



TECHNOLOGICAL DIFFERENTIATION ASSOCIATED WITH THE SAINT-CESAIRE NEANDERTAL

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ABSTRACT

Technological study of the lithic assemblage from the Castelperronian level at Saint-Césaire (Charente-Maritime, France) reveals internal differentiation between "archaic" and "Upper Paleolithic" themes. This technology, associated with the most recent Neandertal known, is analyzed here in its spatio-temporal context. Observations pertaining to technological differentiation and to the organization of space in the rockshelter are presented, and the significance of these new data to the transition from Middle to Upper Paleolithic is briefly discussed.

INTRODUCTION

The site of Saint-Césaire is located 8 km from the town of Saintes, in Charente-Maritime, Western France, near the Atlantic Ocean. This area contains much evidence of early hominid occupation dating to the transition to Upper Paleolithic adaptations.

The site is a collapsed, west by northwest-facing rockshelter near a small stream, adjacent to sources of flint on the plateau above. It yielded a sequence of levels spanning the Mousterian through the Aurignacian periods (Lévêque 1979). Sandwiched in between Denticulate Mousterian and Proto-Aurignacian is a level containing Castelperronian materials associated with a Neandertal skeleton. This level is known as E_{jop} superior, and burnt flints from this level have been dated by thermoluminescence to 36,300 BP (Mercier *et al.*, 1991).

The Neandertal skeleton, shown in figure 1 within a circle and accompanied by the letter H, was found near the shelter wall, closely associated with backed points and backed knives; high frequencies of heavily modified, fractured stone artifacts can be seen as a hatched area in squares E4, F4 and E5. The items found in the vicinity of the skeleton are small to medium sized. Further away, in the northernmost squares, large artifacts were found, including

unmodified flakes and flat scrapers and foliates. Some features, probably hearths, were discerned through analysis of field notes (see area with double hatching in figure 1). The heavy line in figure 1 shows the extent of pieces bearing a lustrous polish, due to differential hydration. This distribution may track the position of the edge of the rockshelter overhang or dripline during the period in question, possibly reflecting a difference between sheltered and unsheltered space (Zones 1 and 2 respectively), with an alcove on the western side. The straight diagonal line was constructed from several spatial distributions of independent artifact classes (faunal species, stone tool and core differentiation, polish, clast size, and reduction stage indicators on flakes). This is corroborated by the large round boulders that would reflect the collapse of the overhang in the past. The possible hearth features were located mostly under the shelter, as well as in the vicinity of the dripline, and some were apparently stone-lined. The two zones were also differentiated by the techniques of stone reduction used to produce the objects recovered in each (backed points to the south of the dripline and large scrapers to the north of it); at the dripline itself and in the alcove, a mix of these elements suggests an overlapping in depositional context.

CORE REDUCTION

Level Ejop superior enclosed 202 cores, of which the main types are represented within the outlined space in figure 2. Among them, the lower two-thirds of the figure (48.5 %) are clearly Mousterian-like. The flake scars observed on them are short and often thin. 24 % of the cores in the level bear a flake scar arrangement that is very often observed on cores from Upper Paleolithic contexts (in the upper third of the figure). Many of these were designed for the production of blades; some of these (12 %, upper left) are close to the Aurignacian technique (a), while others (5 %) are closer to the blade technique commonly seen in the Gravettian (g). Between the more "Upper Paleolithic" and more "Mousterian-like", a third group, consisting of 27.5 % of the cores, blends characteristics of Middle and Upper Paleolithic technology.

52.5 % of all the cores can be ascribed to technological themes illustrated in figure 2 that are clearly distinct from each other. Of these, we distinguish 3 % as polyhedrons, 10 % as tabular cores with few removals, 15 % as centripetal-tabular cores, 2.5 % as Levallois cores, 5 % as discoidal cores, 5 % with longitudinal and burin reduction, and 12 % as cylindrical reduction of short blanks. Among the Mousterian-like cores, some bear wide, invasive scars, from the removal of flat flakes. Sometimes these flakes are overlapping, removing one or more edges of the core, while others exhibit more numerous, less invasive, narrow scars from the removals of thin flakes, and often bear delicate, thin retouch removals. The former technique, with wide, invasive removals, is similar in some ways to the technique used in the Denticulate Mousterian level below the Castelperronian at Saint-Césaire. The latter technique, with very thin, more concentrated removals, is common in the Mousterian of Acheulean Tradition.

47.5 %, the balance of the cores, combine two or more of the themes shown here, and cannot be neatly classified as one or the other. Two of these intermediary pieces are represented by hatching. The one

in the center exhibits a twisted platform edge, resulting from the superpositioning of cylindrical blade reduction onto centripetal, Mousterian-like reduction.

UNMODIFIED FLAKES AND QUADRIPOLAR DIFFERENTIATION

5032 unmodified flakes (larger than 2 cm in maximum length) were analyzed from this level, of which the 2544 unbroken flakes are plotted in figure 3 along axes of elongation and flattening, reflecting the quadripolar technological differentiation of Level Ejop superior. This technology emphasized chunky flakes (pole 1) and thin flakes (pole 2), and to a lesser degree, blades, although as roughly 50 % of all flakes are broken, blades are probably underrepresented. These blades do not systematically reach the degree of differentiation seen in the Upper Paleolithic (poles 3 and 4). The Castelperronian of Saint-Césaire displays a technological polymorphism, but a strong tendency towards the systematic production of flat and thin flakes (pole 2) corresponds to a characteristic Mousterian-like flake manufacture. When the flake shape poles are quantified (figure 4), a tendency towards flake flattening (emphasizing sharp edges) tempers the dominance of thick, chunky flakes (pole 1, flakes which tend to swamp many assemblages, and which constitute an even larger majority in Egpf, the underlying Mousterian level at Saint-Césaire). Thin flakes and blades are underrepresented, because of the high incidence of breakage in Ejop superior, but this was a core reduction technology that focussed on thin flake production with relatively few blades.

This technological differentiation of core reduction is reflected in the spatial arrangement of cores (figure 5). Mousterian-like cores (uncircled numbers) with wide, invasive scars are distributed throughout the excavated area, but are the only cores found in zone 2, the unsheltered zone to the windward of the heavy line, a grid schematic of the diagonal line or dripline. Mousterian-like cores with thin,

more concentrated removals (large 2, underlined) are distributed in Zone 1 (to the leeward of the line), where the Neandertal skeleton was found, and a large cluster of these was present in the alcove.

Blade cores (circled numbers) and cores designed to produce blades (L circled) were distributed almost exclusively in Zone 1, overlapping into Zone 2 in the alcove. They track the postulated dripline and are arrayed along this line. These cores appear to cluster in the vicinity of hearths (hatched zones). Detailed analysis of stratigraphic position of all these artifacts has revealed no depth differential between these Middle and Upper Paleolithic indicators.

RETOUCHED FLAKES

The retouched tools are mostly fashioned on flakes, but some are on blades. These blades are rather short, although true blades, while in the minority, are present. Dihedral or multi-faceted platforms are rare; most platforms have a single facet. Punctiform platforms are even rarer. Simple retouch (*retouche simple*) dominates; steep retouch (*retouche abrupte*) and planar retouch (*retouche plane*) were used also, sometimes occurring on the same piece, a characteristic of this industry.

The following typological groups are present :

- scrapers, usually fashioned on flakes, some on short blades, a few on true blades. The vast majority of platforms are single-faceted; dihedral and multifaceted are present in equal quantities; a few are punctiform.

- points, almost all made on flakes (only one on a blade); platforms are mostly single-faceted; planar retouch is present on several points.

- endscrapers, often on flakes but tending towards elongation, some of these are made on true blades, with single or dihedral facets. A particular type of flat endscraper, made on broad

flakes, is present here, and is characteristic of the Castelperronian - this type is also found at the Castelperronian deposit of Quinçay, in Vienne. The endscrapers are much less elongated than those found in the Aurignacian.

- denticulates, mostly on flakes but some on blades, with mostly single-faceted, some dihedral, with fewer multi-faceted or punctiform platforms.

- steeply retouched flakes have variable platforms. On one piece, steep and planar retouch co-occur, with circular, steep retouch on a Levallois flake with planar preparation.

- engraving tools (*becs*) are exclusively made on flakes with single platform facets; this group is usually characterized by alternate retouch, and exhibits very little variability.

- backed points (*pointes à dos*) are mostly on short blades, and one is even on a flake. some are quite wide; one is fashioned on the bulb. Retouched bases are present. Typical of this assemblage is the removal of the median dorsal ridge during knapping. When platforms are preserved, they have single facets or are punctiform.

- backed blades (*lames à dos*) are short, with mostly single facets.

- foliates (*foliacés*) have distinctively planar retouch that in some cases invades the whole external face. A foliate biface is present. This kind of retouch is present on other kinds of tools as well, especially scrapers.

- burins are mostly on flakes, the majority are made on flat planes. Butts are single-faceted or dihedral.

- bipolar retouch on anvil (*retouche écaillée*) is limited to flakes.

SPATIAL DISTRIBUTION OF STONE TOOLS

Becs are restricted to the sheltered zone, many endscrapers and burins also have a tendency to occur there and in the alcove. Backed points and steeply retouched tools cluster with the blade cores, in the sheltered zone, with the Neandertal skeleton, while traditional Middle Paleolithic tools (large flat scrapers, foliates, and a biface) are limited to the unsheltered zone, roughly avoiding the zone of lustrous polish to the lee of the projected dripline (figure 1). At the dripline, both kinds of stone tools are found associated with each other, overlapping. There is no visible stratigraphic difference between these two technological tendencies. Foliates and the large scrapers with foliate tendencies tend to be more frequent within a band tracking the dripline.

As in the case of cores, tools appear to cluster in the vicinity of hearths, forming arcs suggesting toss zone size sorting rather than a redeposited context. The technological differentiation between Zones 1 and 2 is presented in table 1. Independent variables in the form of faunal remains also track the two zones: the majority of bovine remains are distributed in Zone 2, while reindeer bones were more often found to occur in Zone 1. The functional context of these two assemblages may have been linked to different technological adaptations varying with seasonality in the annual round.

DISCUSSION

These results can be summarized as follows: the production of large flakes from cores similar in some aspects to the underlying Denticulate Mousterian cores occurred in front of the shelter, and these items were deposited there. Some large flakes were reworked into tools and cores, thereby becoming smaller, and these were deposited under the shelter and in the alcove, where reduction was more differentiated, with discoidal and blade core reduction. A zone of overlap can be seen between the two zones and in the

alcove. Although temporal association between the two zones cannot be demonstrated, research has not, until now, distinguished any stratigraphic differentiation that might reflect change through time. Techno-spatial variability in this level might reflect a contemporaneous, but functionally distinct organization of activities within the shelter and in front of it. This view, however, cannot rule out the possibility that the materials were deposited sequentially in time. For example, materials found in front of the rockshelter reflect a basically archaic technology with few Upper Paleolithic attributes, and may have been deposited earlier than those covered by the rockshelter overhang, with significant proportions of technological elements of both the Upper and Middle Paleolithic.

The Castelperronian technology of Saint-Césaire retains many characteristics of the Middle Paleolithic. While emphasizing blade production, this industry does not reach the extreme laminarity of Upper Paleolithic core reduction. The result is a highly variable tool assemblage. The Castelperronian in general, as shown in previous work (Laplace 1958; Lévêque, Backer and Guilbaud 1993) is characterized by interassemblage variability through time and space. The Castelperronian of Saint-Césaire is one of the most archaic of Castelperronians.

ACKNOWLEDGEMENTS

This paper was presented to the Second Annual Meeting of the Paleoanthropology Society, in Toronto, Canada, April 13-14, 1993. We would like to thank Dr. John Yellen for organizing these meetings.

A. Backer wishes to thank the L.S.B. Leakey Foundation for funding her dissertation research on spatial distributions at Saint-Césaire, and the Anthropology Graduate Students, University of New Mexico for allocating travel funds allowing her to present this paper at the Paleoanthropology Society meetings in Toronto.

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Table 1 : Spatial differentiation, Ejob superior, Saint-Césaire.

ZONE 1 SHELTERED SPACE	ZONE 2 UNSHelterED SPACE
Neanderthal skeleton	-
small tools and flakes	large tools and flakes
backed points, backed blades	flat scrapers
more breakage	less breakage
hearths	few hearths
blade cores	no blade cores
Levallois, discoidal cores	no Levallois or discoidal cores
faunal remains mostly reindeer	faunal remains mostly bovines
lustrous polish on flint	no polish present on flint
fewer large blocks	many large blocks
late reduction stage of large nodules	early reduction stage of large nodules

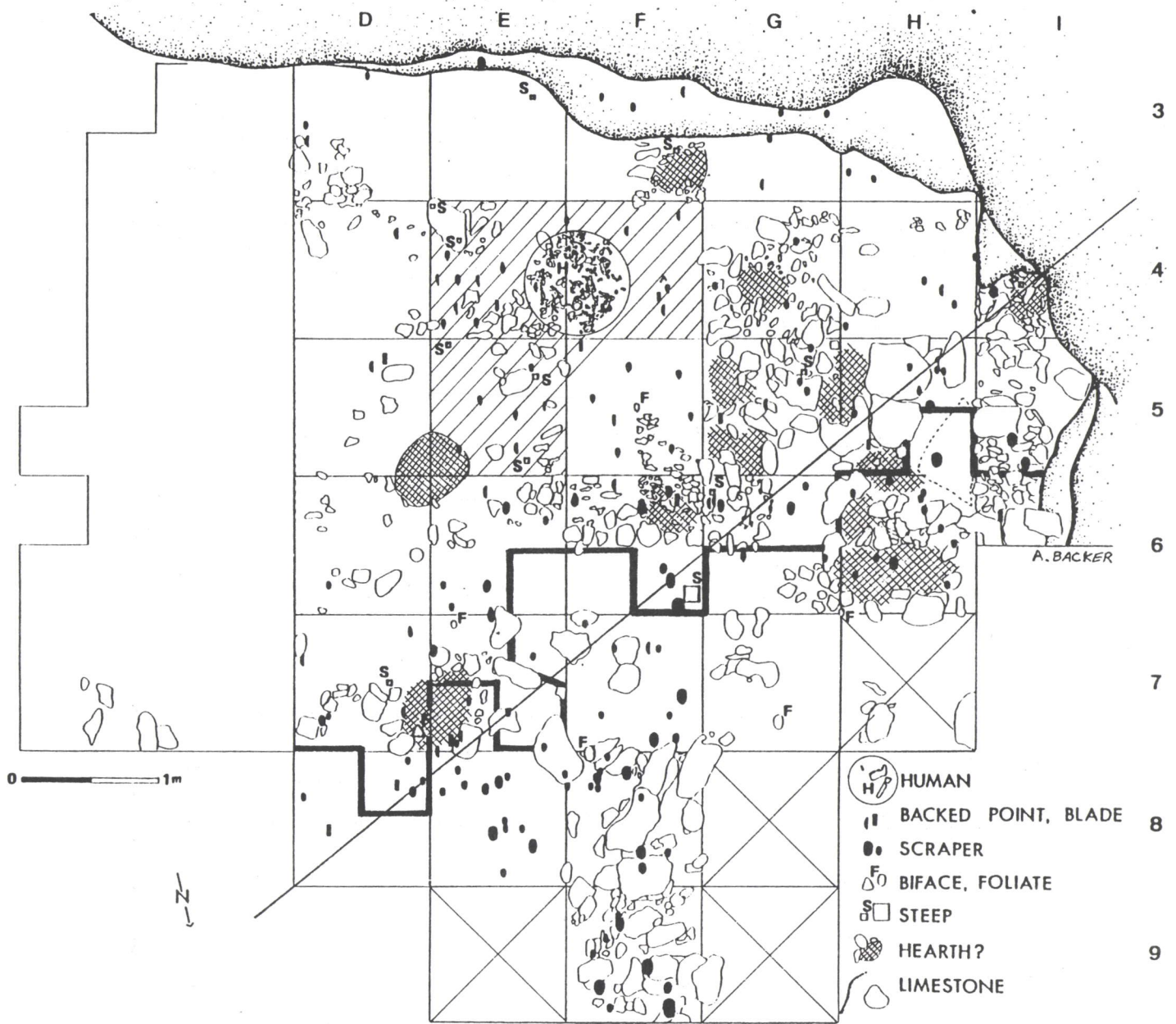


Figure 1 : Excavated area planview, Ejop superior, Saint-Césaire.

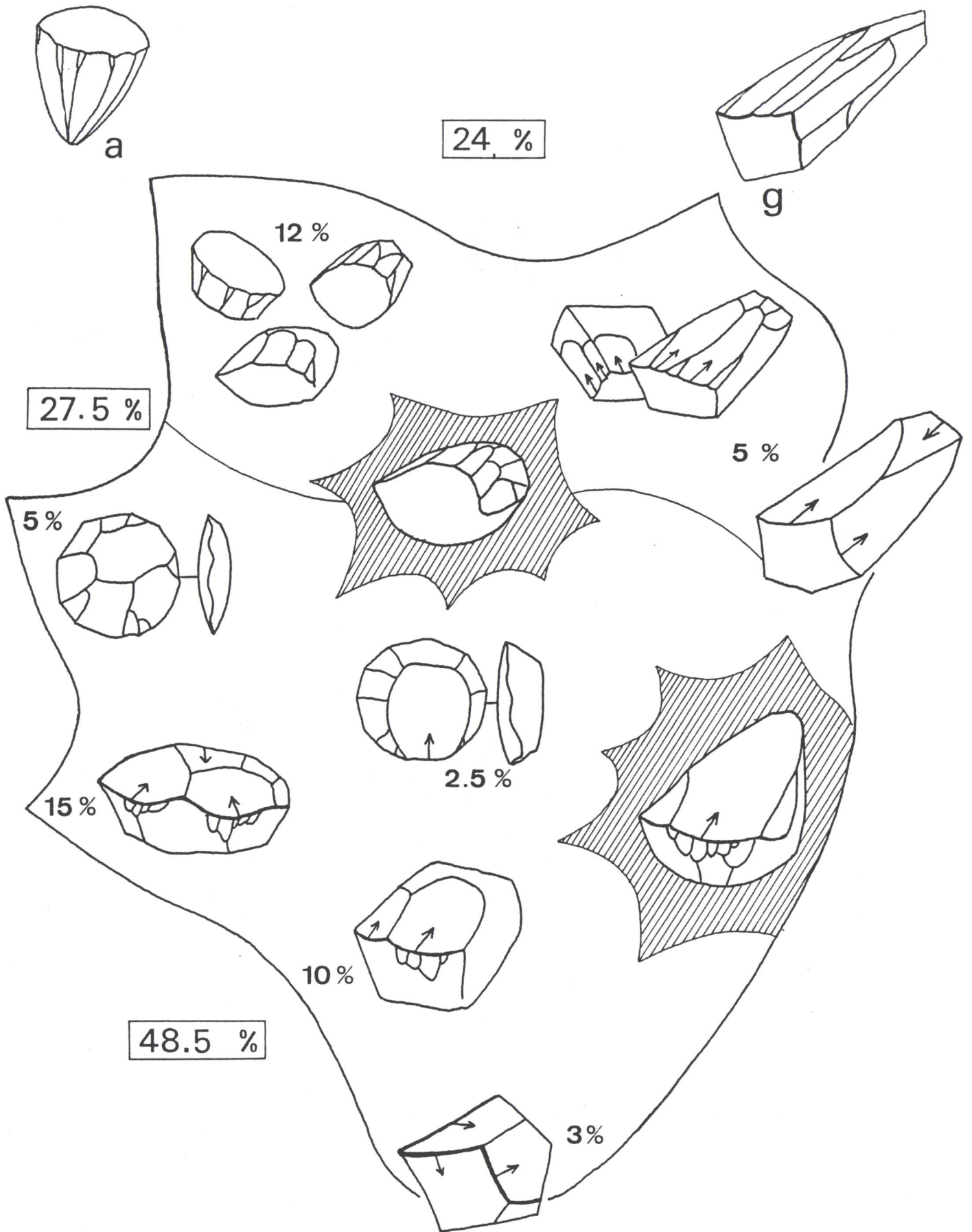


Figure 2 : Technological core themes, Ejop superior, Saint-Césaire.

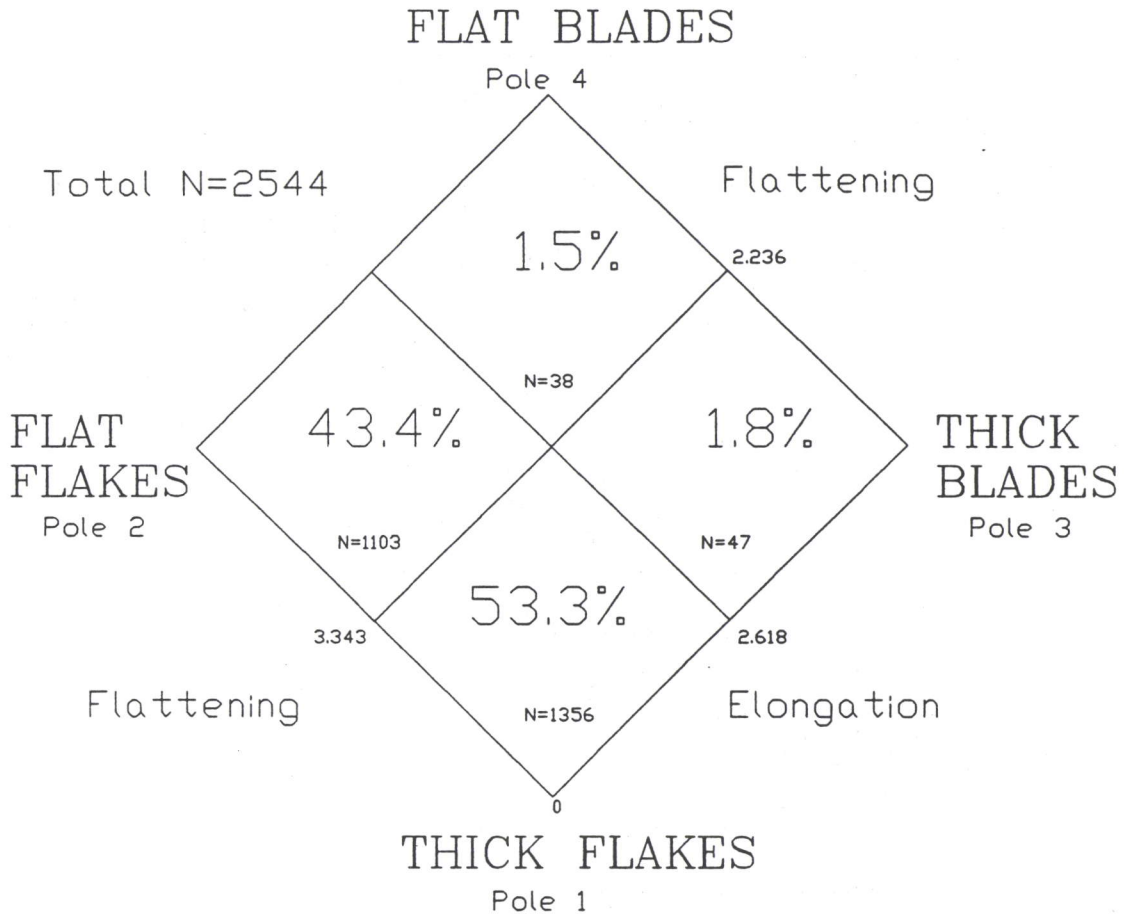


Figure 4 : Percentages of flake shape poles

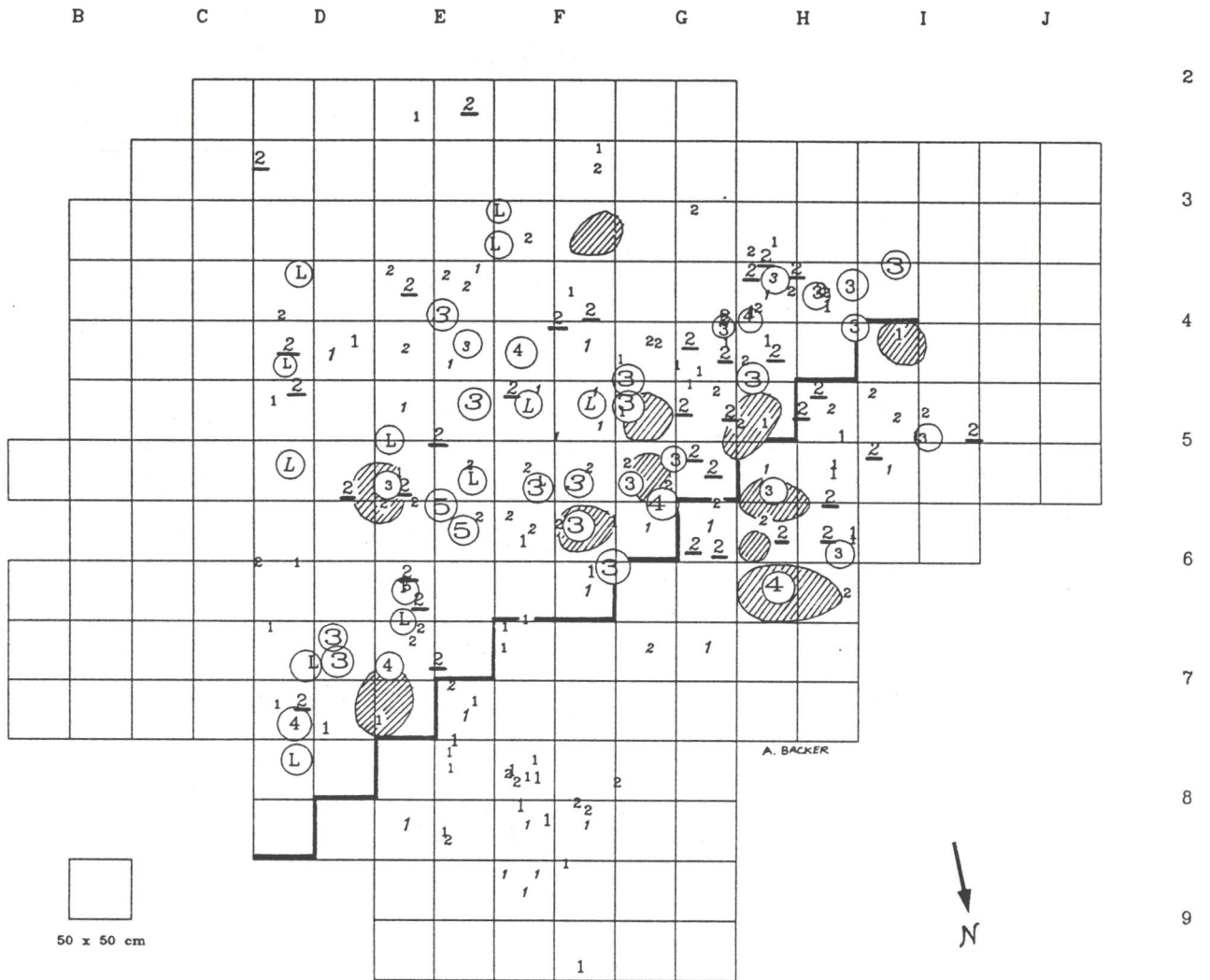


Figure 5 : Spatial distribution of different core types by pole of removals