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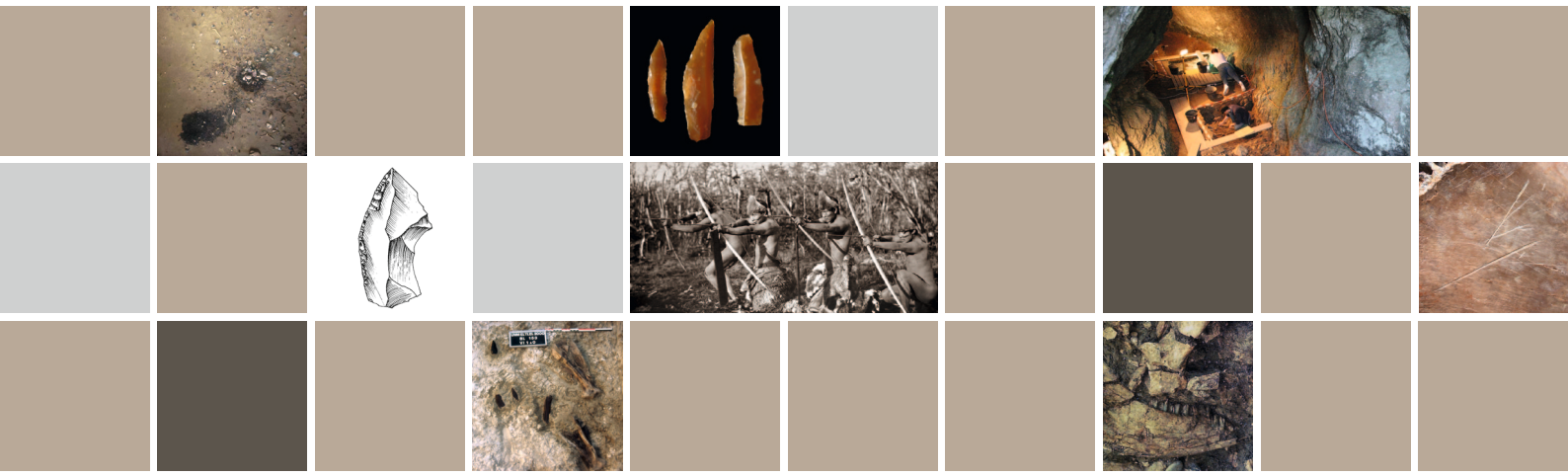
HUNTING CAMPS IN PREHISTORY

Current Archaeological Approaches



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Article outline

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HUNTING FOR CAMPS AT AN AZILIAN SITE IN WESTERN FRANCE

Grégor MARCHAND, Nicolas NAUDINOT
Sylvie PHILIBERT, Sandra SICARD

Abstract

A preventive excavation conducted in the Chaloignes Valley (Mozé-sur-Louet, Maine-et-Loire, France) in 1999, over a surface of approximately 9200 m², revealed ten homogeneous loci and a group of lithic scatters disturbed by post-depositional processes. Due to the absence of organic materials and the inclusion of all the loci within the same stratigraphic unit, we are forced to base nearly all hypotheses on the lithic remains alone. The challenge is to understand the economic organization and mobility strategies of human groups in the west at the end of the glacial period, obviously in association with their hunting practices. Several lines of evidence indicate frequent occupations by small groups, rather than base camps with complementary zones. An analysis of the usewear and fractures of weapon armatures show that these objects were used for hunting or war activities in all of the loci. Meanwhile, a techno-functional analysis of locus 1, where weapon elements were repaired, shows that other objects of material culture were also manufactured there. It appears that the notion of a hunting camp is inappropriate to describe Azilian activities that are apparently highly influenced by the mobility of the groups.

Mots clés

Azilian, Maine-et-Loire, Final Paleolithic.

1 - The site and its problems

In a large depression at the confluence of three valleys, in the hamlet of Chaloignes in the Maine-et-Loire Department (figure 1), thousands of lithic artifacts distributed among several distinct zones attest to repeated occupations by Azilian human groups. The preventive excavation realized in 1999 over more than one hectare showed that in the center of this depression, the layers of archaeological remains were mixed together and sometimes disturbed by Final Neolithic or Middle La Tene occupations (Marchand, 2008; Marchand *et al.*, 2004, 2008, 2009). On the periphery, small isolated loci that are better preserved allow us to more clearly define the spatial organization and production strategies of the lithic tools. The great monotony of our observations in these two domains nonetheless do not permit us to clearly determine whether the site of Chaloignes corresponds to an immense base camp with distinct activity zones or a succession of small camp-sites more or less spread out in space. The challenge is to understand the economic organization and mobility strategies of human groups in the west at the end of the glacial period, obviously in association with their hunting practices. This goal must be accompanied by a methodological reflection since in a geological context such as the Amorican Massif, with its acidic sediments, the rarity of organic remains forces us to base all models of site function on the lithic artifacts alone.

Figure 1 - Location of the site of Chaloignes (Mozé-sur-Louet, Maine-et-Loire, France).

A techno-functional analysis of locus 1, initially interpreted as a weapon armature repair zone provides an opportunity to determine the economic information that can be obtained from a lithic assemblage found with no other associated archaeological elements.

2 - Les Chaloignes, how did it work?

2.1 - What is it?

The site of Chaloignes (Mozé-sur-Louet, Maine-et-Loire, France) is located in the upstream portion of a small stream at the point of convergence of three thalwegs (figure 2). This stream is a branch of the Aubance, itself a tributary of the Loire, situated only two kilometers to the north (figure 3). This river, which constitutes a potential circulation route and even more so, a rich and particularly diverse ecosystem, is accessible along nearly ten kilometers of its banks, across one hour of walking distance on an open terrain (or within a range of five kilometers). Lacking preserved bone remains at this site, the fundamental role of the Loire is primarily perceptible in the preferential procurement of flint cobbles for tool manufacturing, but was of course also attractive for its hunting and fishing potential.

The topographic disposition at Chaloignes favored the preservation of Tardiglacial levels during a phase of climatic improvement, which followed a cold period and the formation of complex deposits in a periglacial environment (figures 4-5). Based on typological comparisons with sites in the Paris Basin, the remains found in these levels are attributed to the Late Azilian with monopoints, contemporary with the Alleröd (Bodu and Valentin, 1997; Thévenin, 1997).

Figure 2 - General view of the Chaloignes basin, in the axis of the southern valley. In the background to the left, the city of Angers (photograph: Gr. Marchand).

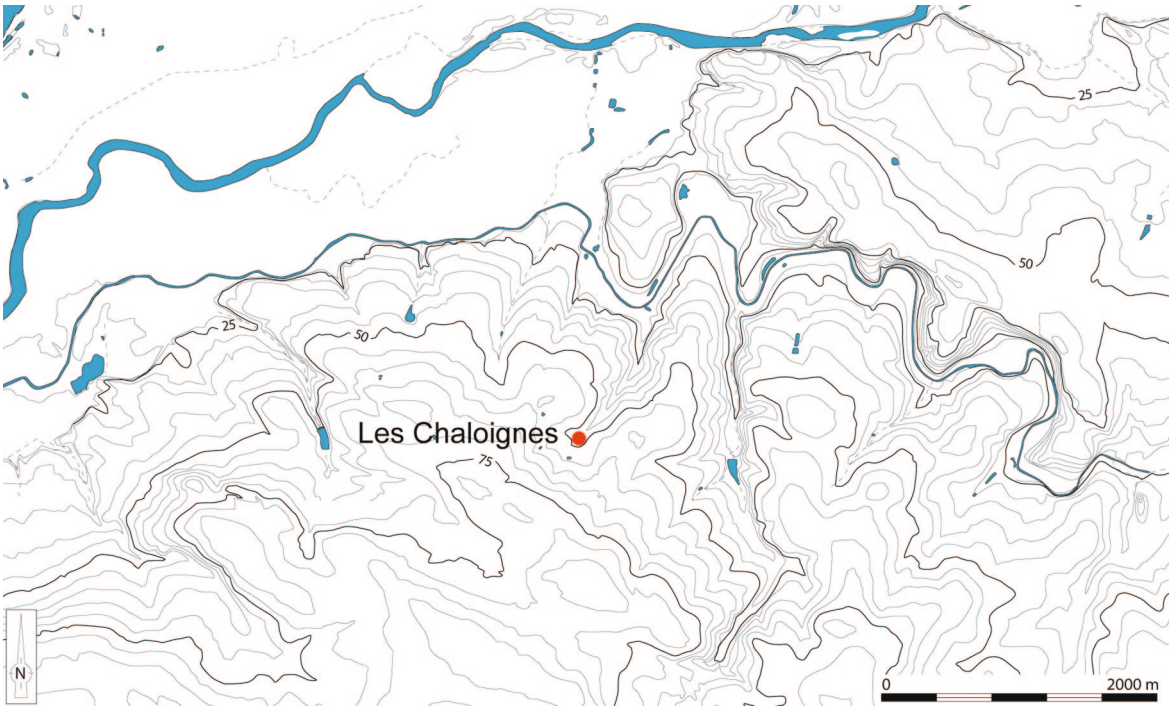

Figure 3 - Topographic position of the site of Chaloignes (CAD: J.-F. Nauleau).

Figure 4 - View of the eastern valley in which loci 1 and 2 are located (photograph: Gr. Marchand).

Figure 5 - Stratigraphy in locus 1, in the eastern Chaloignes valley. The Azilian flint artifacts are found at the top of the orange silts – top of the sedimentary sample collections (Photograph: Gr. Marchand).

The deposition of silts during the Holocene resulted in the differential preservation of lithic artifacts depending on the processes of erosion in relation to the topography. Consequently, there are two types of spatial units: loci with clear limits, covering 25 to 70 m² and larger zones with very diffuse limits in which we observe a scatters of flint that are sometimes very dense (figure 6). This latter configuration could be due to the initial nature of the occupation, or to repeated occupations in the same location, or to their dispersion by erosion processes – or perhaps all three at the same time. Over the 9200 m² excavated, 9900 lithic artifacts were recorded, showing a relatively density. The knapped Azilian artifacts were recovered in ten homogeneous loci, two homogeneous zones and two zones that have a strong Azilian component, but with later

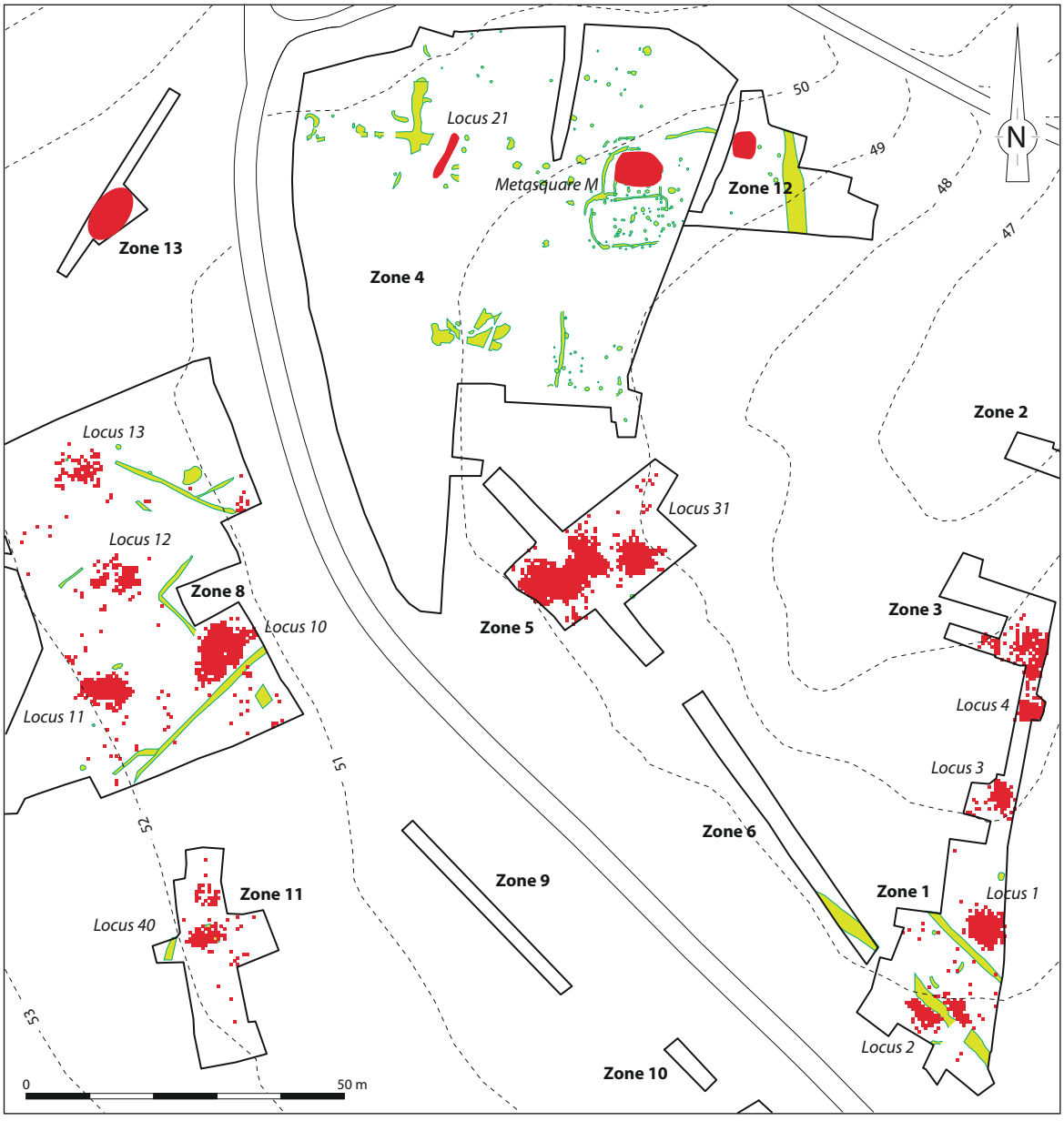

Figure 6 - Plan of the site of Chaloignes showing the excavated zones (black outlines). The collected flint artifacts are indicated by quarter meter square (in red); the red zones indicate very disturbed scatters (zone 13, metasquare M and zone 12). The Protohistoric structures are represented in green (CAD: J.-F. Nauleau and S. Sicard).

intrusions from the La Tene period. In these final Paleolithic occupations, no constructions, hearths, rubified zones or wall effects were observed. It is tempting to consider this parameter as an indication of short term occupations, but similar observations at other sites suggest that this could be a characteristic cultural trait of the Late Azilian (Bodu, 1995).

2.2. The functions of these occupations

Due to the failure of radiocarbon datings and detailed stratigraphic correlations, there is no longer any possibility of determining the chronological succession of these loci based on extrinsic criteria. We must thus rely upon intrinsic criteria, including the origins of raw materials, the debitage methods employed, the sequences of *chaînes opératoires* and the tools. Lithic raw materials from the closest sources, the terraces of the Loire, are largely dominant, though we did identify ten materials with a non-rolled cortex originating from the sedimentary basins in variable proportions (on average 14.7 % of the determined materials, but up to 60 % in locus 4). The border of the Amorican Massif is only 10 km to the east; the levels of the Secondary era are 20 km away (figure 7). Montbert quartzite, of which a few traces were found (0.5 %), arrived from 75 km away in the Nantes region to the west. This is the maximum distance known for raw material procurement at Chaloignes. The fragmentation of the *chaînes opératoires* in space is already seen in this stage in the lithic analysis of these flints with a non-rolled cortex imported from long distances given that some of them arrived in the form of blocks to be knapped and others in the form of blades or tools. In many cases, however, the motivation behind this dispersion within the occupation is impossible to understand, especially for the isolated knapping by-products, such as cores or neo-crests. They could indicate that the loci were contemporary if we exclude random or contingent behaviors such as curiosity during regular passages or playing children.

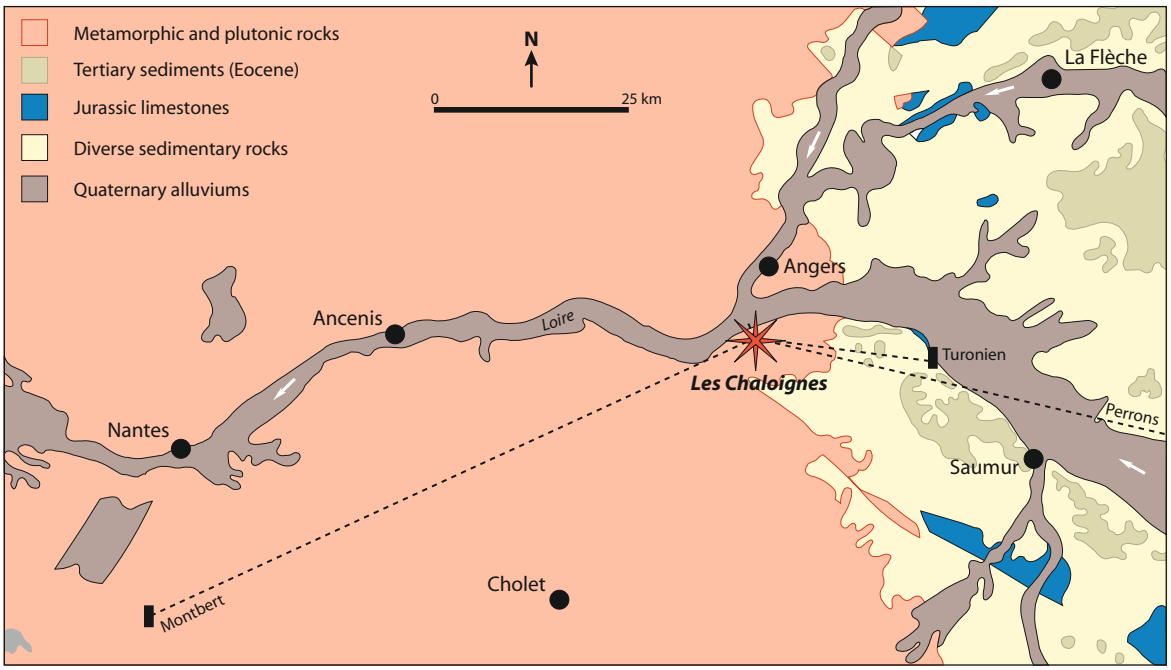

Figure 7 - Locations of the main sources of non-rolled materials identified (CAD: Gr. Marchand).

Despite a significant time investment, we had little success refitting artifacts between the loci, except for some links found between loci 1 and 2. Within the loci themselves, refits are much more frequent, but never exhaustive, suggesting circulations outside of the loci and an exportation of some knapped products (cores and blades, for example). Our technological analysis shows that all the technical debitage phases and all tool types are present in each zone. There are nonetheless some loci with activities oriented toward the production of weapon elements, the use of end-scrapers or burins, or laminar blank production, which are opposed to other loci that are more generalized with multiple activities. We also observe that high rates of burned pieces are found in both the loci with numerous weapon elements (locus 1) and the generalized loci (locus 11), while this rate is low in the zones more devoted to laminar debitage (figures 8-9).

Based on these observations, already discussed in other publications (Marchand *et al.*, 2008, 2009), we propose the hypothesis of repeated occupations by small groups, rather than one of base camps with complementary zones. What did men and women come to do here at the end of the Tardiglacial period? With its location in a depression sheltered from the wind and benefitting from the existence of a likely permanent spring in the western valley, the site of Chaloignes would have been well adapted to a long term occupation. But today, who can say where the animal passages and favorable collection zones were located? A first level of inquiry will show us the importance of hunting or war activities in this complex occupation.

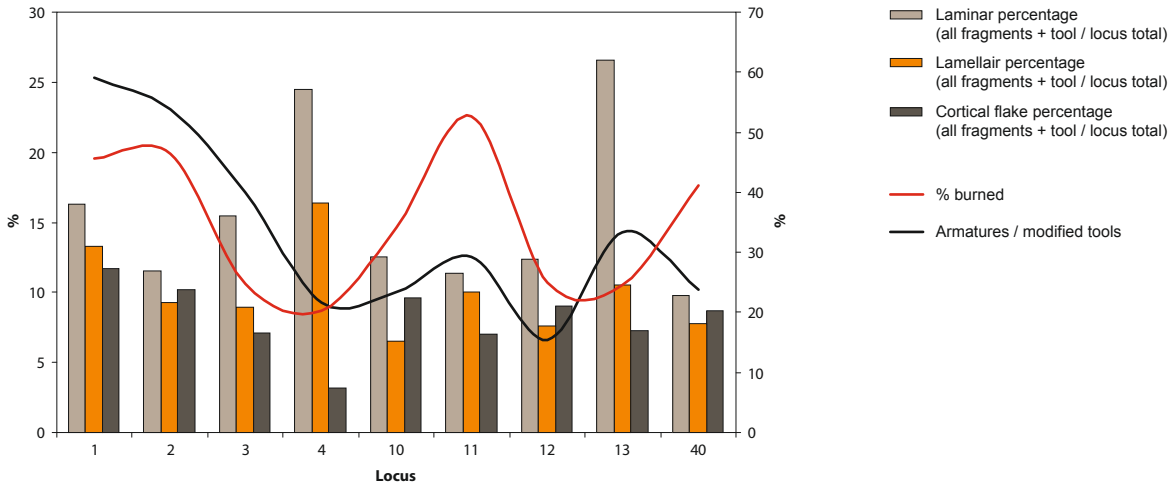

Figure 8 - Comparison by locus and zone of the rate of burned objects, weapon elements, blade debitage, bladelet debitage and cortical flakes (the limit between blade and bladelet was set at 12 mm).

3 - Broken arrows!

The range of weapon elements at Chaloignes is largely dominated by monopoints with a curved back of highly varied dimensions (figure 10). Their length is between 25 and 50 mm, with a mean of 35 mm. Their width is between 9 and 13 mm, with mean of 11 mm. Their thickness is between 2 and 8 mm, with a mean of 4 mm. The weight of the whole and almost whole points (missing part estimated as less than 5 mm) ranges from 0.396 to 7.539 g, with a mean of 2.120 g.

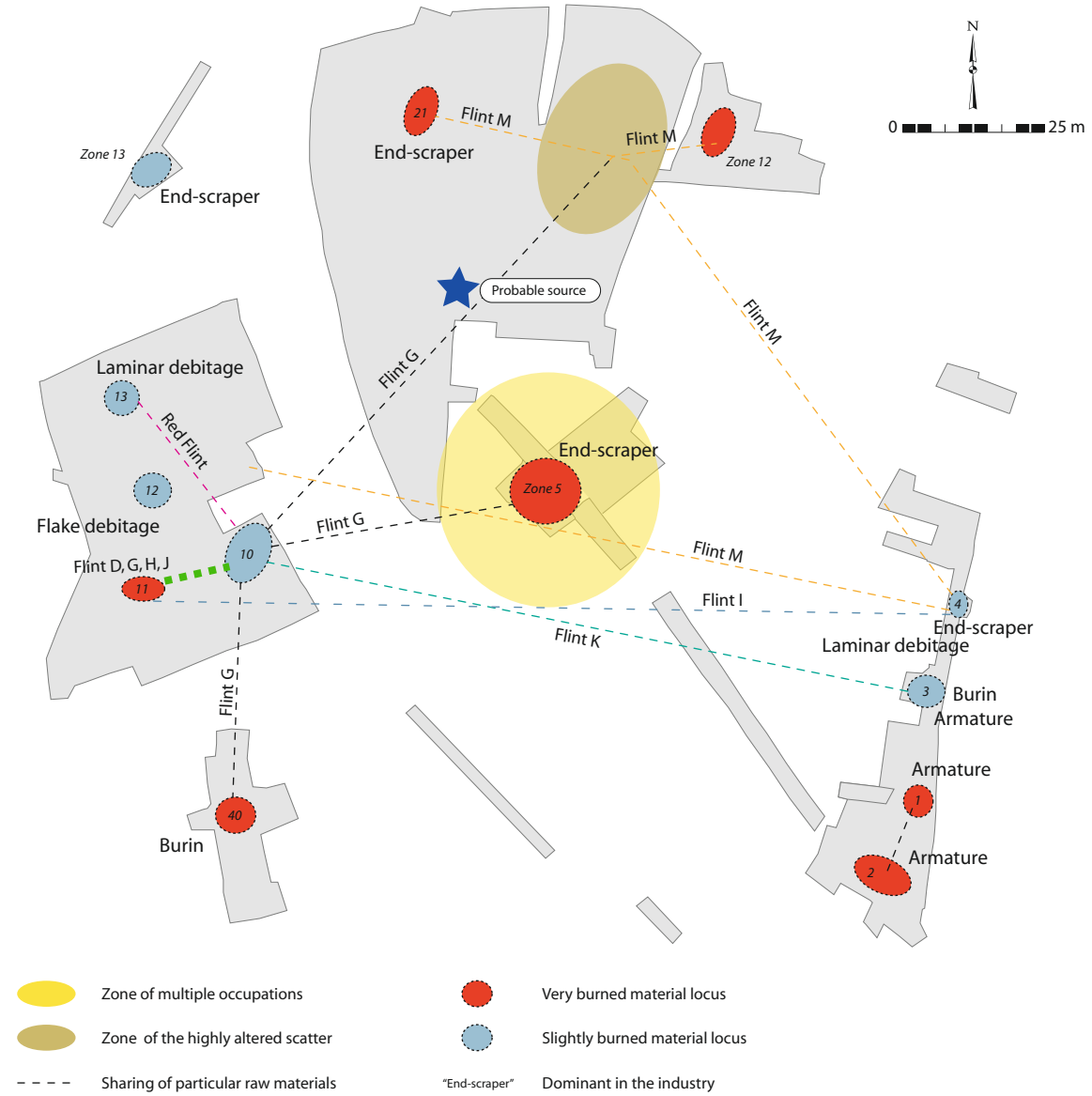

Figure 9 - Cartographic position of a few important elements on the Azilian site of Chaloignes.
The lines indicate the flint with non-rolled cortex shared between loci or zones (CAD: Gr. Marchand)

Figure 10 - Azilian points of locus 1 (photograph: H. Paitier).

Though they are frequently damaged, the monopoints of Chaloignes show a rather low rate of fracturation (figure 11; table 1). This observation provides interesting information concerning the methods of hafting of these weapon elements. It could indicate a rather loose attachment of the object to the projectile shaft; upon impact, the apical point would thus tend to be detached from the shaft, rather than breaking. It therefore appears highly probable that the attachment of the Chaloignes stone weapon elements was weak. The low standardization, as well as the relative thickness of these elements, probably played a role in this phenomenon. The use of ligature is nonetheless possible given the frequency of basal modifications, especially to reduce the width of the piece. The function of this retouch would have been, among other things, to prevent the edges of the stone elements from cutting the ligature.

Table 1 - The fracture types observed on the monopoints with a curved back at Chaloignes (108 fractures and 23 thermal fractures.

		Number
Thermal fracture		23
Krukowsky	*Transversal*	5
	Oblique	17
Cone initated at the center of the fracture	*Transversal*	5
	Oblique	1
Simple fracture	*Transversal*	38
	Oblique	9
Complex fracture	*Face*	20
	Latérale	5
Positive fracture lip	*Transversal*	6
	Oblique	2

Several “deviant” points were identified within the assemblage (figure 12). In addition to providing information concerning the *chaîne opératoire* of the conception of monopoints with a curved back, these elements directly attest to the existence of weapon element fabrication activities in the different loci. It is interesting to note that all of these pieces, without exception, were manufactured on blanks with an abrupt facet, probably resulting from their detachment at the intersection between the flaking surface and the sides of the core. Given the technical flexibility of these clearly Azilianized groups, we can wonder if in some situations, the retouching of these curved-backed monopoints was opportunistic. Some of the points considered here as “deviant”, could have in fact have been simply used with partially retouched backs. This idea is supported by one of the pieces, which has a lipped fracture with a step termination indicating a violent apical impact (figure 12, no. 4). In this case, the back would have been simply intended to create a flat surface to be inserted into a groove in the arrow shaft; perhaps the Azilian artisans did not find it necessary to retouch the entire edge for this purpose.

To determine the origin of the fragmentation of the Azilian monopoints at Chaloignes, the different fracture types were described (table 1). To avoid biasing the results, only those pieces displaying no signs of heat treatment and which could be clearly identified as belonging to this category of weapon elements were selected. Four broad categories were employed to describe the fractures (figure 13): cone fractures of the Krukowsky type, simple fractures, complex fractures on a surface and complex fractures on a lateral edge. The cone fractures were divided into three categories depending on the location of the percussion zone: retouched edge (Krukowsky),

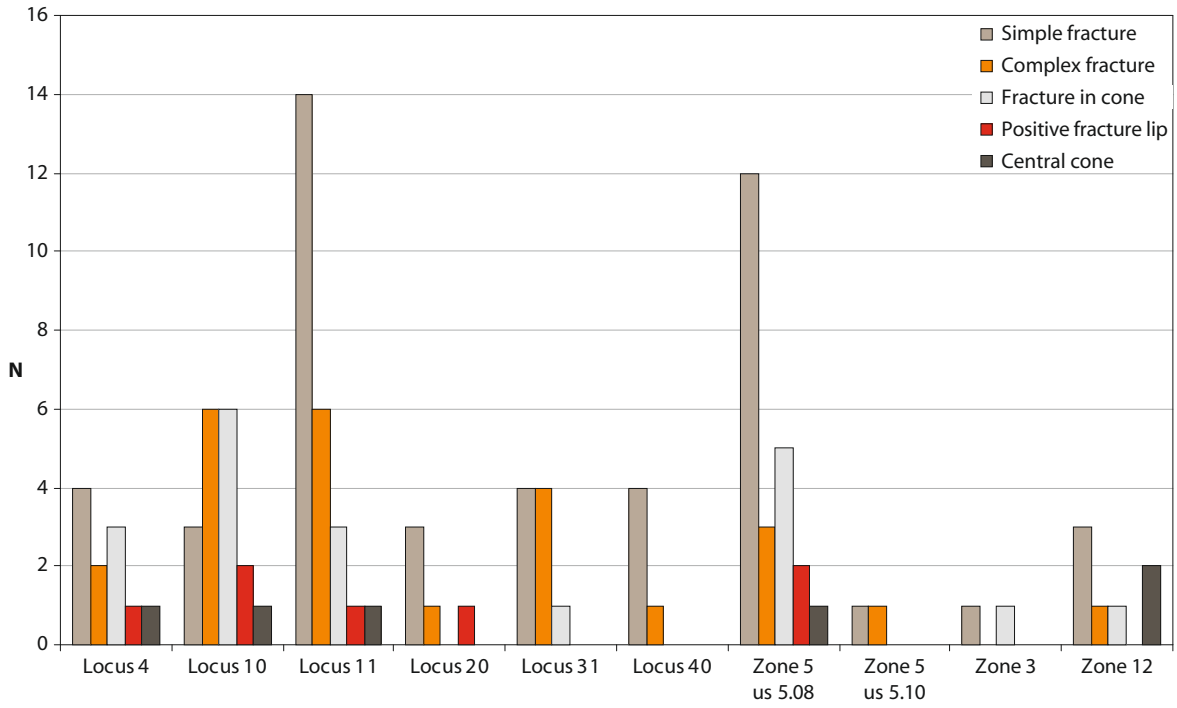

Figure 11 - Fracture types recorded on the Azilian points of Chaloignes.

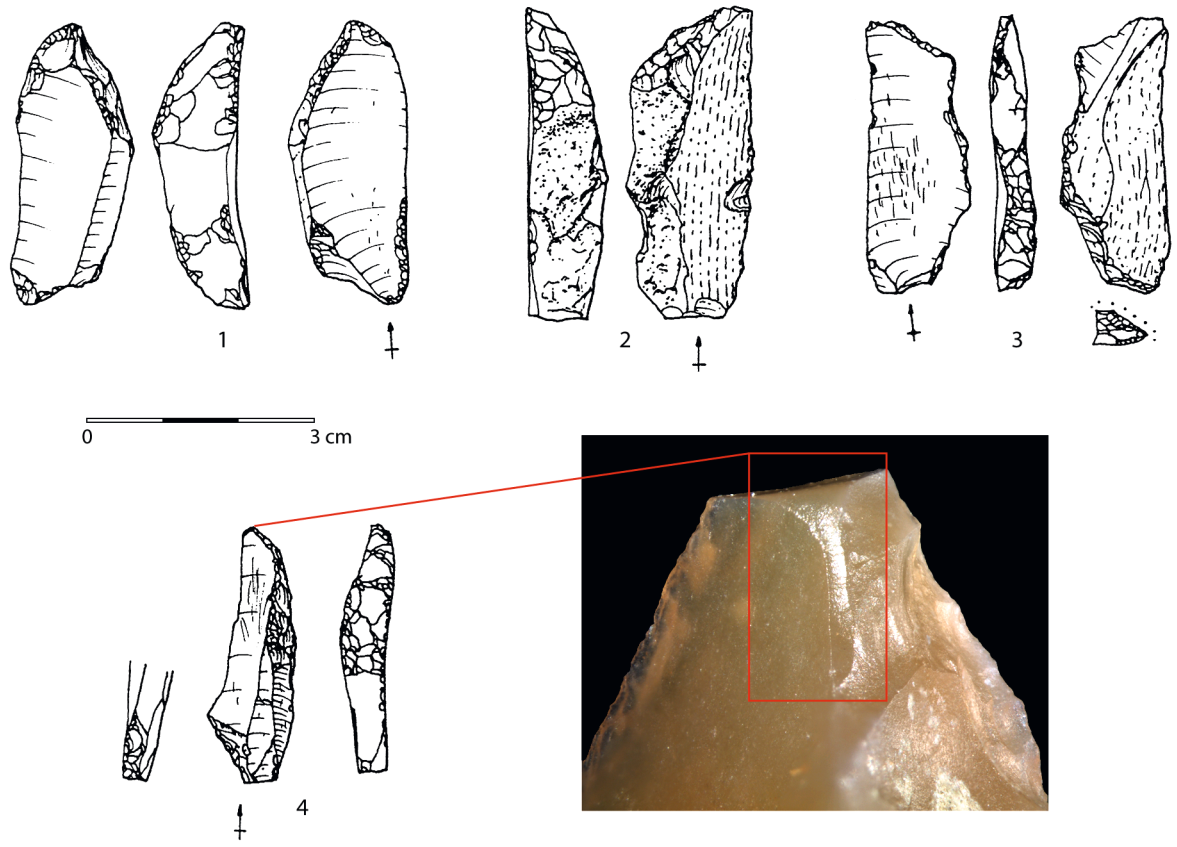

Figure 12 - "Deviant" Azilian points probably corresponding to objects discarded in the process of fabrication. Though its back is only partially retouched, piece no. 4 was used as a projectile point, as is shown by the characteristic fracture on its apex. This choice attests to the high technical flexibility of the Azilian artisans in terms of the standardization of weapon elements (drawings: P. Forré; photographs and CAD: N. Naudinot).

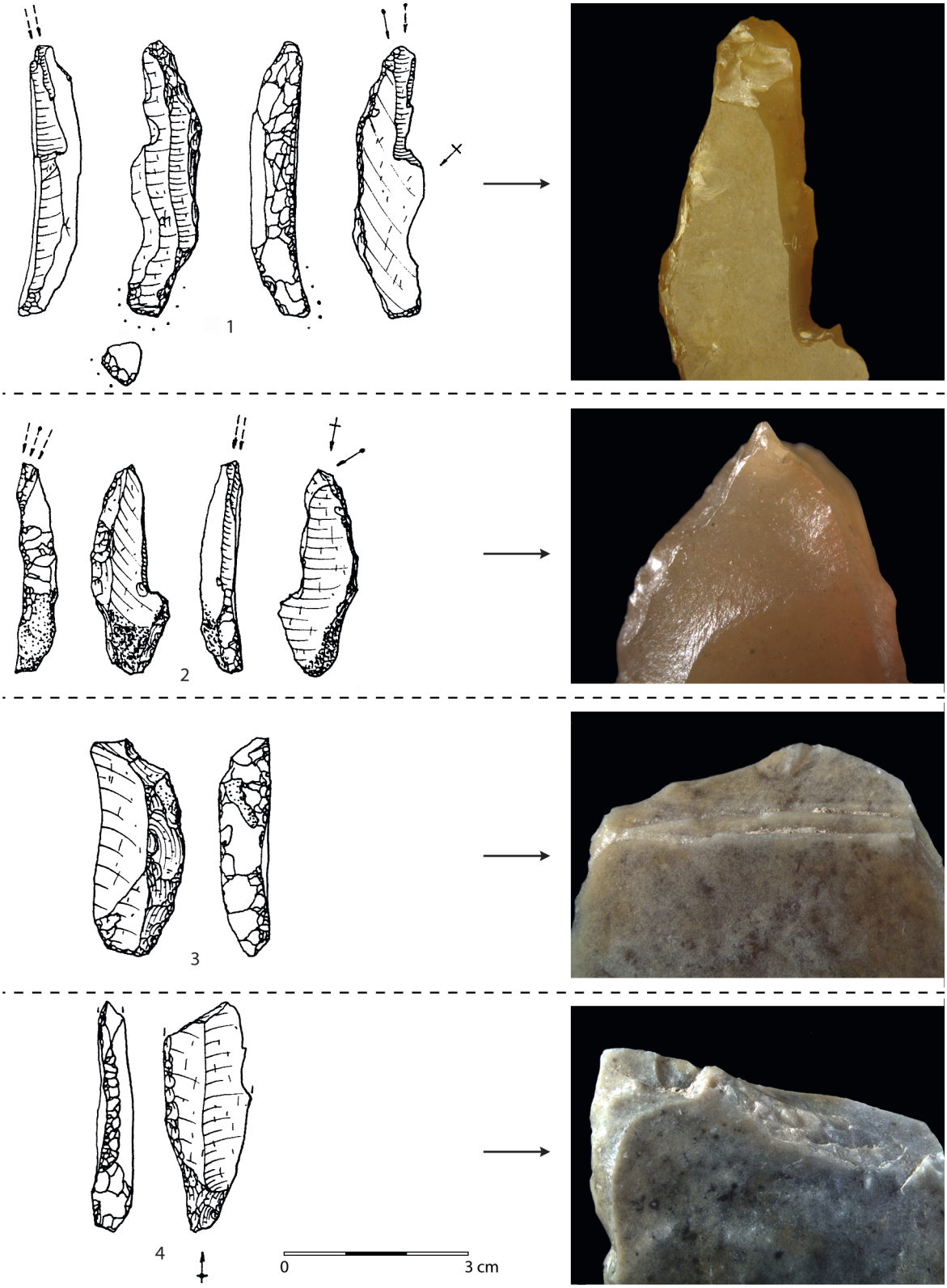

Figure 13 - Azilian points and potentially associated fragments displaying, in proportions comparable to those of the Krukowski fractures, stigmata that could result from a violent axial impact; 1 and 2: Lateral pseudo burin-spall fracture with a hinge termination; 3: Bending fracture on a face with a hinge termination; 4: Lateral pseudo burin-spall fracture with a step termination (drawings: P. Forré; photos and CAD: N. Naudinot).

central part, sharp edge. The complex fractures were distinguished based on the morphology of the lip termination: feather, hinge or step (following the methodologies of Fischer *et al.*, 1984 ; O'Farrell, 2004 ; Naudinot, 2008). Due to the difficulty of determining the morphology of positive lips at the moment of the fracturation of the piece, these were classed in a separate category.

The analysis concerned all of the loci except for locus 1, which was studied in the context of a more global functional analysis, and included 108 fractures. While simple fractures are the most numerous (N=47), complex fractures and Krukowsky fractures are present in relatively equal proportions (respectively 25 and 22) (figure 14). We should remember that the number of complex fractures may have been higher given the presence of seven positive fracture lips, some

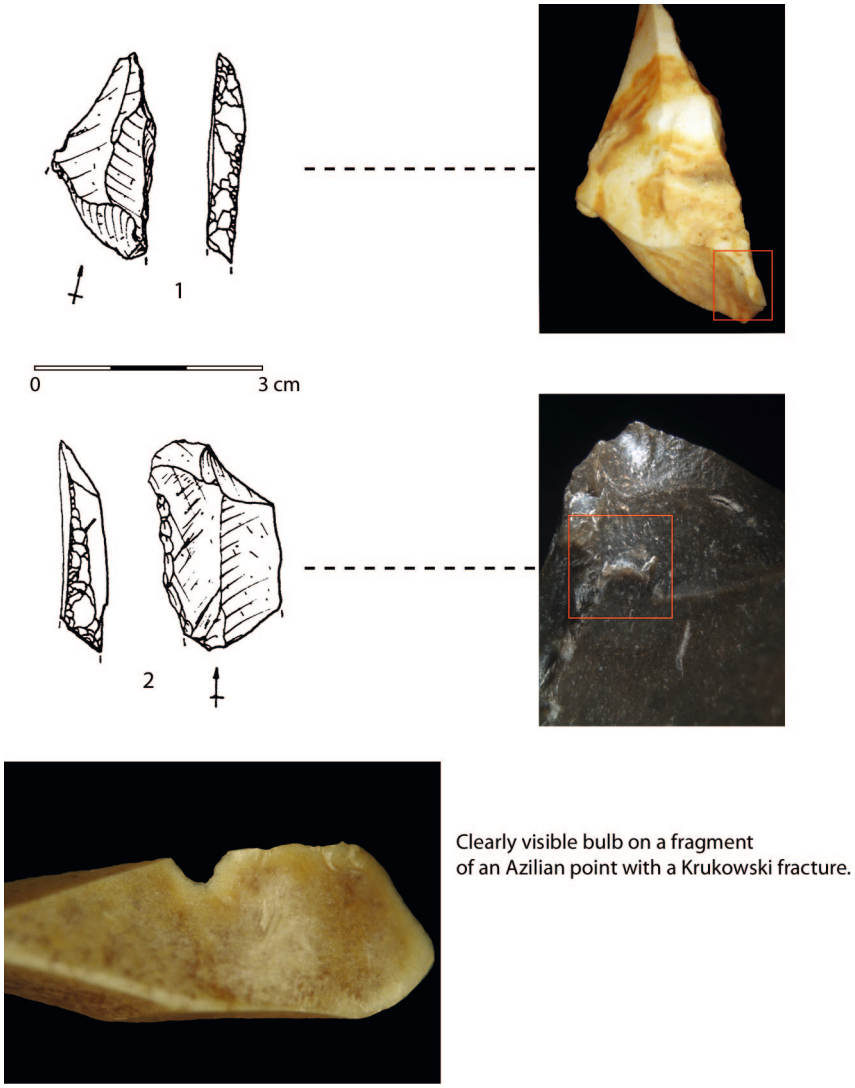

Figure 14 - A large proportion of the Azilian point fragments at Chaloignes display Krukowski type fractures with a clear bulb of percussion. This type of fracture commonly occurs during the retouching of the back of the weapon element, often at the transition from direct to crossed retouch, especially when the back retouch is realized by percussion, which seems to be the case at Chaloignes. Along with the "deviant" pieces, these fragments thus attest to intensive projectile point fabrication activities at Chaloignes (drawings: P. Forré; photos and CAD: N. Naudinot)

of which could be diagnostic. Complex fractures on a surface are the most frequent (N=20), followed by lateral ones (N=5). In both cases, step terminations are largely dominant, followed by hinge and feather terminations. We observe that these traces, which can be interpreted as resulting from a violent impact, are very clearly present on the monopoints of Chaloignes. Some of the pseudo-burin spall removals attain a length of 20 mm. It is evident that the nature of these stigmata is dependent on, among other factors, the projection method employed. It is thus possible that not all of these weapon elements were shot with an arrow, but that some could have been used as javelin tips. The relatively heavy weight of these pieces supports this hypothesis. Most of the cone fractures are located on the retouched edges (N=22), and less often on the central part of the piece (N=6). They are completely absent from the sharp unretouched edges. The fractures are most often transverse relative to the axis of the blank. The oblique fractures are mostly associated with the Krukowsky fractures.

These results indicate diverse causes for the fracturing of the Azilian points of Chaloignes. Based on the research cited above, by A. Fischer et al and M. O'Farrell (ibid.), it appears that some complex fractures (especially those with a step termination), almost certainly attest to a violent apical impact that could occur during a hunting or war-related activity. Others, such as Krukowsky fractures, probably indicate a fracturing of the piece during the retouching of the back. The largest class, that of simple fractures, is unfortunately not diagnostic and many of them are probably the result of trampling. No specialization is thus observable at Chaloignes in terms of the activities associated with these backed pieces, nor among the different loci considered. Over the entire site, the assemblages yielded very similar proportions of pieces broken by an impact and pieces broken during fabrication. In any case, it is clearly evident that the activities associated with these objects (conception, use and maintenance) were at the heart of the preoccupations of the hunter-gatherers at Chaloignes. Is this observation nonetheless sufficient to consider this site as being composed of one or several "hunting camps"? The study of locus 1—which is the first phase of continuing functional analyses that will be conducted at this site – contributes some elements of response to this question.

4 - Locus 1: a paragon of an Azilian activity unit?

4.1 - The ID card of locus 1

The position of locus 1 on the periphery of a depression and in the middle of a thalweg insured the good preservation of the Azilian remains[1] over a roughly circular zone of approximately 5 m in diameter, at the top of the periglacial silts (figure 15). Technological associations with objects from the neighboring locus 2 could attest to a shared function (figure 16). Locus 1 is one of the most affected by thermal modifications, with more than 45% of the objects being heated (figure 8). The distribution of these burned pieces shows no particular spatial arrangement, but only a concentration at the center of the locus, corresponding to the zone with the greatest artifact density (figure 15). An integrated analysis of several parameters reveals an opposition between the distribution of weapon elements and cores (figures 17-20), the central space being devoted to the former and the periphery to the latter.

1. This locus yielded 819 lithic artifacts during the excavation, to which are added 2980 objects, including 2560 chips less than 10 mm long, collected through the systematic sieving of all the sediments.

Our technological analysis shows that all of the debitage activities were realized in place, as is indicated by an Azilian point broken during fabrication and refit with other laminar products. The abundance of retouch flakes and Krukowski type fractures further supports this hypothesis. The proportion of weapon elements is very high at 33 % of the entire modified tool kit, versus 11 % for all the other loci. These elements consist of Azilian points, apparently again damaged mono-points, which were sometimes broken during their fabrication in place. Apical point fragments were not detected, however, even though they are lacking on many of the weapon elements in this locus; did they remain in the processed animal carcasses or were they broken when the weapons were shot?

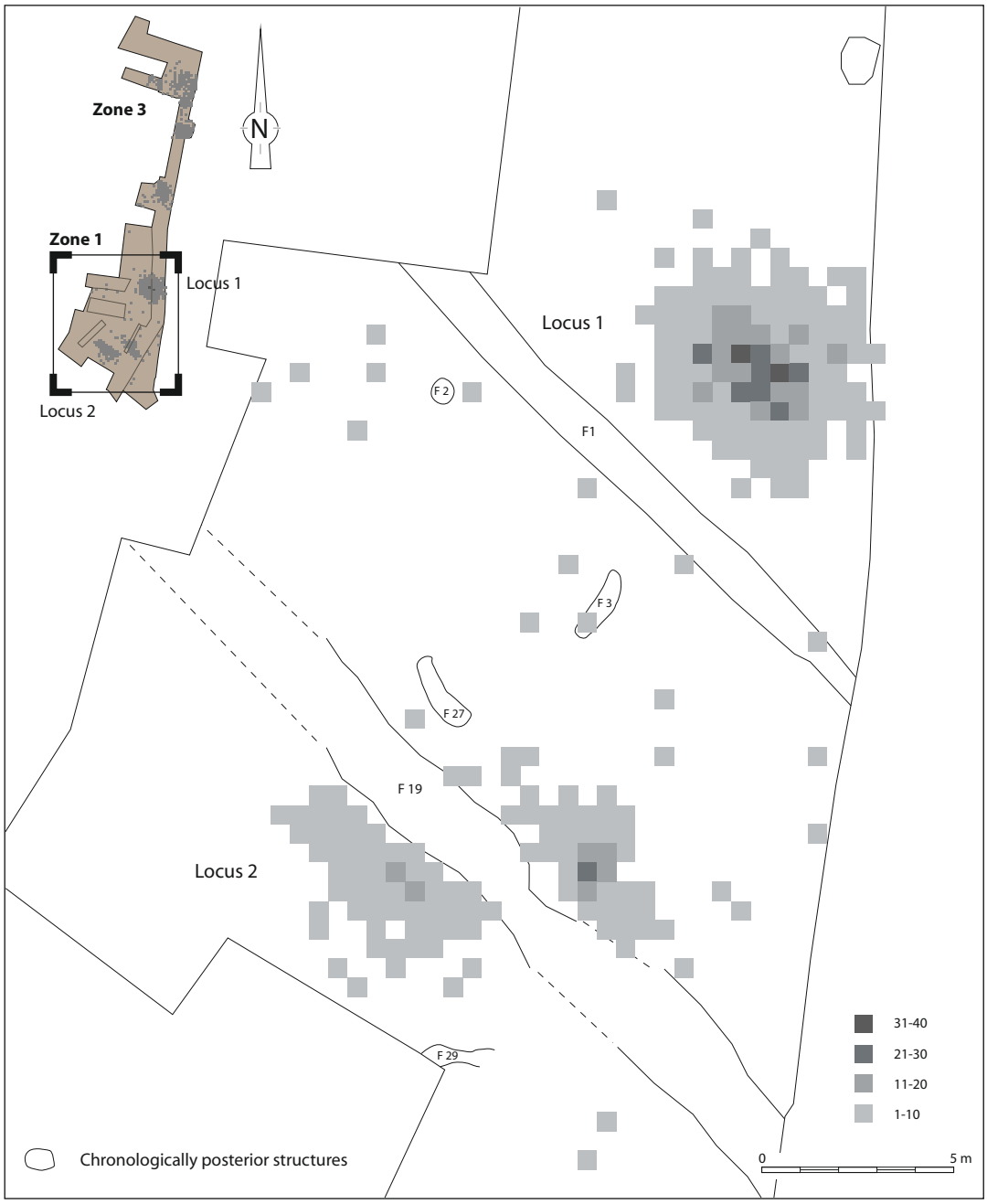

Figure 15 - Distribution of burned flints in loci 1 and 2, shown by quarter meter square (CAD: S. Sicard).

Figure 16 - Associations and refits between loci 1 and 2 (CAD: S. Sicard).

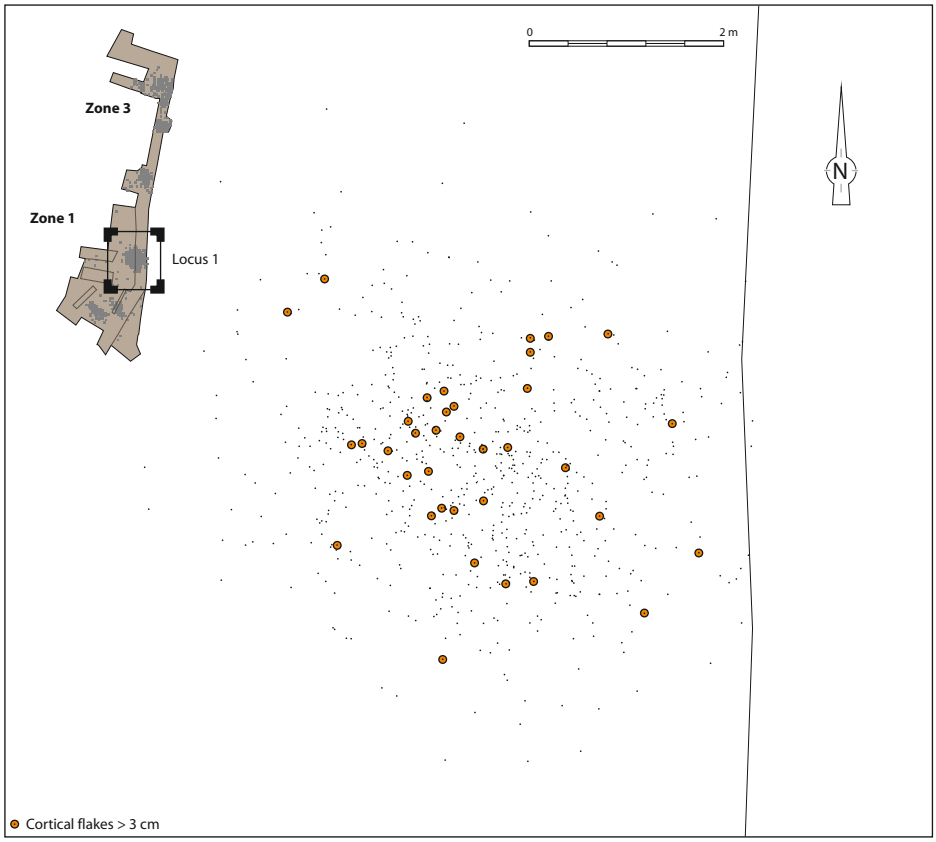

Figure 17 - Distribution of cortical flakes in locus 1 (CAD: S. Sicard).

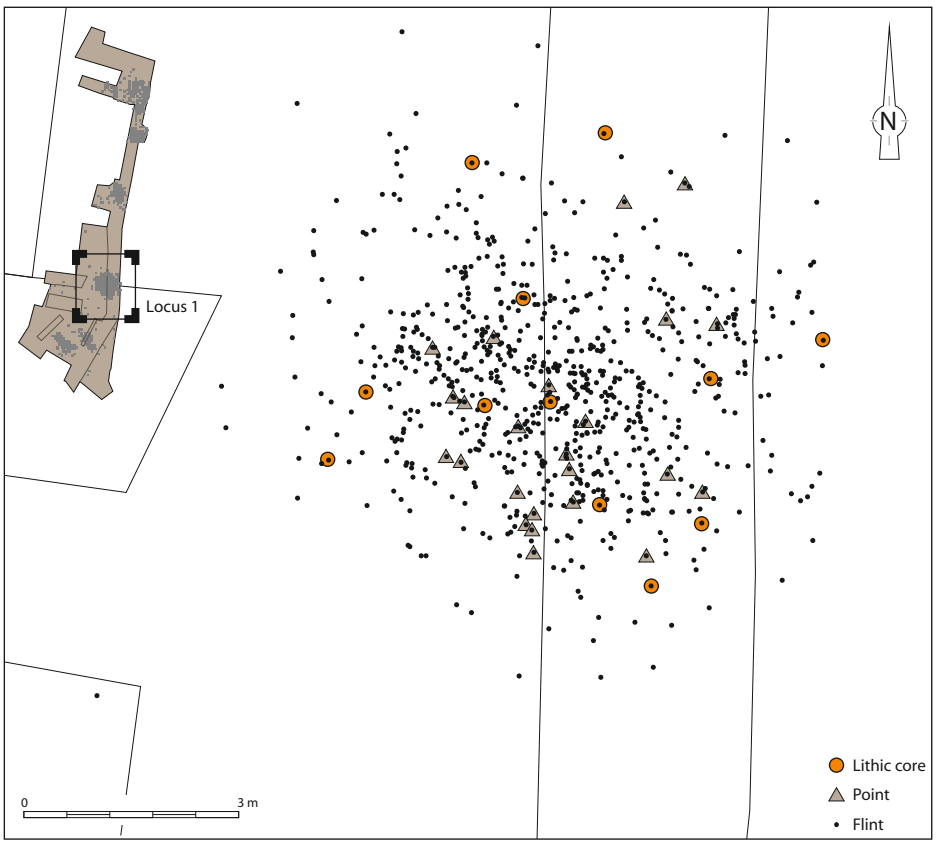

Figure 18 - Distribution of Azilian points and cores in locus 1 (DAO : S. Sicard).

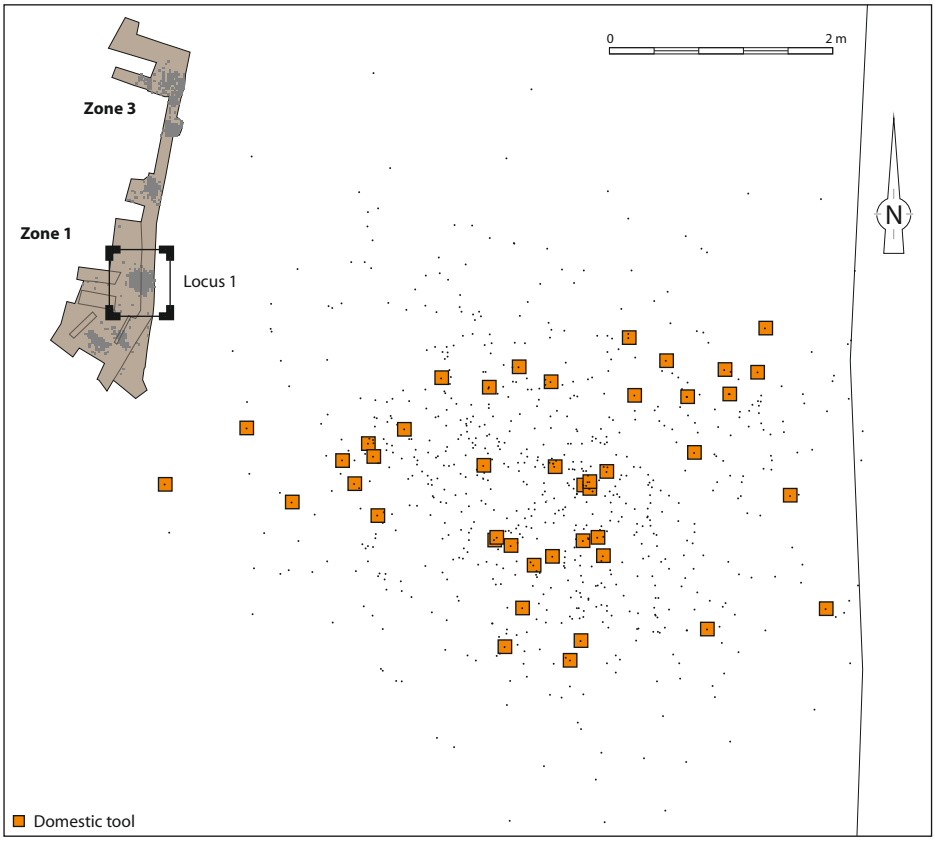

Figure 19 - Distribution of domestic tools in locus 1 (CAD: S. Sicard).

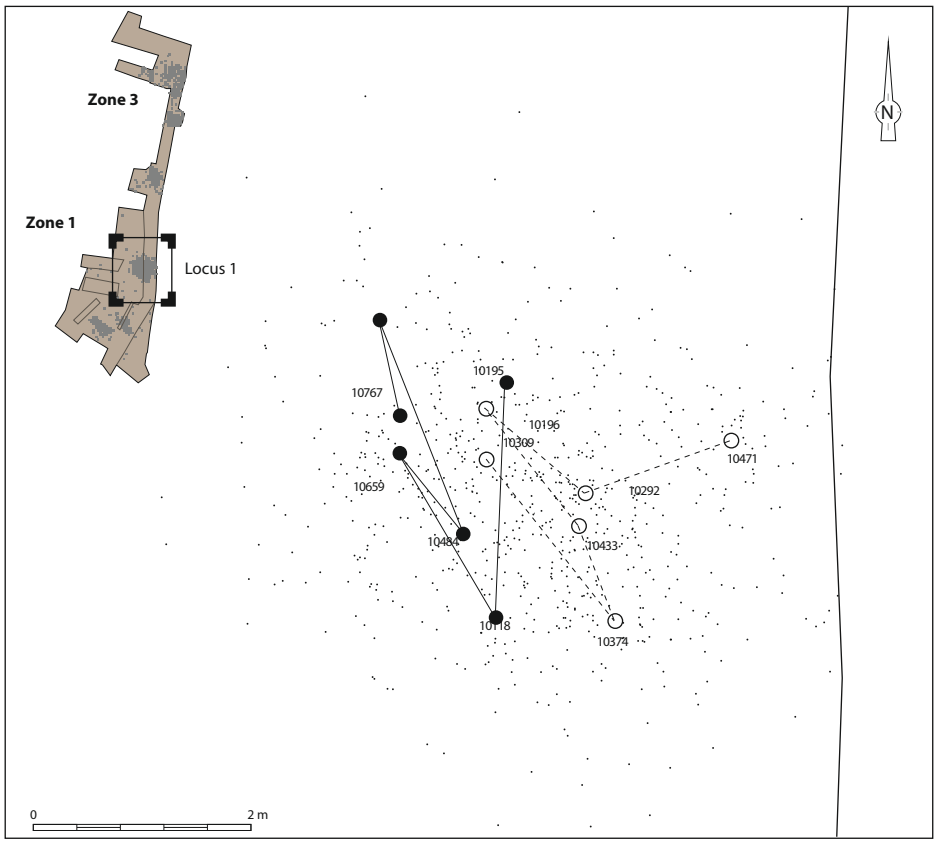

Figure 20 - Refitted blocks in locus 1 (CAD: S. Sicard).

4.2. Multiple functions…

We conducted a functional analysis of around one hundred pieces, including 15 domestic tools, 27 weapon elements and 58 unretouched pieces (figures 21-22). These tools were lightly used and multiple use episodes are rare, except for one endscraper that was discarded after its front was resharpened. The unretouched blanks, which compose nearly half of the sample, seem to have been implicated very little in the activities since only 2 blanks out of 58 display use traces. The rate is higher for the retouched tools, including both domestic tools (40 %) and weapon elements (23 %), but has only an indicative value due to the number of objects considered. This form of tool management corresponds to a low techno-functional investment. Three main categories of activities were identified: hunting activities and the processing of hides and ligneous vegetal materials.

The weapon elements, including points and backed pieces, display extensive impact damage in their apical and mesial zones (11 out of 16). They correspond to the fractured basal parts of arrowheads brought back to the site with the arrows after they were shot. The macro and micro impact traces confirm their function as weapon elements and demonstrate that the arrows were repaired and the projectile elements were replaced in place. Butchery activities were not clearly identified in this sample.

Several tool types display traces indicating that they were used to process ligneous vegetal materials, especially wood with a transverse kinematic movement: one burin, one truncated flake and one chipped blade. They were used for various tasks and were integrated within one or several distinct *chaînes opératoires*. We observe scraping, probably to remove bark, and planing activities, as well as the regularization of a pseudo-cylindrical piece, probably corresponding to the shaft of a weapon or other instrument.

While the first two of these functions correspond to the same interpretative schema, the last one does not entirely support the demonstration. In effect, the analysis of the endscrapers shows that they were used in hide processing activities. These tools are implied in the middle and final operations of the *chaîne opératoire*, which consist of defleshing and softening the hides by scraping them while they are in the process of drying or resoaking. The traces of dry skin cutting observed on one Malaurie point could correspond to the fabrication of straps or pieces of leather.

Hide working is usually associated with relatively long term occupations, which does not fully correspond to the image of hunters following prey and stopping at a short term camp to repair their weapons. This usewear analysis thus contributes new elements to the possible scenario proposed based on technological and typological comparisons of the loci.

5 - Pauses in the process of prey acquisition

To reach a conclusion, we must first ask ourselves if the concept of a “hunting camp” is really pertinent. Hunting is an activity that involves the detection, tracking and killing of a prey animal, this last stage sometimes occurring after a battle. It is not exactly superposed onto the entire *chaîne opératoire* of prey acquisition, which also includes the preparation of weapons and possible propitiatory rituals before the processing of carcasses and possible ritual activities performed to this sequence. Except in the case of trapping, the act of hunting itself leaves no material traces that can be transformed into archaeological remains, in contrast to phases during which this activity is suspended, and which are anchored in space. These latter “hunting camps” are devoted to various activities that leave distinct archaeological traces: weapon preparation, prey observation (from the “hunting stand” described by L. Binford in 1978), prey killing (kill site) and the cutting

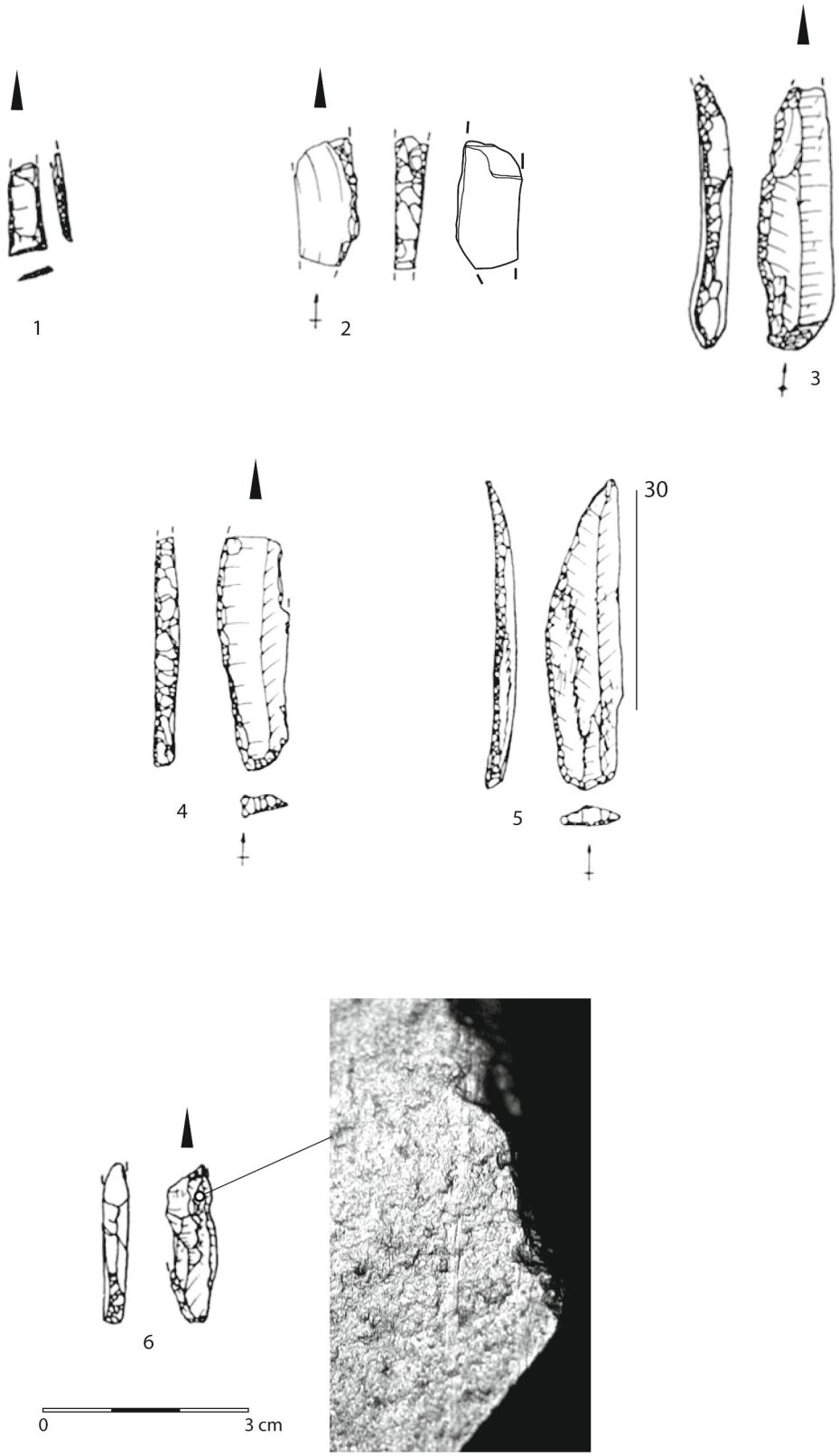

Figure 21 - Usewear on the weapon elements of locus 1 (drawings: P. Forré and S. Philibert).

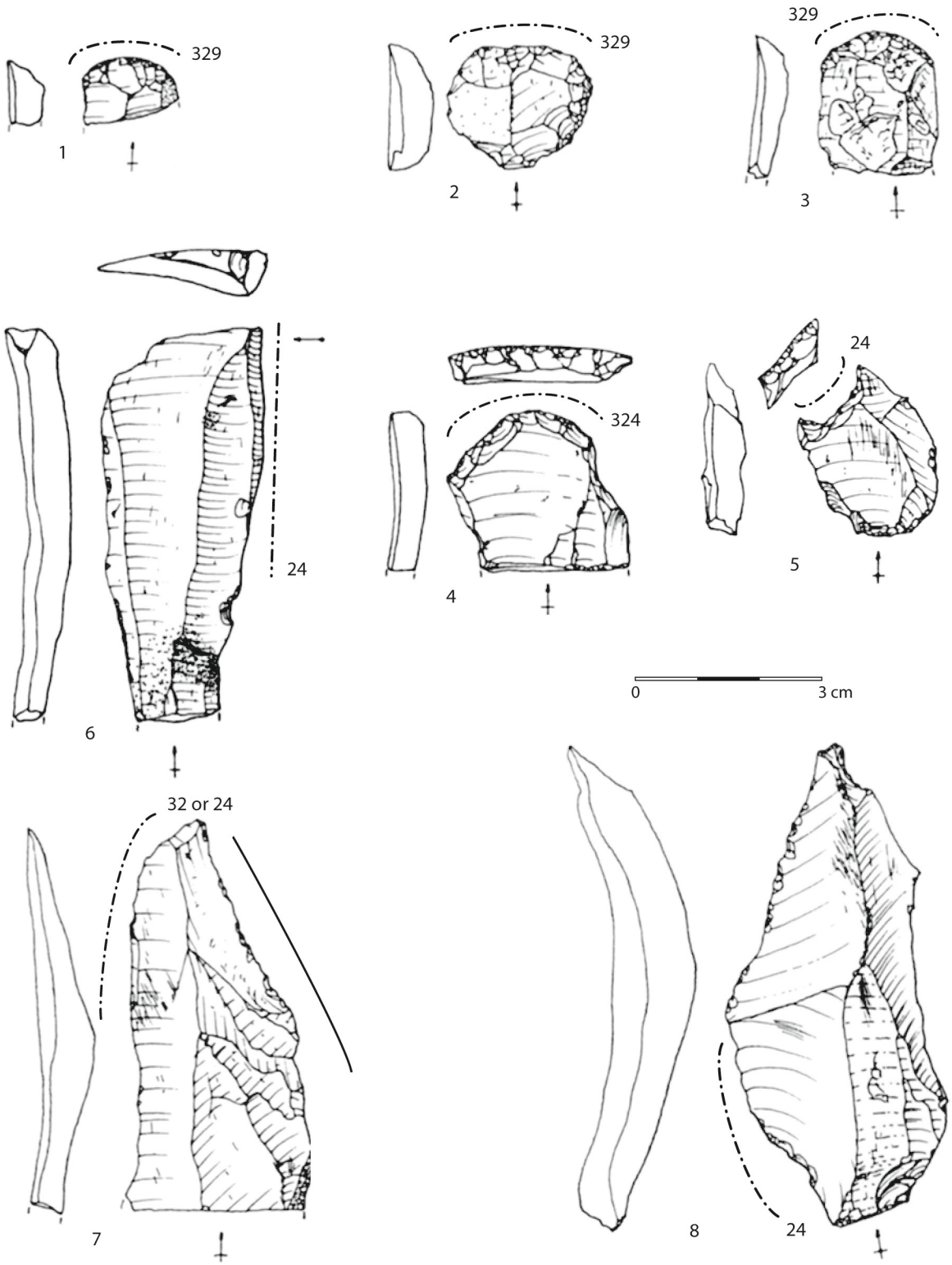

Figure 22 - Usewear on the domestic tools of locus 1. Continuous lines: longitudinal kinematic movement (cutting, sawing, etc.), dotted lines: transversal kinematic movement (scraping, etc.), 32: skin, 324: fresh or wet skin (329 can be replaced by 32), 24: wood, ligneous vegetal products (drawings: P. Forré and S. Philibert).

of carcasses into portions for transport and preservation (butchery site). While it is pertinent to group these activities under the same generic term in order to differentiate them from base camps or the habitats occupied by the rest of the group, the term is not fully operational for archaeological research.

One of the main activities that we detected in locus 1 at Chaloignes, through our technological and functional analyses, clearly preceded the prey acquisition phase, occurring during the phase of weapon repair and the manufacturing of material objects. If we adopt the terminology used above, this locus could represent one of the sub-types of a "hunting camp", operating at the beginning of the sequence of activities. The presence of numerous weapon elements damaged during use indicates that the other loci also correspond to this type of activity, but not exclusively. If discovered in isolation, this small scatter of lithic artifacts would be interpreted as a relatively short-term occupation, but it is located on the periphery of a large occupation that also includes large zones and many configurations are possible. The presence of all tool types and a complete (but open) lithic production sequence in all the loci gives the impression that these units were autonomous, but how many of them functioned at the same time? More refits are needed to answer this question, though we doubt the efficacy of such an endeavor. We know based on economic analyses of lithic materials that most of the territories covered include the Loire Valley and its tributaries. Meanwhile, flints originating from over 70 km away demonstrate movements to the west and south. What was the nature of the mobility patterns of these groups over this relatively vast space? Since Chaloiges is the first Azilian open-air site to be excavated in the West, it is difficult to evaluate its role within an economic strategy. If this type of occupation proved to be the norm, our conclusion would be that these populations were highly mobile, in contrast to certain Mesolithic societies, for example.

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