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A brief overview of Aurignacian cultures in the context of the industries of the transition from the Middle to the Upper Paleolithic

■ FRANÇOIS BON

ABSTRACT Recent technological studies devoted to lithic industries from many Aurignacian sites of western Europe have made it possible to better define the earliest stages of this culture in the area. Such studies show the existence of two principal facies (Archaic and Early Aurignacian), whose chronological position and geographical dispersion are still in need of refinement; the evidence available in any case already enables some discussion of the unity of the technocomplex,

in time as in space. The technological approach also shows the important role played in the characterization of these different industries by the production of elements (bladelets, in this context) associated with the manufacture of projectile points. This paper proposes to see in the search of technical solutions to make better hunting weapons one of the factors explaining some of the main technical changes observed during the Middle-to-Upper Paleolithic transition.

In the past, studies of the Aurignacian have been strongly directed towards the identification of the origins of a culture interpreted by a majority of researchers as evidence for the migration of a population. However, instead of representing a homogenous culture progressing across the European continent, the initial stages of the Aurignacian appeared in the form of several facies identified in various areas of Europe. The emergence of this culture thus offers a rather confusing taxonomic picture — Protoaurignacian in some parts of Spain and Italy, Archaic or Initial Aurignacian in southeast France, Aurignacian “o” in southwest France, etc.

Over the last few years, studies devoted to the technological analysis of lithic industries have contributed to overcome this situation. In fact, such studies have made it possible to clarify the nature of the different facies and to make inferences regarding the degree of their relationship. If, for example, we consider southwest Europe, in particular France and the Iberian Peninsula, two distinct facies can now be defined within the earliest phases of the Aurignacian. After summarizing the elements of definition upon which rest the description of these facies, we will consider questions and models suggested by these results.

The Early Aurignacian in Aquitaine

Since the Aurignacian was first recognized, in the beginning of the 20th century, the industries belonging to the Early Aurignacian of Aquitaine have constituted the basis for the analysis of this culture as a whole; this is illustrated, for instance, by the seminal research of Breuil (1913) and Sonnevile-Bordes (1960). Indeed, the main attributes classically associated with the Aurignacian (carinated scrapers, Aurignacian blades, split-based points) belong in this facies. Over the last few years, lithic industries from different sites in southwest France

occupied by human groups of the Early Aurignacian were studied from a technological point of view (Fig. 1): Brassempouy, Landes (Bon, 1996, 2002); Caminade, Dordogne (Bordes, 2000); Castanet, Dordogne (Pelegrin and O'Farrell, in press); Garet, Landes (Klaric, 1999); Hui et Toulousete, Lot-et-Garonne (Le Brun-Ricalens, 1993); Abri Pataud (Chiotti, 1999); Le Piage and Roc-de-Combe, Lot (Bordes, 2002); La Tuto de Camalhot, Ariège (Bon, 2002; Bon et al., 2005). To these we can also add several sites where knapping activities were dominant, all located on sources of raw material in the area of Bergerac (Dordogne): Barbas (Ortega, 1998; Teyssandier, 2000), Corbiac-Vignoble II (Tixier, 1991; Bordes and Tixier, in press), and Champ-Parel (Chadelle, 1990).

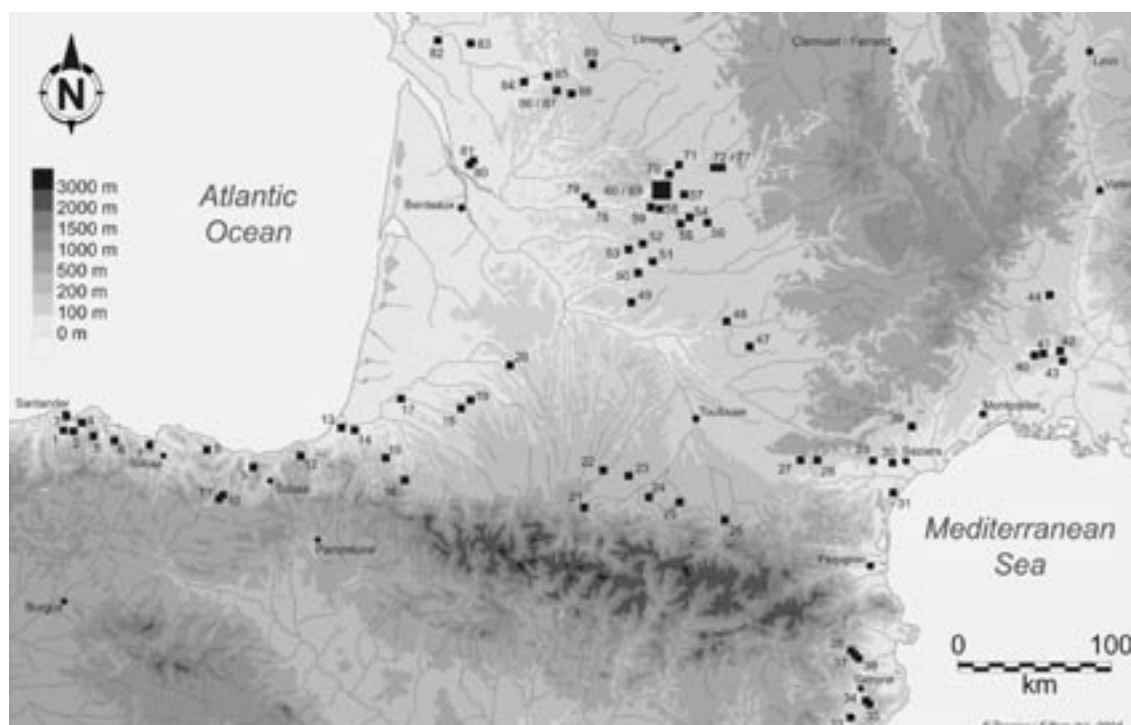


FIG. 1 – Location of the main Aurignacian sites in Southern France and Northern Spain.

- | | | | | |
|-------------------------------|----------------------------|------------------------------------|--|------------------------|
| 1. Hornos de la Pena; | 20. Cazaubon (Drouilhet); | 37. Mollet I; | 57. Laussel; | 74. Font-Yves; |
| 2. Castillo; | 21. Gargas; | 38. Reclau Viver; | 58. Le Flageolet, grotte XVI; | 75. Bassaler-Nord; |
| 3. Pendo; | 22. Les Abeilles; | 39. Rothschild; | 59. Caminade; | 76. Chanlat; |
| 4. Morin; | 23. Aurignac; | 40. L'Esquicho-Grapaou; | 60. La Ferrassie; | 77. Comba del Bouïtou; |
| 5. Salitre; | 24. Tarté; | 41. La Laouza; | 61. La Faurélie; | 78. Barbas; |
| 6. Otero; | 25. Mas d'Azil; | 42. La Balauzière; | 62. Lartet et Poisson; | 79. Champ-Parel; |
| 7. Polvorin; | 26. Tuto de Camalhot; | 43. La Salpêtrière; | 63. Pataud; | 80. Pair-non-Pair; |
| 8. Santimamine; | 27. Canecaude I; | 44. Le Figuier, Les Pécheurs; | 64. Cro-Magnon; | 81. Roc de Marcamps; |
| 9. Ekain; | 28. Les Cauneilles-Basses; | 47. Ségalar; | 65. La Rochette; | 82. Rochecourbon; |
| 10. Labeko Koba; | 29. Bize (Tourna); | 48. La Moulinière; | 66. Cellier; | 83. Gros Roc; |
| 11. Lezetxiki; | 30. Régismont-le-Haut; | 49. Beauville (Hui et Toulousete); | 67. Le Facteur; | 84. Grotte à Melon; |
| 12. Aitzbitarte; | 31. La Crouzade; | 50. Las Pélénos; | 68. Vallon de Castelmerle (abris Castanet, Blanchard, La Souquette); | 85. Combe de Rolland; |
| 13. Chabiague; | 32. Romani; | 51. Les Ardailloux; | 69. Labattut; | 86. Les Rois; |
| 14. Le Basté; | 33. Cal Coix; | 52. Laburlade; | 70. Belcayre; | 87. Les Vachons; |
| 15. Isturitz; | 34. Can Crispins; | 53. Abri Peyrony; | 71. La Bombetterie; | 88. La Quina; |
| 16. Gatzarria; | 35. Bruguera; | 54. Le Piage; | 72. Bos del Ser; | 89. La Chaise. |
| 17. Tercis, Moulin de Bénese; | 36. Arbreda; | 55. Roc de Combe; | 73. Dufour; | |
| 18. Brassempouy; | | 56. Les Fieux; | | |
| 19. Garet; | | | | |

These studies have shown the great industrial homogeneity that characterizes the Early Aurignacian of southwest France:

- The assemblages of “domestic” tools are for the most part made on blades, with some tools made on flakes as well. The range of domestic tools is dominated by endscrapers and retouched blades, but includes also burins and splintered pieces in variable proportions (see the assemblages from Brassempouy in Figs. 2-3).
- The main principles of blade debitage are as follows (Fig. 4a)
 - Debitage conceived in an unipolar way;
 - Core volume consisting of a flaked surface with parallel edges, framed by one or two perpendicular sides;
 - Not much elaboration of shaping out methods, beginning with the removal of cortical pieces, possibly laminar flakes, and with crests being set up only if need be;
 - Frequent extraction of products from the intersection between the flaked surface and one of the sides (possibly after the creation of a new crest), which makes it possible to then detach robust blades in the center of the flaked surface, while at the same time the volumetric properties of the core are maintained;
 - Very frequent preparation (faceting, short *éperon*) of the impact zone, associated with a nearly exclusive use of direct, soft hammer percussion;
 - Detachment of robust products, facilitated by the mode of preparation of the impact zone, and seemingly taking precedence over the search for regularity.
- The production of bladelets corresponds to a separate *chaîne opératoire*, and is mostly carried out through the reduction of “carinated scrapers”, which in fact are bladelet cores (Lucas, 1997). The bladelets produced are small-sized, about 10-30 mm in length, and

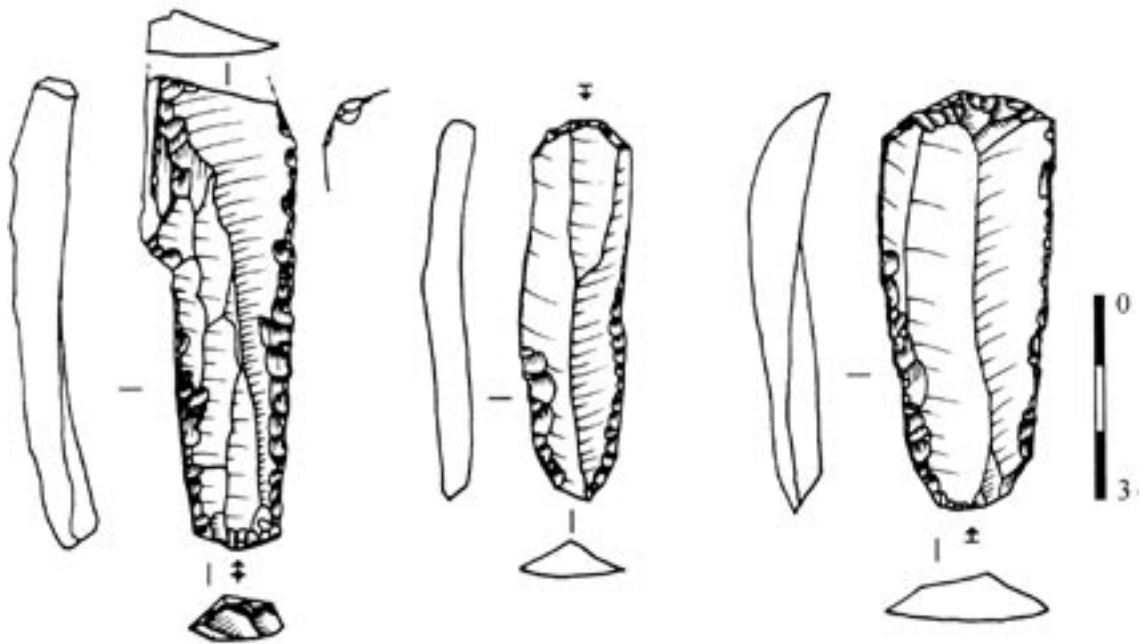


FIG. 2 – Brassempouy (Landes, France), grotte des Hyènes, level 2F: scrapers and retouched blade.

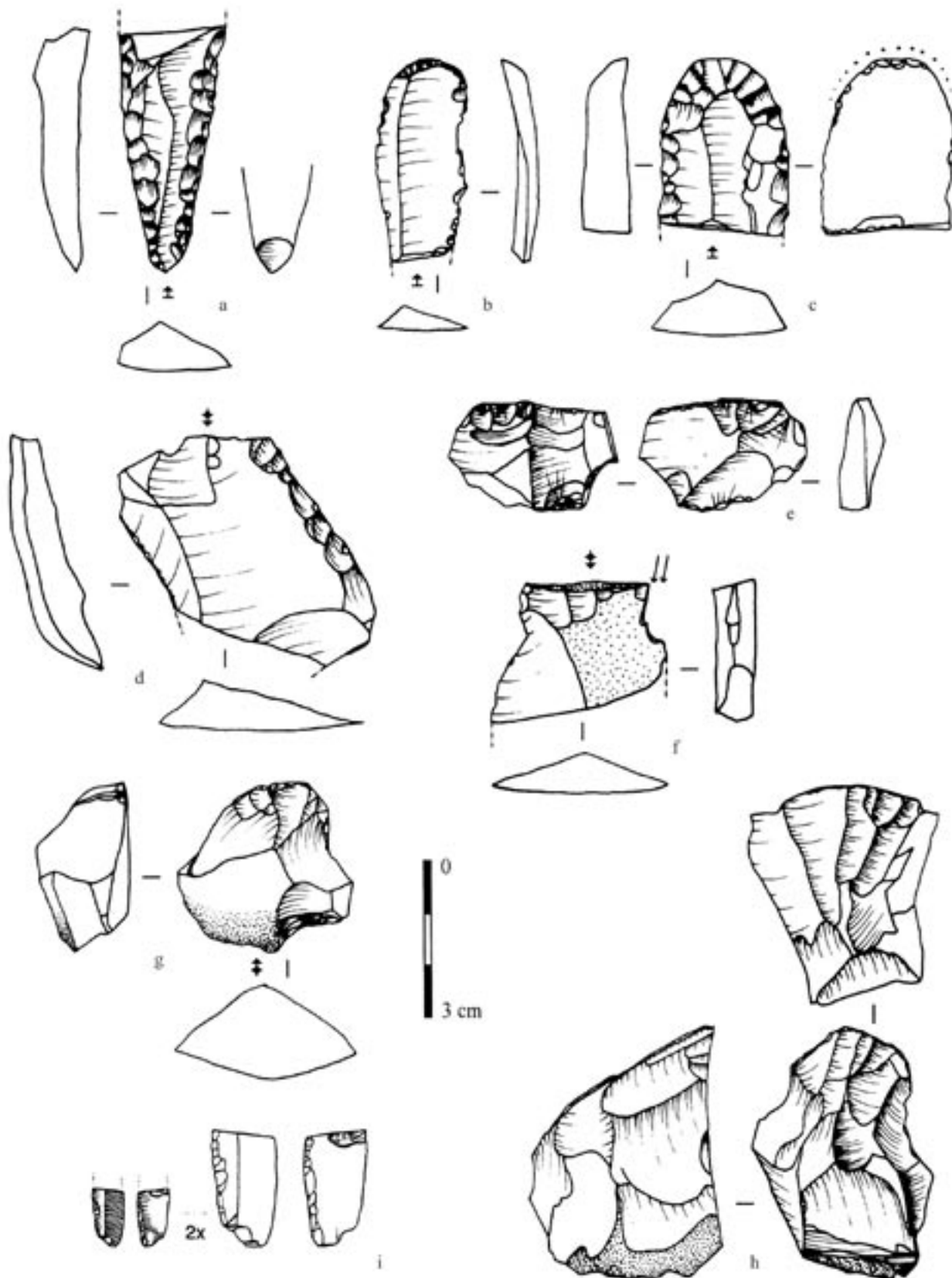


FIG. 3 – Brassempouy (Landes, France), grotte des Hyènes, level 2A. a-c. scrapers and retouched blade; d: sidescraper; e. splintered piece; f. burin; g. nosed scraper (core?); h. carinated core; i. Dufour bladelet (after O'Farrell, 2005).

very few are retouched. This suggests that they were used with no retouch; perhaps only after segmentation into smaller fragments; when transformed by retouch, the latter is often inverse or alternate. Recent analyses of the material from Brassempouy (Landes) and Castanet (Dordogne) show that at least some of these objects were used as projectile components (O'Farrell, 2005).

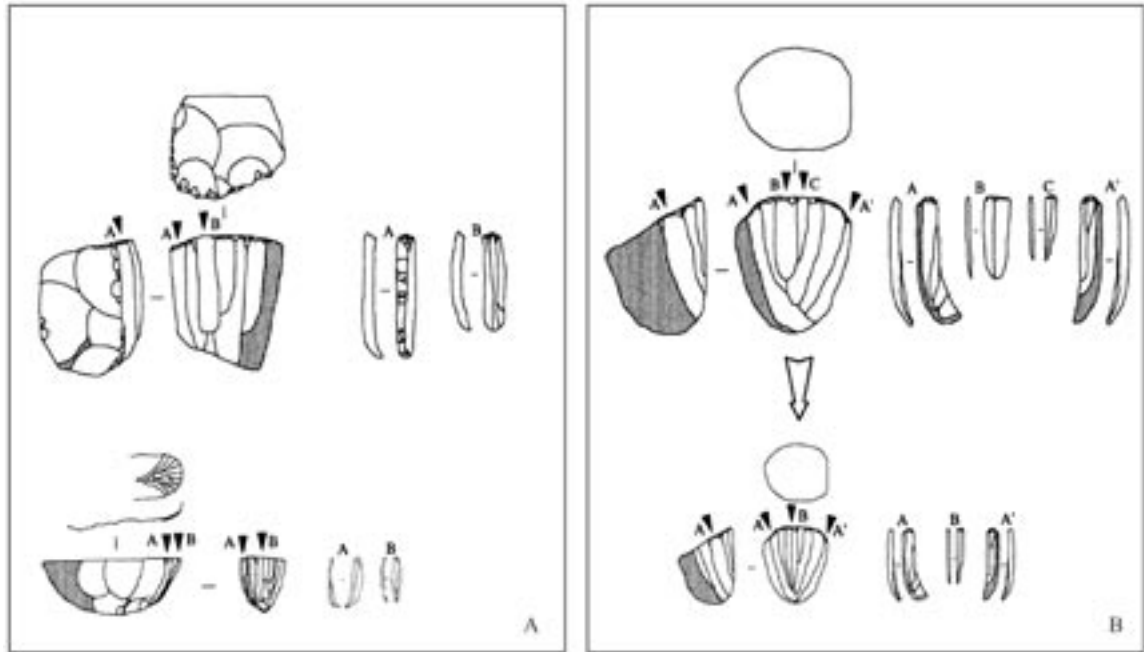


FIG. 4 – A. Dissociated productions: two independent chaînes opératoires to produce blades and bladelets (based on the industries from Brassempouy and La Tuto de Camalhot, Aquitaine, France). B. Integrated productions: only one chaîne opératoire to produce blades and bladelets (based on the industry from Arcy-sur-Cure, Burgundy, France) (after Bon et Bodu in Schmider, 2002).

These various studies have enabled us to identify a suite of technological features defining the Early Aurignacian. The dissociation between blade and bladelet productions is especially important: these two productions correspond to distinctive *savoirs-faire* and respond to different consumption requirements (domestic tools and projectiles). A techno-economic dissociation is also illustrated by the fact that, at some sites, blades and bladelets are produced in different moments, or in different places (see Fig. 5, for an example from La Tuto de Camalhot).

Proto-, Archaic, Initial Aurignacian: behind the multiplicity of words

Several sites which have been interpreted as occupied by groups variously designated as Protoaurignacian (cf. the seminal research by Laplace, 1966), Archaic Aurignacian, or Initial Aurignacian, have yielded industries which, in fact, are all rather similar. In France and northern Spain, the main sites featuring such kinds of occurrences are: Arbredda, Catalonia (Ortega Cobos et al., 2005); Arcy-sur-Cure, Burgundy (Schmider, 2002); Esquicho-Grapaou and La Laouza, Gard (Bazile, 1999, Bazile and Sicard, 1999); Gatzarria (Laplace, 1966) and Isturitz, Atlantic Pyrenees (Normand, in press); Labeko Koba, Basque Country (Arrizabalaga and Altuna, 2000); Mandrin, Drôme (Slimak et al., in press); Morín, Cantabria (Maíllo, 2003); l'observatoire, Monaco (Onoratini et al., 1999); Le Piage, Lot (Bordes, 2002).

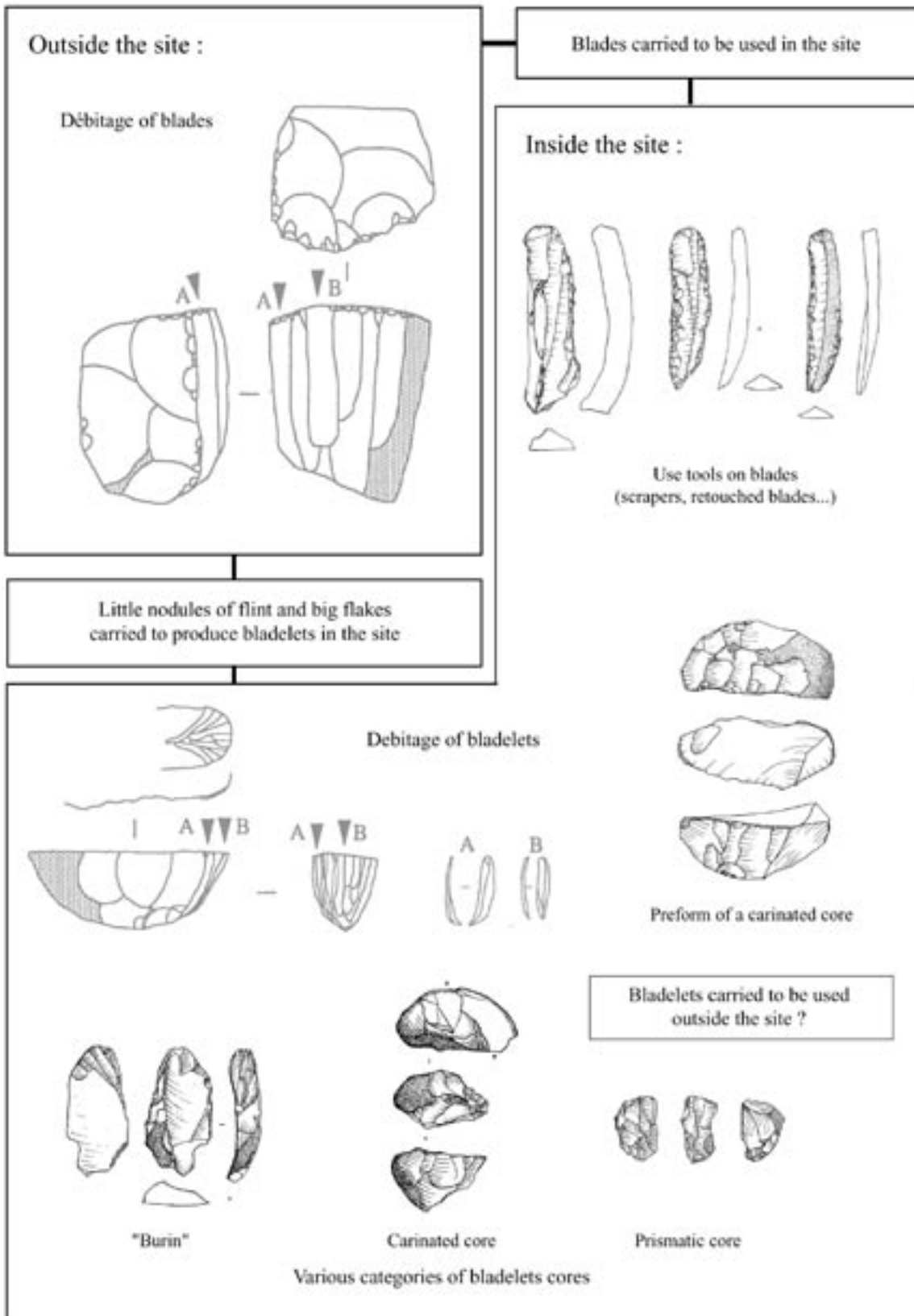


FIG. 5 – Lithic production system, based on the industry from La Tuto de Camalhot (Ariège, France) (after Bon et al., 2005). Black: artefacts from level 70-80; grey: production schemes.

In spite of an internal variability greater than that observed among industries belonging to the Early Aurignacian, the industries from these sites have the following characteristics:

- In contrast with the Early Aurignacian, there is often an operational continuum between the production of blades and bladelets; even if bladelets can be produced separately (using small cores, or obtained along the edges of big flakes), the debitage of blades frequently continues into the debitage of bladelets (Fig. 4b).
- This operational continuity is evident in the morphological resemblance between some of the blades and some of the bladelets: thin, regular, and, especially, rectilinear. At the end of production, the knapper chooses the most robust blades as blanks for domestic tools, such as endscrapers, retouched blades, or burins; the bladelets are transformed by retouch, mainly into Dufour bladelets of the Dufour subtype (Demars and Laurent, 1992; for examples from the Arcy-sur-Cure industry, see Fig. 6); the blades of intermediate size are seldom retouched and were most likely used as knives.
- Certain aspects of the debitage evoke knapping methods used in the Early Aurignacian (unipolar reduction; use of soft hammer; little preparation of cores), but others set the two facies apart (Fig. 4):
 - Cores are often of pyramidal shape, which conditions the extraction of lateral removals and is intended at maintaining the volumetric properties that make it possible to detach rectilinear products from the middle of the flaking surface;
 - The striking platform remains almost systematically flat.

Towards the description of two distinct traditions

The technological study of industries from many French and Spanish Aurignacian sites tends to show the existence of two separate technological systems. In one, corresponding to the Early Aurignacian, there are two distinct *chaînes opératoires* to obtain blades and bladelets; in the other, corresponding to the Archaic (also referred to as Initial or Proto-) Aurignacian, only one *chaîne opératoire* is required to obtain these various categories of objects. These differences reflect the existence of different *savoirs-faire*. Of especial importance is the fact that the manufacture of weapon components (made on bladelets) and of domestic tools (made on blades) is not necessarily integrated in a single *chaîne opératoire*.

The aim of current research is to determine the chronological position and the geological distribution of each of these two technical traditions. It seems that the Archaic Aurignacian is more common in Mediterranean and southern Pyrenean areas. In contrast, the Early Aurignacian is better represented in southwest France. But industries close to the Archaic Aurignacian have also been described in some Aquitaine sites — as Le Piage, Lot (Bordes, 2002), and Dufour, Corrèze (Bordes and Bon, in press) — and even as far north as Arcy-sur-Cure, Burgundy (Schmider, 2002).

More work is necessary to verify whether these industries indeed have significantly different geographical distributions, and the question of their position in time is also not an easy one. With some exceptions as Le Piage (Bordes, 2002), or Labeko Koba (Arrizabalaga and Altuna, 2000), the two traditions do not occur stratified at a single site, although the Isturitz sequence will undoubtedly bring much to bear on this issue (Normand, in press). Thus, the chronological position of these two industrial facies must rest at present mainly on the com-

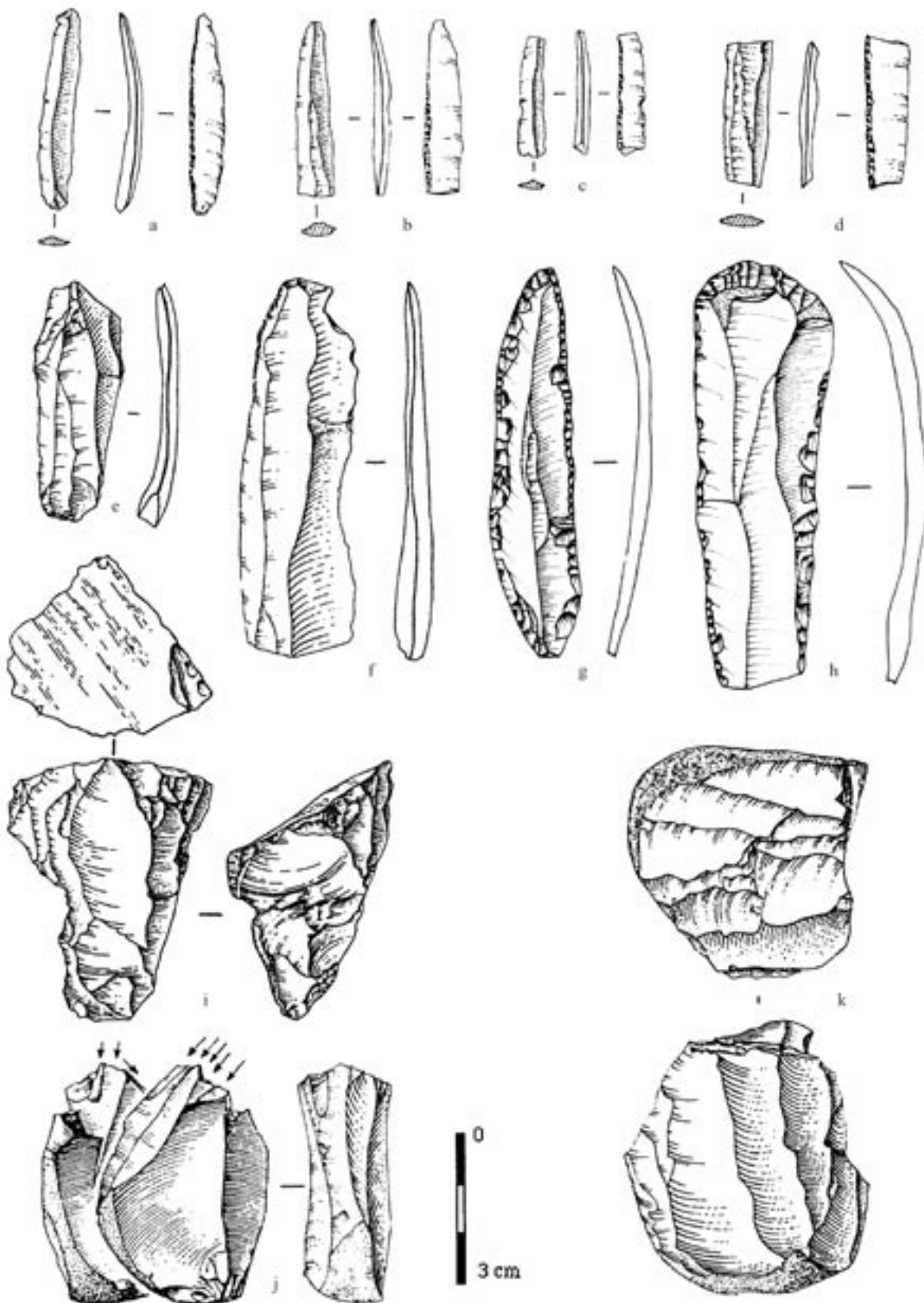


FIG. 6 – Arcy-sur-Cure (Yonne, France), grotte du Renne, level VII. a-d. Dufour bladelets; e-f. unretouched blades; g-h. scraper and retouched blade; i, k: cores; j. burin (after Schmider, 2002, modified).

parison of radiocarbon dates. These results seem to show that the Archaic Aurignacian appears at several sites in southern Europe between 38 000 and 35 000 BP, in particular at Arbreda (Soler and Maroto, 1993; Maroto et al., 1996) and Fumane (Bartolomei et al., 1994), although its real age seems to be closer to 35 000 than to 40 000 BP (Zilhão and d’Errico, 1999); the emergence of the Early Aurignacian (dated to between ca.35 000 and ca.32 000 BP) is somewhat later. However, it remains possible that these two industries were also in part synchronous after 35 000 BP (Bon, 2002).

Towards the definition of new models

We have seen that both the chronological position and the geographical distribution of industries belonging to these two traditions pose as yet unsolved problems. It is in any case clear that the existence of different traditions inside what we designate as the Aurignacian alters the vision of a homogenous wave of settlement. This forces consideration of new models for the explanation of the Middle-to-Upper Paleolithic transition.

One way to tackle this problem is by asking the question of what brings together these various Aurignacian industries when compared with such transitional industries as the Châtelperronian. Ultimately, it seems that it is mainly the importance of microlith production. We saw that Archaic Aurignacian and Early Aurignacian knappers did not produce the same kinds of bladelets, the difference residing in the nature of the *chaînes opératoires*. But the production of microliths itself can be seen as a novelty in comparison with previous transitional industries. Did it arise to fulfill new requirements? Bearing in mind that the bladelets were intended as blanks for components of hunting weapons, the answer probably has to be no. In fact, there is a high probability that Châtelperronian points were intended, at least to some extent, for use as projectile points (Pelegrin 1990), a major difference by comparison with most Middle Paleolithic technologies. What is new with the Aurignacian, thus, is not the search for projectiles but the fact that the microliths are serially, laterally hafted along the shaft of projectiles, not mounted at their extremities. This Aurignacian innovation represents a technical solution which will be followed throughout the Upper Paleolithic: that of arming projectiles with microliths made from bladelets.

On the basis of these considerations about the search of a technological solution for the manufacture of hunting weapons we can thus propose the following model:

- Between 40 000 and 35 000 BP, European prehistoric societies are changing their industries, particularly where experiments with technical solutions to make projectile points are concerned. It is in this period that such points begin to occupy an important place in the equipment of prehistoric groups. Is this in relation to the diffusion of a new type of hunting weapon, for example the spear-thrower? If so, these changes in lithic industries are perhaps in part related to, and in part explain, first the emergence and then the surge in the manufacture of bone projectiles.
- Although this focus on lithic armatures is a shared feature of industries belonging to this period, it can also be used to divide them on the basis of the various technical solutions adopted to achieve a common purpose. One solution was that of hafting the points at the tip of the projectiles, as with Châtelperronian points. Another— that of laying out along the shaft a series of microlithic components — soon became essential, and this solution undoubtedly appears among industries of the Archaic Aurignacian, and is developed in the Early Aurignacian.

Was this innovation related to constraints posed on human groups by their displacements? One possibility is that bladelets are a technical solution providing a perfect balance between 1) concerns regarding the production of standardized hunting weapons, and 2) the exploitation of vast territories in which resources of mineral raw-materials are of diverse quality and uneven distribution (Bon, 2005). In fact, no matter what raw-materials are available, producing bladelets is almost always possible, and it is also easy to transport raw materials in small amounts. Is this an argument in favor of the hypothesis that the Aurignacian is related to migration? Perhaps, if we consider the extension of the phenomenon, but diffusion of ideas is also a viable explanation.

This model expresses the fact that the Aurignacian has many things in common with other European industries of the period between 40 000 and 30 000 BP. These shared features relate to the development of technical solutions for the manufacture of projectiles, and possibly explain the “cultural mosaic” that develops during the period. Therefore, the Archaic Aurignacian can be seen as an industry of transition, more precisely one within which a very promising technical solution was developed: the use of microliths. This model, which can now be tested, proposes that hunting had a major role in the Middle-to-Upper Paleolithic transition, and that it is the realm of hunting activities, in their full socio-economic (and even symbolic) dimension, that undoubtedly underlies the changes observed in the technical dimension which was the focus of this paper.

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