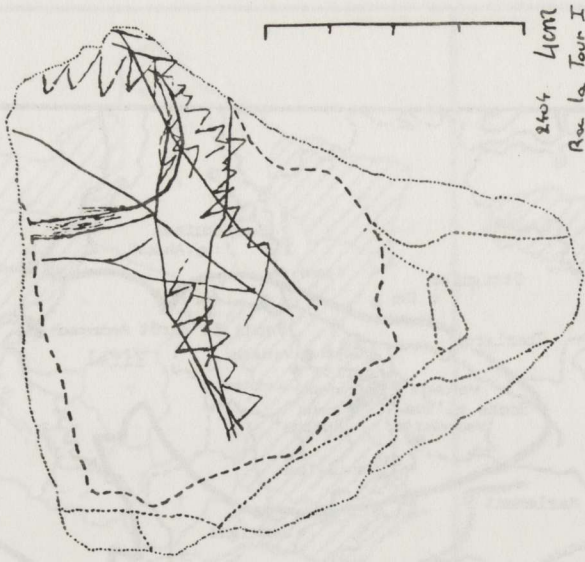


Fig. 4 - Roc-La-Tour I : Abstract signs : zigzags

Five zigzags are associated with curved lines which might be parts of a figurative drawing. There are also straight lines, some of them being parallel in twos. We notice the same zigzags associated with realistic animals on fig. 3 (there are other ones), and it is the same with parallel lines, which also make abstract zones (fig. 5).

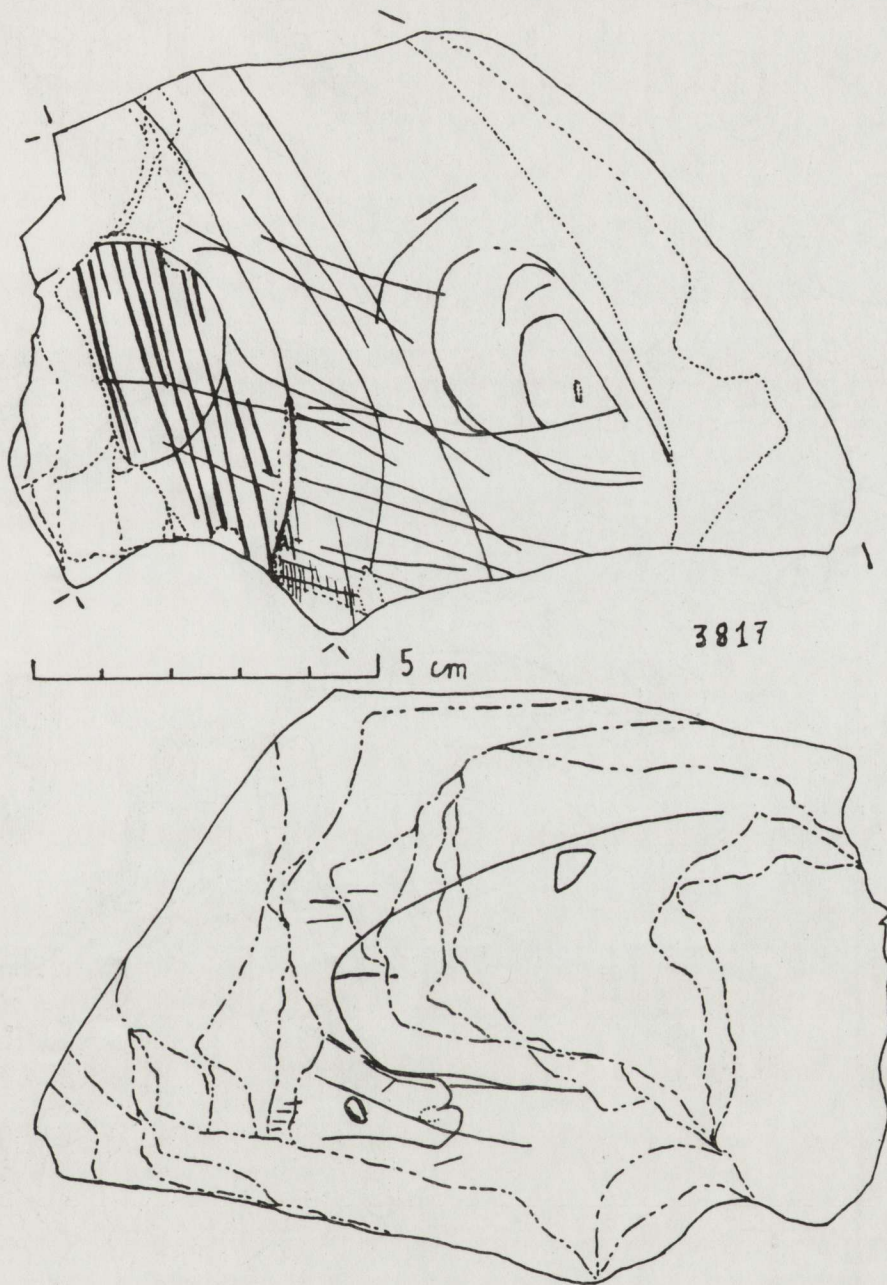


Fig. 5 - Roc-La-Tour I : Parallel and crossed lines.
(transcription J.G.R.).

The dotted lines indicate the natural successive layers of schist. Two animal heads (head to tail) cross them. On the reverse side there are more or less straight lines, most of them are nearly parallel two by two, crossing obliquely. There are far more abstract signs than realistic figures in the Magdalenian Ardenne.



Fig. 6 - Europe in the Upper Magdalenian (Bölling and Dryas II).

This map has been established mainly from "La Préhistoire Française", "La fin des temps glaciaires en Europe" and "l'Art des Cavernes", and with the help of various European prehistorians. Occupied areas : number of reliable sites. Visited areas : a dot for each site. Striking opposition between used areas and nearly desert areas with isolated sites, 50 or 100 km far from the nearest site.

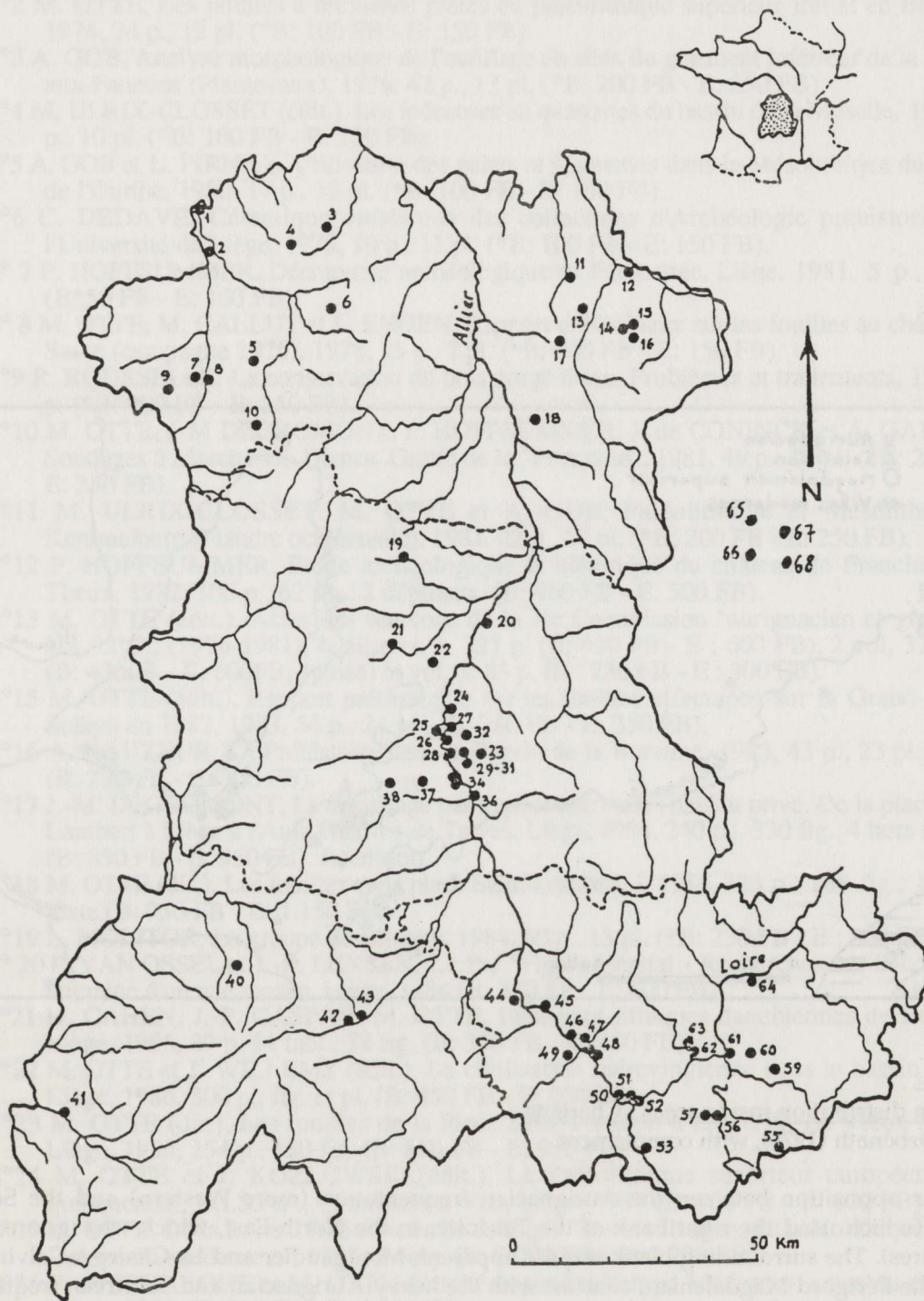


Fig. 7 - Uneven distribution inside areas : Massif Central.
 from Daugas and Raynal (1979), with complement.

Several groups of sites appear to be separated by blanks 45 to 50 km wide. Parts of these blanks seem to have been fit for dwelling, particularly in the North. The sites 40 to 43 are rather isolated sites, quite probably linked with the same group.

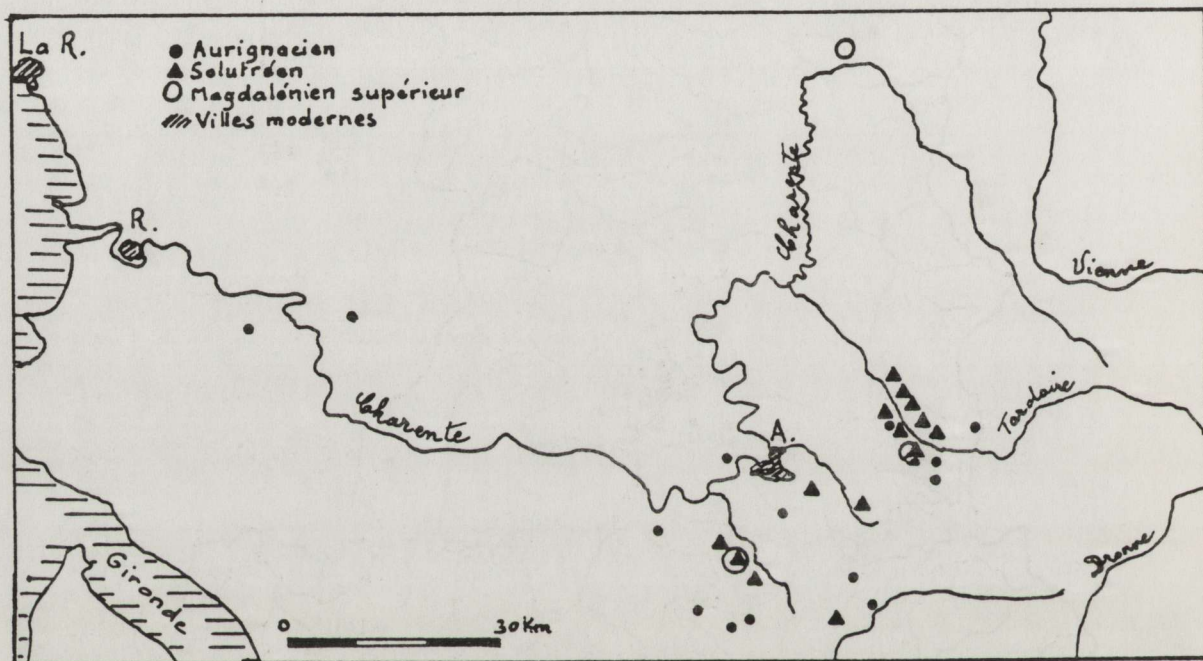


Fig. 8 - Uneven distribution inside areas : Charente.
according to Debénath (1976), with complement.

A clear opposition between the Aurignacian frequentation (more Western) and the Solutrean frequentation (which used the right bank of the Tardoire, to the North-East, which was ignored by the previous cultures). The surrounding blank is quite apparent. Montgaudier and La-Chaire-à-Calvin, on the very edge of the Périgord Magdalenian, contrast with the heavy Aurignacian and Solutrean frequentation (14 and 14 sites). Le Chaffaud, to the very North-East, is an isolated site, 50 km off the other ones, and 40 km far from Lussac and Angles and the Vienne-Anglin group. But is it really Upper Magdalenian?