"The body of my enemy": Armed conflicts in societies without wealth
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No traces, no crime? The archaeological visibility of prehistoric collective armed conflicts

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Abstract: When considering the possible existence of collective armed conflicts during prehistory, the problem of their poor archaeological visibility immediately arises. Like many social phenomena, conflicts in ancient societies do not necessarily leave material traces that can be preserved and interpreted without ambiguity. Among prehistorians, the discussion is further complicated by disagreements over the signification that should be given to the absence of evidence (is the lack of indication of existence an indication of non-existence?). Despite the debate's long history, data accumulation is slow, and the types of archaeological traces mentioned vary little: depictions of conflict, fortifications, offensive and defensive equipment, and marks left on the bodies of victims. This article presents a review of these data, accompanied, in the case of anthropological evidence, by an attempt at formalization. Some lines of thought are also outlined for the Late Paleolithic in Europe: the defensive function of caves, the identification of possible combat weapons, and the frequency of exocannibalism.
Keywords: Biological anthropology, funerary archaeology, weapon, hunter-gatherer, conflict, war, Mesolithic, Neolithic, Paleolithic, Stone Age.

When considering the possible existence of armed conflicts during prehistory (Paleolithic, Mesolithic, and Neolithic), their archaeological visibility is of course a crucial issue. Here, we provide an overview of the criteria commonly used by prehistorians to identify traces of such conflicts, accompanied by some thoughts.

1. A FEW PRELIMINARY POINTS

Several preliminary remarks are necessary to provide context for this contribution.

The first point concerns the degree of generality of the topic under discussion: the question "were there armed conflicts during Prehistory?" must always be situated in time and space. We might ask: "Were there armed conflicts in Western Europe during the Late Paleolithic period," or "in Central Europe at the end of the Neolithic period", etc. Although trivial, this point is worth emphasizing, because the question of prehistoric armed conflicts lends itself, perhaps more than others, to the creation of highly generalized overviews that sometimes paint a global picture of the history of ancient armed conflicts by accumulating disparate examples drawn from very diverse contexts. It is therefore worth reiterating the need to adopt contextualized approaches and to reconstruct regional scenarios, the synthesis of which is the only way to identify meaningful trends.

In this contribution, we attempt to provide a comprehensive review of the types of archaeological evidence generally put forward to attest to the presence of conflicts. This text is not exhaustive in terms of archaeological cases: most of those mentioned in the following pages are only examples, borrowed from various places and periods, with a particular focus on the European Late Paleolithic, which is the core of our reflection.

On this point, there is a striking divergence between the number of possible indicators, those that have been reliably evidenced, and the comments they give rise to. The types of archaeological traces considered as possible indicators have remained virtually unchanged for decades (see, for example, Childe, 1941; Leclerc and Tarrête, 1988). The list of archaeological cases is growing

steadily, but slowly. On the other hand, in recent years there has been a proliferating number of review articles, which often merely draw on the same data, only viewed from different theoretical angles.

In any case, when discussing these indicators of conflict for the most ancient periods of human history, we are immediately confronted with their scarcity, their debatable nature, and the meaning to be attributed to this scarcity. However, the issue of armed conflict is not exceptional in this regard: in prehistoric societies, most social phenomena leave very few archaeological remains (Testart, 2012, p. 161).

The debate on the antiquity of prehistoric armed conflicts is sometimes complicated by the ambiguity of the concepts used—in particular, the definition of *what* exactly is being sought when archaeological data is examined in this perspective. At one extreme are scholars who question the "origin of war" (as formulated, for example, by Ferguson, 2006), giving the latter term a restrictive meaning such as "armed conflict between organized political groups" (e.g., Otterbein, 2009, p. 43, cited in Kissel and Kim, 2019). One of the drawbacks of such a definition is to shift the difficulty to the "political" nature of Paleolithic societies; while some authors accept it readily, others reject it outright—and with it the very possibility of war during that period (see discussion in Kissel and Kim, 2019, pp. 144–146). At the other end of the spectrum are studies which, often through successive shifts, end up discussing all forms of violence rather than armed conflicts alone (e.g. Guilaine and Zammit, 2001). The problem is that, ultimately, any violence against persons, once it is considered legitimate by society, can fall within this definition—human sacrifice, accompanying dead, judicial assassinations, etc. Between those two positions, a middle ground is to consider that what we are trying to determine here is the existence of collective armed conflicts, or armed conflicts between human groups. That is the perspective we are taking here.

Another aspect that complicates the discussion, and even leads to confusion, is the varying demonstrative value given to the absence of evidence (Boulestin and Darmangeat, 2025). Although the principle that "absence of evidence is not evidence of absence" is widely accepted in archaeology, some researchers nevertheless consider that, in the case of prehistoric armed conflicts, the absence of evidence is such that it becomes conclusive: "The early absence of evidence is not rare. It is a global pattern, and as such, gains probative weight. (…) This absence of evidence should be seen as *negative* evidence" (Ferguson, 2006, p. 480; italics in the original text). Other researchers, on the contrary, consider that if evidence of conflict is rare in prehistoric societies, it is because the same mechanisms of archaeological invisibilization are at work in all these societies, which is made possible by the fact that they largely share the same material culture. We will return to this debate in the conclusion. The rest of this text is devoted to a discussion of these different categories of indicators.

2. REPRESENTATIONS

Some figurative paintings and engravings dating from the Paleolithic to the Neolithic periods are sometimes cited as evidence of prehistoric conflicts. The first question here is whether what we see actually refers to armed conflict—in other words, whether what is depicted is actually a battle. There is no conclusive evidence from the Paleolithic and Mesolithic periods in Europe. For the Late Paleolithic, reference is sometimes made to figures of "wounded men"—human silhouettes pierced by darts—found in a few caves and shelters located mainly in France. After a systematic critical review, Lorblanchet retains only three, from the caves of Pech Merle and Cougnac in the Lot region, and considers that their interpretation as "allegorical figures" is the most likely (Lorblanchet, 2009, p. 425). Even if a more literal interpretation of these representations were favored, there is no particular reason why they should represent a collective combat rather than any other form of violence against a person (murder, execution, etc.).

The same reservation applies to the scene engraved on a wall of the Addaura 2 cave in Sicily, generally attributed to the Epipaleolithic or Mesolithic period, although its exact dating remains uncertain. Within a group of anthropomorphic figures, the two central individuals have been interpreted as "restrained men," bound and even in the process of being killed by homicidal ligature strangulation (Guilaine, 2005; Ludes et al., 2024). Although this hypothesis is convincing, there is no reason to favor the idea that this scene is linked to warlike practices (execution of prisoners) rather than to another context (judicial execution, for example).

In other cases, geographically more distant or chronologically more recent, there are representations whose interpretation is more certain. In northern Australia, in Arnhem Land, rock art includes explicit depictions of armed clashes between human groups (Taçon and Chippindale, 1994). These paintings might date back at least 6,000 years, and ages of around 10,000 years have been suggested for the earliest phase (the "Dynamic" style), although it remains difficult to establish a precise absolute chronology (on this issue, see, among others, Langley and Taçon, 2010; David et al., 2017; Johnston et al., 2017). In Mediterranean Spain, the famous "Levantine" art, whose most convincing chronological attribution currently points to the Neolithic period, also offers a variety of scenes of confrontation (López Montalvo, 2015, 2018). Among the confirmed cases of representations of collective armed conflict, these are the oldest known to us, related to the worlds of Australian hunter-gatherers and Neolithic European farmers and herders.

However, even in these two cases, where the identification of battle scenes seems certain, a second question could be asked (Darmangeat, 2021, pp. 246–247): what battles are we talking about? Are they real fights (referring to events that actually happened) or imaginary ones (mythological, allegorical, etc.)? Are they exceptional

events (and therefore not necessarily part of an established social system) or ordinary events? Are they regulated confrontations or fights to the death? Even if the hypothesis that these scenes depict real armed conflicts seems very reasonable, it remains difficult to reach any indisputable conclusions, as in all cases where interpretation is based solely on iconographic evidence.

3. THE MATERIAL MEANS OF CONFLICT: PERMANENT DEFENSES (FORTIFICATIONS)

Defensive structures—such as trenches, earthworks, palisades, etc.—are known to exist among certain hunter-gatherer groups. Such structures have notably been documented in North America. For example, on the Northwest Coast, among the Interior Salish, L. V. W. Walters reports: "The village where Okanogan, Washington, now stands, is said to have been fortified by piles of rocks behind which trenches were dug; that is, on the camp side. The women stayed hidden in the trenches during battle. Barricades of logs were never built. This refuge was described by Suszen as on the tableland overlooking the present town. Here were trenches for defense and food stored in underground cellars. They would flee up this hill, passing up the steep sides by ladders which were pulled up after them." (Walters, 1938, p. 80; see also Reid, 2014). Several other cases are reported in D. E. Jones (2004, pp. 101–106).

In Eurasia, one of the oldest examples (around 8000 cal BP) is a group of sites in western Siberia located on rocky promontories and protected by palisades and trenches (Piezonka et al., 2023). As in the case of the Salish, these groups did not practice agriculture or animal husbandry, but were sedentary or semi-sedentary, which certainly favored the use of this type of fortification, found again in the Neolithic period.

No equivalent to these structures is known in the European Paleolithic. However, we can at least suggest a line of inquiry: the possibility of a defensive function for certain natural sites, particularly caves. This use is known in several parts of the world outside hunter-gatherer societies—for example, in Hawaii, where the practice of "hiding in caves" (pe'e pao) during times of war is documented, with some cavities being specifically designed for this purpose (concealment and fortification of the entrance, weapon caches: Kolb and Dixon, 2002, p. 526). We can also cite the fortified caves built in the central Pyrenees in medieval times (e.g. Guillot, 2011). Here, the cavity is designed as a natural fortification, perched high up, protected on all sides except one, and requiring only reinforcement of the entrance to provide shelter.

The cave porches occupied during the Paleolithic period do not feature any reinforcements of this type, and when prehistorians discuss the reasons that may have led groups to settle there, other aspects are highlighted: these locations provided protection from the elements and often offered a vantage point from which game could be spotted from afar in an open environment. These arguments are indisputable, but the idea that the defensive potential of these sites may also have been a factor cannot be completely ruled out. The protection provided by the walls, the good visibility of the surroundings, and even the difficulty of access (undeniable in the case of some caves!) are obvious advantages when one fears attack by another group. We can therefore imagine that these concerns may have played a role, even if it remains impossible to state this with certainty.

4. THE MATERIAL MEANS OF CONFLICT: DEFENSIVE EQUIPMENT (SHIELDS, ARMOR)

The use of protective equipment is known among many hunter-gatherer groups. Examples include the various types of wooden shields commonly used by Australian Aborigines (see references cited in Darmangeat, 2021, p. 214), or the genuine armor documented in North America, particularly among sedentary hunter-gatherers on the Northwest Coast (see Levinson et al., 2021, for a Tlingit example, and Jones, 2004, for a detailed review covering the entire continent). In the absence of metal, however, such equipment is almost invariably made from flexible animal materials (skin, leather) or plant materials (wood, plant fibers), which are perishable components with very low potential for preservation in an archaeological context. Even if such personal protective equipment had existed in the Paleolithic, Mesolithic, or Neolithic periods, it would have had very little chance of surviving to the present day.

Exceptions include armor made from a combination of osseous lamellae historically used by the Chukchi, Koryaks, and Inuit of the Bering Strait (Hough, 1893, pp. 631–634; Jochelson, 1908, p. 562; Bogoras, 1909, pp. 161–167). Prehistoric groups that developed an elaborate osseous industry—the Magdalenian culture in particular—had the materials and techniques necessary to design equipment of this type. They clearly did not do so: although a few fragments of perforated osseous plates appear among assemblages of Magdalenian osseous industry (Pétillon, pers. obs.), there is no evidence of the numerous standardized elements that make up the osseous armor of the North Pacific.

5. THE MATERIAL MEANS OF CONFLICT: WEAPONS

The issue of archaeological visibility arises differently in the case of offensive equipment. In societies without metal weapons, much of this equipment is made from perishable materials (for example an archer's equipment: bow, quiver, arrow shafts and fletching, etc.). However, at least one component has significant potential for

preservation: projectile heads made of stone or osseous materials, which are usually abundant in Paleolithic and Neolithic assemblages. The problem here is identifying the use of these weapons—in particular, distinguishing between hunting weapons and combat weapons, as the two can overlap considerably.

5.1. A trend in the design of combat projectiles

Studying the weapons of Australian hunter-gatherers, C. Darmangeat highlights the existence of a principle which states that "any device likely to increase, all other things being equal, the lethality of the projectile, is used in combat weapons" (Darmangeat, 2020, p. 171). He cites in particular the addition of barbs, or the existence of spears whose tips are deliberately notched so that they break off in the wound (Darmangeat, 2020, pp. 172–176). The same observation has been made in other ethnographic contexts, for example among the Baruya of New Guinea: "In combat, arrows with a breaking point near the tip are used (...) a warrior hit by a 'fragmentation' arrow considers himself lost because when the arrow is removed (...) the fingers of the operator (...) will break the tip into several segments (?) inside the wounded person's body. While the kajane arrow is recognizable by its light color, others have circular notches that serve as both identification marks and breakers" (Lemonnier, 1987, pp. 578–579, question mark in original; see Lemonnier, this volume). Similarly, among the Danis of Irian Jaya: "When hunting, the first priority is to find a quick-to-make arrowhead that causes large, deep wounds, while in war, arrowheads that allow for accurate long-range shooting are preferred, or those that inflict deep, complex wounds that are likely to become infected, even if the time required to manufacture these complex arrows is significantly greater" (Pétrequin and Pétrequin, 1990, p. 492)—these modifications again taking the form of barbs and/or detachable parts intended to remain in the wound.

There is therefore a recurring concern to equip combat weapons, or at least some of them, with all the technical refinements available to inflict the most serious injuries—which seems quite logical given their intended use—even if this involves longer or more complex manufacturing processes.

The problem, of course, is that the presence of these refinements is neither a necessary nor a sufficient condition for identifying a fighting weapon: a weapon of simple design can very well be used in a confrontation with a group of people; conversely, a complex projectile (barbed, with a detachable head, etc.) can be used in certain types of hunting. This is therefore at most a trend and not a strict correlation.

5.2. Possible evidence for the Late Paleolithic?

Despite these reservations, identifying this trend may provide food for thought when considering certain elements of the Paleolithic toolkit from a new perspective.

5.2.1. Barbed points

In very general terms, and despite their many differences in detail, Late Paleolithic projectile heads in Europe can be classified into two broad categories (fig. 1): axially mounted flint points (i.e., mounted at the tip of the projectile and along its axis), and composite armatures combining an antler point with lithic inserts (i.e., flint bladelets glued to the sides of the osseous point). However, towards the end of the Late Paleolithic, between ca. 16,000 and 14,000 years before present (which corresponds archaeologically to the Upper Magdalenian), a

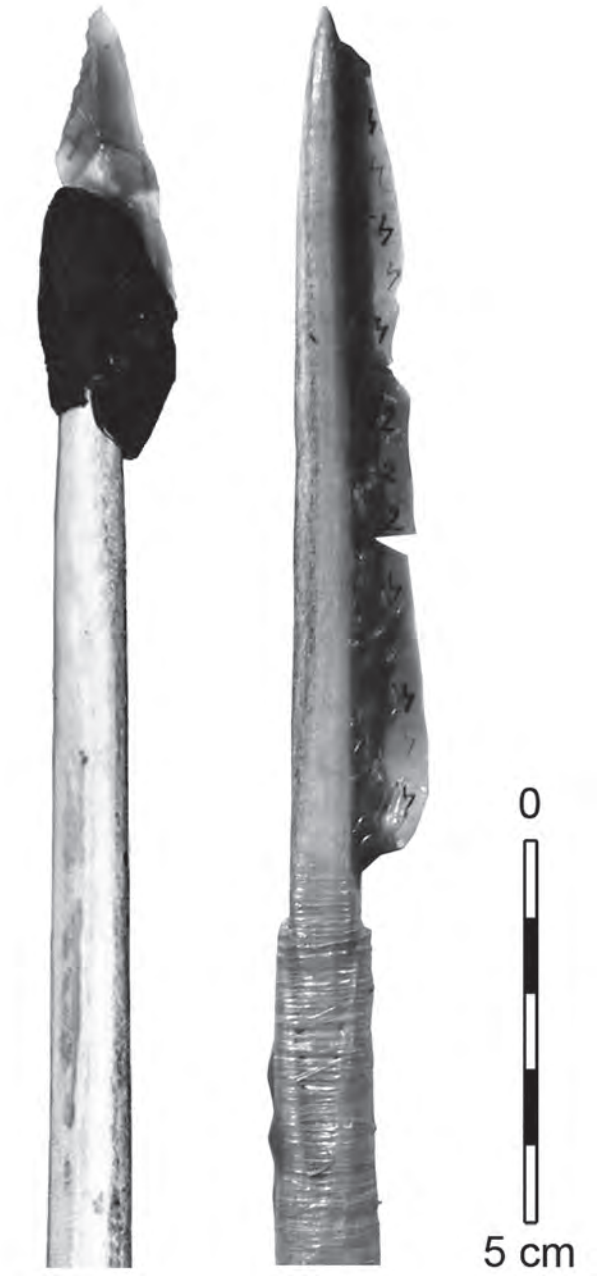

Fig. 1 – Examples of experimental reconstructions of the two main categories of projectile heads from the Late Paleolithic in Europe: flint point with axial mounting (left, after Wild et al., 2018, fig. 2) and antler point with lithic inserts (right, photo J.-M. Pétillon).

third component appears: barbed points made of antler, which generally represent between 10 and 30% of all osseous points (fig. 2–3). Without repeating in detail an argument already presented elsewhere (Pétillon, 2009), we will recall a few generalities. These barbed points are classically referred to as "harpoons" (Julien, 1982), and are therefore associated with fishing activities, or at least with the capture of aquatic animals. However, ethnographic comparisons show that morphologically similar points can indeed be used to equip harpoons, but also simple barbed projectiles with non-detachable heads, which have a wide range of uses (hunting, fishing, combat). The range of possible functions for this type of point is therefore very broad.

These points display several characteristics that are reminiscent of those repeatedly observed on weapons used against humans. Compared to "classic" osseous points (without barbs), these barbed points:

- show evidence of an additional feature (retention, to make the projectile more difficult to extract);
- require longer and more complex manufacturing (to shape the barbs);
- are more costly to produce in terms of raw materials (although this aspect is probably secondary, the blanks used to shape barbed points are at least twice as wide as those used for "classic" points, due to the space taken up by the barbs, and therefore "consume" more material);
- are more frequently decorated, the most common patterns being longitudinal, transverse or oblique incisions that underscore the different parts of the object, particularly the barbs (fig. 2);
- show greater typological variability over a relatively short period than non-barbed points (fig. 3). This variability in shape and size may reflect a greater concern for technical perfection in barbed points, which

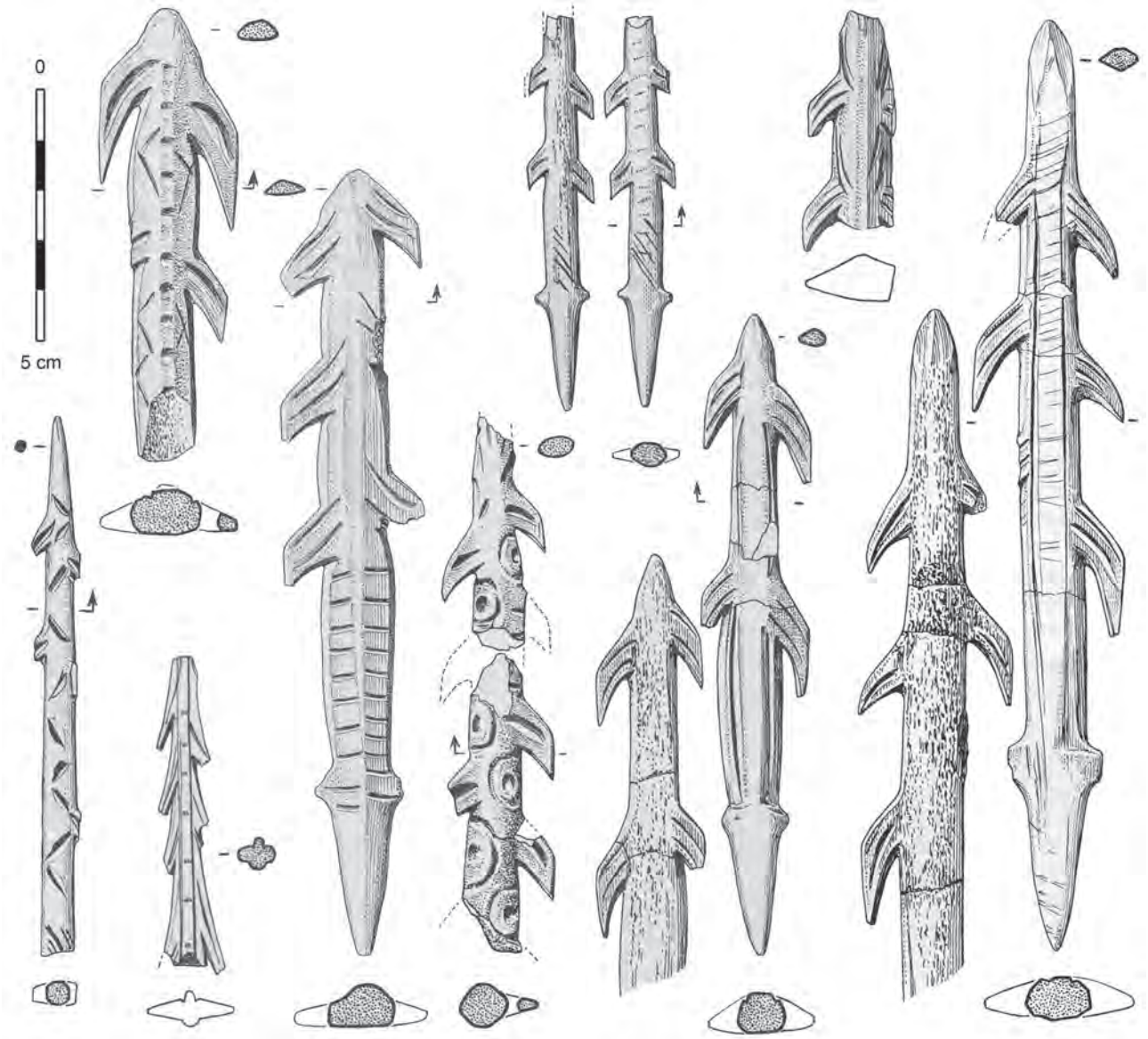

Fig. 2 – Abri Morin, Gironde: examples of decorations on barbed points (drawings by P. Laurent in Deffarges et al., 1974, fig. 2–6)

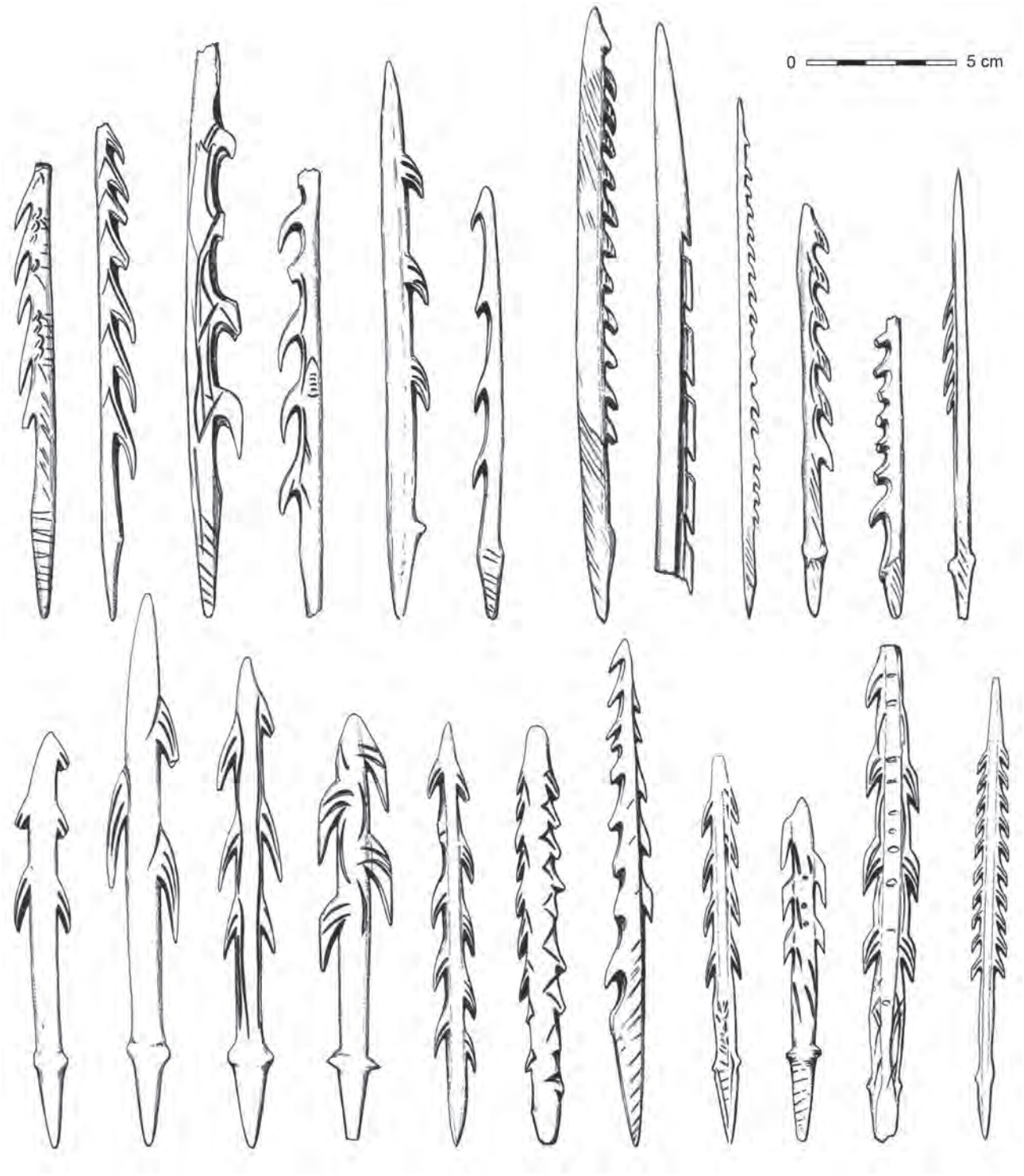

Fig. 3 – Overview of the typological variety of Magdalenian barbed points (after Julien, 1982, fig. 41–44).

is expressed in the development of different designs (see also Julien, 1999).

Finally, on a handful of pieces, certain features suggest a more specific use against humans: these are three objects which, in addition to barbs pointing in the usual direction (towards the rear), have one or more inverted barbs pointing towards the distal end of the projectile (fig. 4).[1] When they were published, these three objects were described as devoid of practical use (Julien, 1982, p. 92; Robert and Gailli, 1991; Tymula, 2003). Indeed, it is difficult to imagine what use these inverted barbs could have for hunting or fishing, as their presence would more likely hinder the penetration of the projectile. However, they become useful if the aim is to make it particularly difficult for the victim to remove the projectile, which only makes sense in the context of use against humans (Darmangeat, 2020).

However, even if we follow this line of thinking, it remains undecidable whether these objects refer to a con-

Fig. 4 – Points with inverted barbs. 1: Courbet cave, Tarn (Palart.616, refitting and photo C. Lucas, © The Trustees of the British Museum. Shared under a CC BY-NC-SA 4.0 licence). 2: Grotte de la Vache, Ariège (after Robert and Gailli, 1991, fig. 2). 3: Abri de la Madeleine, Dordogne (after Julien, 1982, fig. 108).

text of collective conflict or other circumstances, such as judicial sanctions like corporal punishment (Darmangeat, 2020). The extreme rarity of these objects—three pieces among the approximately 2,000 known Magdalenian barbed points—rather supports the second hypothesis. As noted by C. Darmangeat (2020), the use of such weapons in a judicial context is also attested in Kimberley (northwestern Australia): [this instrument] "can be used as a spear-head attached to a suitable shaft, or as a dagger. (...) It is about 18 inches [45 cm] long and, besides being sharply pointed, is provided with six rows of double cleat-shaped points, carved on the circumference out of the solid wood, and extending in all for a length of 14 inches. [35 cm]. It is obvious that if this weapon is thrust into a body, there will be considerable difficulty in extracting it. You cannot push it forward, and you cannot pull it backward. It cannot be pushed forward or pulled backward. (...) It is chiefly used as a punishment for heinous tribal offences, one of the chief of which is adultery" (Hardman, 1889-1891, p. 65). The description corresponds to the spear points depicted by E. Clement for the same region (1903; here fig. 5).

5.2.2. "Fragmentation" points

The ethnographic descriptions cited above refer to a second type of modification found on certain combat projectile heads: the presence of breakaway points designed to facilitate the tip's breakage upon impact. Certain osseous artifacts from the European Late Paleolithic may be considered in this light.

Many Paleolithic assemblages of antler points contain fragments that show deliberate thinning, either by scraping, cutting, or oblique grooving, followed by transverse breakage by bending (fig. 6, nos. 1-5). Formerly known as "*pointes à base raccourcie*," these fragments are now interpreted as waste resulting from the calibration of the point during its manufacture (streamlining, adjusting length: Chauvière and Rigaud, 2005), from the cutting of a point embedded in a carcass to allow the shaft to be recovered (Chauvière and Rigaud, 2005), or from a repair (after fracture of the distal end, a second apex is shaped a few centimeters lower on the mesial part, the damaged part being then discarded).

Nevertheless, a few objects remain for which none of these interpretations is entirely satisfactory, because they show a significant degree of shaping (and therefore do not appear to relate to the initial stage of point manufacture) and feature an intact distal end (making the hypothesis of repair waste or recovery after impact less likely). This raises the question of whether the thinning was intended to facilitate fracture of the point on impact, and thus the formation of fragments inside the wound. Exceptionally, the complete object can be found: the only case to our knowledge is a double-beveled point made of antler, complete and approximately 18 cm long, with a thinning mark ("*raclage en diabolo*") just beyond the base (fig. 6, no. 6). Here, the hypothesis of a deliberate modification intended to weaken the point can be raised.

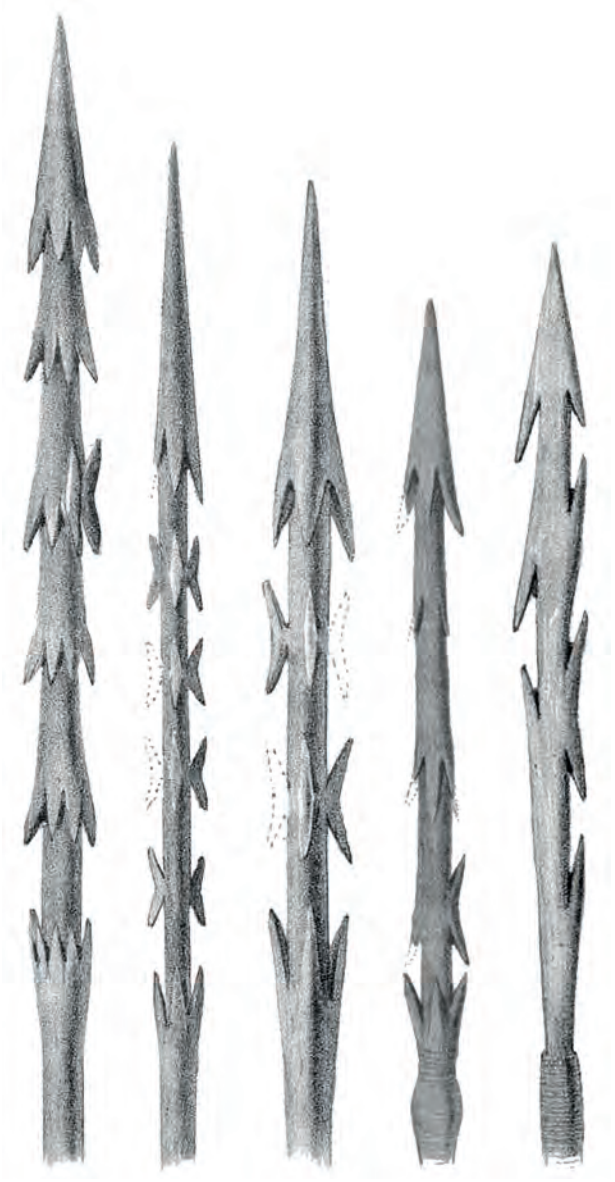

Fig. 5 – Spearheads with inverted barbs from the Kimberley region (after Clement, 1904, pl. II-III). The heads measure between 40 and 70 cm long and the projectiles are described on pp. 22–23 as "fighting spears."

These thoughts on barbed points and sectioned point fragments are only hypothetical and are based on only a small number of objects. We just wanted to show that there are some possible candidates for combat projectiles in the Late Paleolithic weapon kit, even if no formal conclusions can be drawn.

6. HUMAN REMAINS

Traces of violence on human skeletons are probably the most frequently cited indicators of collective conflict during prehistoric times. However, this use poses a twofold problem. On the one hand, it implies that human remains are actually available for analysis: here again, the question of archaeological visibility arises, as there are entire periods and regions for which the number of known human bones is extremely limited—for reasons related to both preservation conditions and the funerary practices of ancient populations.

On the other hand, for interpretation as evidence of conflict to be conclusive, the criteria used to construct this interpretation must be defined and organized. In other words, it is necessary to explain how to answer the question: "What conditions must be met in order to claim that a set of human remains is evidence of collective armed conflict?"

Here we attempt to formalize these criteria in the form of a decision tree loosely inspired by logicist analysis, starting from the situation where a set of human remains is discovered at an archaeological site (fig. 7).

6.1. Criterion 1: Number

The first criterion to consider is the number of individuals represented in the sample, with two possible values: "one" or "several." A single individual is never conclusive evidence of collective combat, even if it bears clear signs of violent death. One example is the isolated individual from Narrabeen, near Sydney, Australia, dated to around 4,000 years ago (McDonald et al., 2007): numerous microliths were found associated with the skeleton, inside the space occupied by the body, and even embedded in its bones—clearly indicating death by weapon. However, this could just as easily have been a victim of conflict, judicial assassination, murder, etc., with no reason to favor one hypothesis over another.

6.2. Criterion 2: Marks on bones

When several individuals are present, the second criterion to be considered is the evidence of marks on the bones, with three cases to be distinguished: those where a significant proportion of individuals show signs of armed violence (traces of blows, projectile impacts, etc.); those where individuals display signs of cannibalism (butchering, removal of flesh, etc.); and those where neither of these is present.

This three-way division calls for two comments. First, the phrase "a significant proportion of individuals" deliberately leaves open the question of exactly how large this proportion should be (at least 10% of individuals? At least 50%?). To our knowledge, there is no consensus on this issue, as problems in setting quantitative thresholds are common in archaeology, and this case is no exception: it remains an open question. The matter is all the more complex given that, in combat as in hunting, some fatal injuries—but what proportion?—may leave no trace on the bones: this is particularly true of shots to soft tissue. Similarly, as the thorax is often targeted, the ribs and vertebrae are among the bones most likely to be affected and to show signs of impact; yet they are less likely to be preserved than denser parts of the skeleton, such as the long bones.

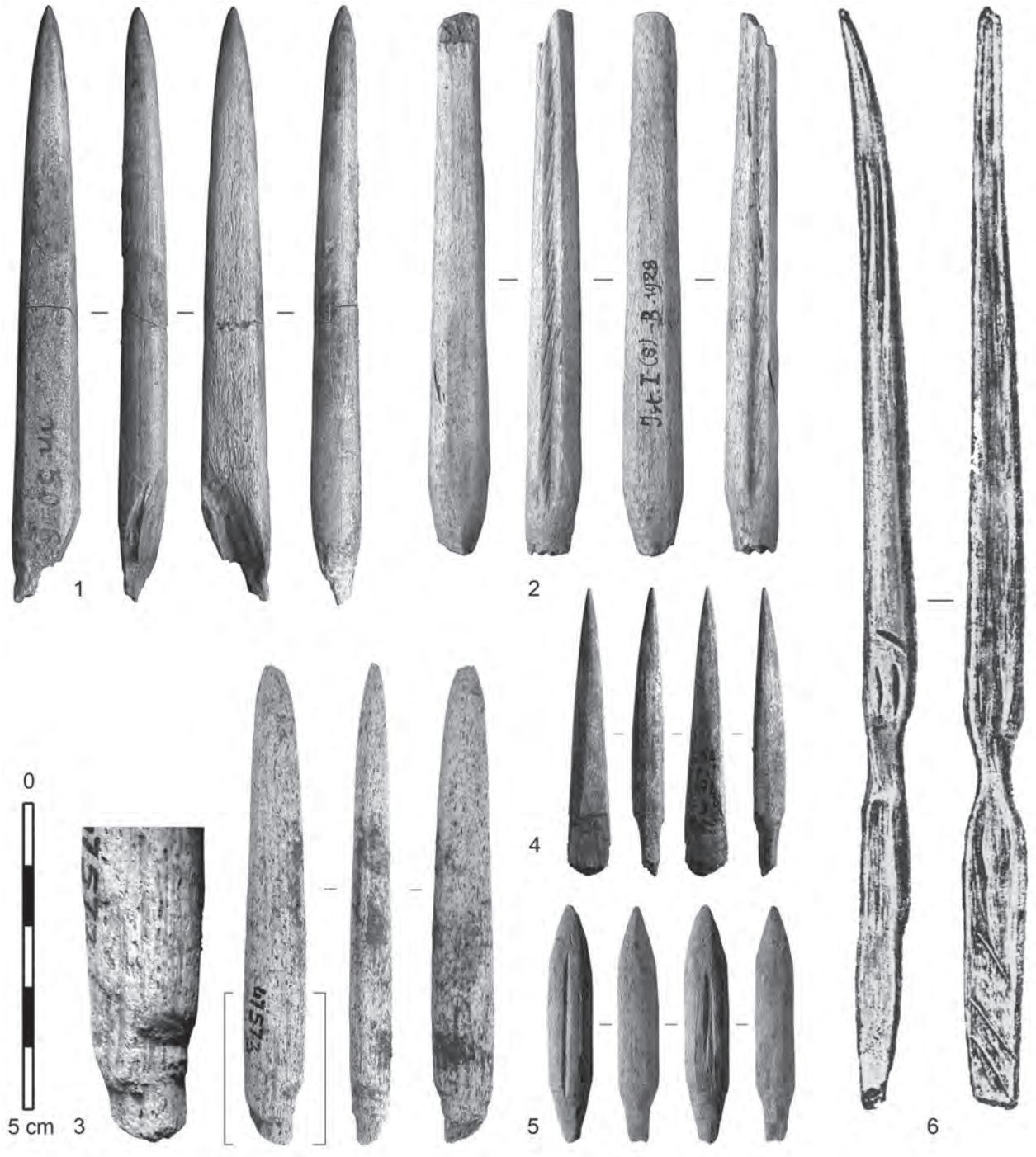

Fig. 6 – Fragments of projectile points with thinning by oblique grooving (no. 1) or scraping (Nos. 2–5); complete double-beveled point with thinning of the same type beyond the base (No. 6). 1: La Marmotte, Yonne; 2: Isturitz, Pyrénées-Atlantiques; 3: Le Mas d'Azil, Ariège; 4: Gazel, Aude; 5: Saint-Germain-la-Rivière, Gironde; 6: Gouërris, Haute-Garonne (photos J.-P. Pétillon, except No. 6, after Saint-Périer, 1927, fig. 14).

Second, in this classification, the presence of traces of armed violence and those of cannibalism are presented as mutually exclusive categories, even though there is no theoretical reason for this: it is quite possible to imagine a combination of the two, where individuals are killed with weapons (which leave traces on the bones) and their bodies are then consumed. However, this situation rarely occurs in practice, because the treatment of the body during consumption generally eliminates any potential traces of violence. Dismemberment, disarticulation, stripping of flesh, fracturing of bones, burning: this set of operations alters the skeleton sufficiently so that any marks from blows or projectiles are usually destroyed or can no longer be identified as such (for a possible exception, see Belcastro et al., 2010). This situation is not specific to the treatment of human bodies: it has been widely discussed in the case of hunted game, where the treatment of carcasses is one of the reasons given to explain the rarity of traces

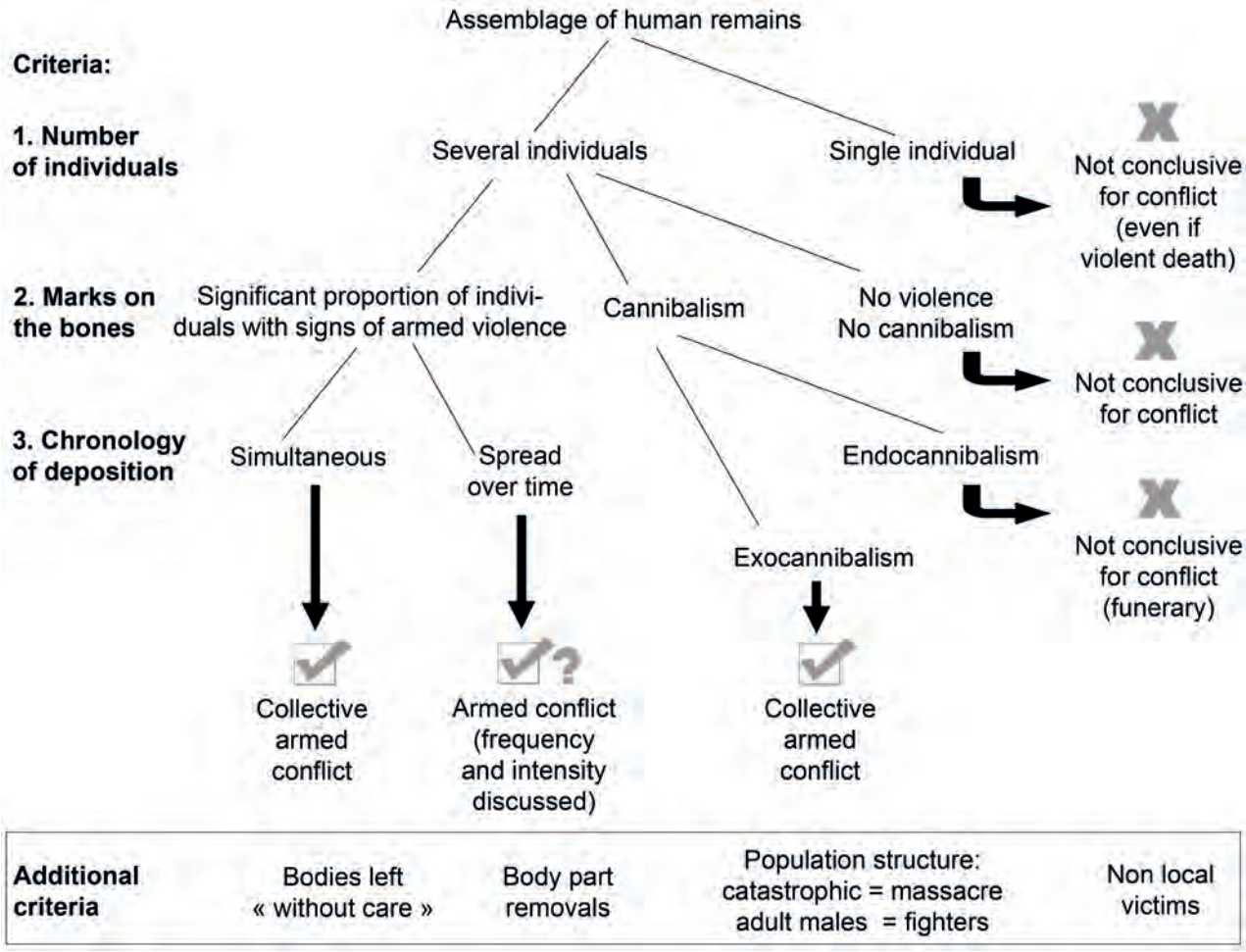

Fig. 7 – Decision tree for interpreting assemblages of human remains as evidence of collective armed conflict.

of hunting weapon impacts (for a recent review, see, for example, Smith et al., 2020; Yeshurun et al., 2024).

That said, let us examine the three cases we have identified. Assemblages showing no signs of violence or cannibalism obviously do not allow us to identify the presence of conflict. In the case of assemblages showing signs of cannibalism, and as has been clearly demonstrated by B. Boulestin and D. Henry-Gambier (2019, pp. 105–106), the only relevant question—after ruling out cannibalism due to starvation—is whether we are dealing with endocannibalism (the consumption of members of one's own group, which is therefore a funeral practice) or exocannibalism (the consumption of members of another group, whose "acquisition" therefore necessarily refers to the domain of collective armed violence). We will return to this point below. Finally, in the case of assemblages where individuals bear traces of violence, a third criterion comes into play: the chronology of the depositions.

6.3. Criterion 3: Chronology of depositions

Two cases can be distinguished here: those where depositions are simultaneous (all bodies were deposited during the same event) and those where depositions are spread out over time.

In the first case, we have a group of individuals who died at the same time, a significant number of whom show signs of violence: in the scientific literature on the subject, this is the most widely accepted definition of conclusive evidence of a collective armed conflict.

In the second case, when depositions are spread out over time, the interpretation to be drawn is more controversial. This is the case, for example, at Djebel Sahaba, a cemetery in the Nile Valley dating back at least 13,400 years, which has recently been re-examined (Crevecoeur et al., 2021) and presented at this conference. Of the 61 individuals documented at Djebel Sahaba, 41 show one or more traces of armed violence, some of which have healed. Based on the length of time the cemetery was in use, the presence of healed wounds, and the demographic structure of the buried population, the authors conclude that the site does not bear witness to a single episode of fighting between groups, but rather to a series of violent events occurring over a fairly long period of time. To describe these events, they avoid using the term "war," referring instead to "recurrent episodes of small scale sporadic interpersonal violence (...) most [of which] are likely to have been the result of skirmishes, raids or ambushes" (Crevecoeur et al., 2021, p. 9). It should be noted, however, that all of this vocabulary

remains within the realm of collective armed conflict, even if the spread of victims over time invites discussion of the scale and intensity of the events concerned, more so than in the case of simultaneous deposition.

6.4. Additional criteria

In addition to the three criteria of number of individuals, traces of violence on the bones, and chronology of depositions, there are four others, none of which are necessary or sufficient, but which reinforce the interpretation, clarify it, or may contribute to tipping the balance in doubtful cases:

- Bodies left "without care" (thrown into a pit, abandoned on the ground without any order): this criterion is common and striking—see, for example, several of the cases summarized by C. Jeunesse in this volume.[2] However, it is not always present: if the members of the group of victims recover the bodies, it is likely that they will give them an orderly funeral, as is the case, for example, in Djebel Sahaba.
- Body part removal: scalping, decapitation, severing of limbs, or other mutilations (see again the cases of "overviolence" mentioned by C. Jeunesse in this volume—but also, for example, the numerous cases recorded for central California in Schwitalla et al., 2014).
- Population structure, i.e., the distribution of individuals by age and sex: if the population studied shows a catastrophic curve—corresponding to what would be obtained if an entire living group were eliminated in a single event—this may lead to the interpretation that a massacre targeting the entire local group took place. Conversely, a population dominated by adult males suggests a group of combatants.
- Non-local victims: in some cases, stable isotope analysis has shown that individuals bearing traces of violent death did not live in the region—which may suggest, depending on the case, the killing of prisoners brought from afar or the elimination of an enemy "expeditionary force" (see the cases of the three sites in central California presented in Eerkens et al., 2014; and the cases of Halberstadt, Herxheim, and Achenheim presented by C. Jeunesse in this volume).

6.5. An example relating to the previous points: the Nataruk case

Here is, by way of example, what applying this set of criteria produces in the case of Nataruk. This Kenyan site is located west of Lake Turkana, on the edge of an ancient lagoon, and dates from the Late Stone Age, approximately 10,000 before present (Lahr et al., 2016). It has yielded 27 skeletons, 12 of which have been excavated, 10 of which show signs of violent death (projectile wounds, various fractures including skull fractures, etc.). The individuals are in various positions, unorganized, and some were probably restrained at the time of death, given the position of their hands. The population includes adult men, adult women, and children, almost all of whom are under the age of 6 and are spatially associated with women. Interpreted as the result of a massacre following a fighting episode, Nataruk has become famous as one of the most irrefutable pieces of evidence of warfare in the Late Stone Age in this region.

If we follow the decision tree presented above, the first criterion to consider is the number of individuals. Here, they are numerous, but they are spread over a large area: the site extends approximately 250 m from northeast to southwest, and although some individuals are relatively grouped together (particularly in the northeast of the site, within a radius of about 30 m), others are more scattered, often with about 20 m between each body. Based on spatial distribution alone, one might almost wonder whether, archaeologically speaking, Nataruk is a single site or a set of disjointed loci within the same sedimentary context.

With regard to the second criterion (traces on the bones), there are numerous indications of armed violence, although the interpretation of certain skull fractures has been disputed (Stojanowski et al., 2016).

Finally, the third criterion (the chronology of the depositions) is, strictly speaking, undecidable here. The skeletons themselves cannot be dated due to the absence of collagen, and absolute chronology is provided by OSL and U/Th dates, which indicate a range of one millennium, between approximately 10,500 and 9,500 years before present. These data are compatible with both the hypothesis of simultaneous deposition of all the bodies and the hypothesis of deaths spread over several centuries, each potentially separated from the others by decades (Stojanowski et al., 2016).

Based on these criteria alone, interpreting the site as a conflict-related event is not so obvious: what is missing is a clearer spatial association between the bodies and the argument that they are contemporary. Here, at first glance, at least one other hypothesis is possible: that of a place of judicial executions, where individuals who have committed acts deemed criminal are repeatedly brought to be put to death over a period of decades. To clarify the interpretation, it is therefore necessary to use additional criteria, in particular the structure of the population. In this case, the structure is catastrophic, particularly given the presence of young children: this rules out the judicial hypothesis and argues more clearly in favor of an interpretation as a massacre linked to armed conflict.

6.6. The special case of cannibalism

This leaves the case of assemblages showing traces of cannibalism, for which we recall that the only relevant distinction is that between endocannibalism and exocannibalism, following B. Boulestin and D. Henry-Gambier (2019, pp. 105–106). These authors also provided one of the most detailed discussions on this issue, applied to the case of human remains found in the Placard cave in Charente. These remains date from the Late Paleolithic, between approximately 22,500 and 18,500 years before present (Badegoulian and early Magdalenian); they con-

sist of a collection of 161 human remains representing at least 18 individuals (9 adults, 9 children), with abundant marks of cannibalism. Furthermore, and this is a key argument for the authors, there are traces of removal and shaping of several skull cups, abandoned on site after use, some of which were taken from children's skulls. We refer the reader to the book (Boulestin and Gambier, 2019) for details of the very convincing argument: in essence, based on historical and ethnographic parallels, this picture is not compatible with funeral or "ancestor worship" practices, and is therefore necessarily a case of exocannibalism, referring to the acquisition of bodies through violence.

Is Le Placard an exception, or can the set of arguments that allows B. Boulestin and D. Henry-Gambier to conclude to exocannibalism be found at other sites? On this point, the authors remain very cautious (Boulestin and Gambier, 2019, pp. 119–120), suggesting a parallel with the Magdalenian site of Gough's Cave in Somerset (Bello et al., 2015), and possibly that of Isturitz in the Pyrénées-Atlantiques (Gambier, 1990–1991; Henry-Gambier and Faucheux, 2012), leaving open the question of the Maszycka site in Poland. However, we would like to be a little less cautious than they are... In the case of Maszycka, a recent study (Marginedas et al., 2025) concludes that cannibalism was practiced on a group of at least 10 individuals, including 4 children and adolescents, and strongly suggests the hypothesis of exocannibalism. Furthermore, a preliminary study of the human remains found at the Magdalenian site of Courbet, in the Tarn region, also highlights the presence of at least six individuals of all ages, with traces of butchering and the removal of skull cups (Marsh and Bello, 2023). A similar interpretation has been suggested for the Magdalenian site of La Marche, in the Vienne region (of the 12 human skull fragments studied, eight show signs of butchering, scraping, and/or thermal action: Airvaux and Le Luyer, 2025).

Several of these assemblages would require more in-depth study. Nevertheless, in our view, this series of sites spread from the Basque Country to Poland via the United Kingdom, dating from approximately 22,500 to 14,000 years before present (i.e., most of the Badegoulian and Magdalenian periods), constitutes, based on current knowledge, the strongest evidence of recurring armed conflict associated with cannibalism in Europe during the latter part of the Late Paleolithic.

7. CONCLUSION

In theory, when we ask the question, "Were there collective armed conflicts at this time and place?", three answers are possible: "yes," "no," and "we cannot know." We wanted to show here that, in the case of early Prehistory, the low archaeological visibility of conflicts makes the answer "no" unattainable: we can never prove that there were none, and we will therefore oscillate between the answer "yes" (when we have conclusive evidence) and the answer "we cannot know" (when none are available).

With regard to the European Late Paleolithic, which was the focus of this research, we wanted to point out that, at least in its latter part, there are indications of armed conflict in the form of human remains that can probably be linked to exocannibalism, as well as lines of inquiry in other areas (the defensive function of caves, the identification of possible weapons of war, particularly in the osseous industry). The greater frequency of archaeological traces of conflict from the Neolithic onwards is linked to sedentism (which encourages the development of fortified sites), the more common practice of burial (which increases the chances of human remains being preserved), and the development, in certain contexts, of figurative art that commonly includes representations of humans (and where scenes of conflict feature). We hope to have shown how inaccurate it is, in such circumstances, to claim that the absence of evidence means the absence of crime.

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NOTES

1 The first two pieces speak for themselves and need no description. The third piece, from the Madeleine rockshelter, is described by M. Julien as follows: "The barb on the left side appears to have been reversed, but unfortunately it is broken. This can be assumed from examining the section of the barb, which is fractured at the point of attachment: on all the other harpoons with broken barbs, the cut created by the breakage generally curves towards the distal part of the instrument and has a V-shaped protrusion towards the proximal part. However, on the La Madeleine harpoon, it is the distal edge that is V-shaped and the proximal edge that is convex. We can therefore assume with some certainty that this barb was oriented in the opposite direction to those still visible on the right side of the piece" (Julien, 1982; p. 92).

2 References to "Jeunesse, ce volume" refer to the article "Massacre deposit sites and their relationship to warfare in Central European Neolithic (5200 - 2500 BC). A state of affairs".

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DISCUSSION

Jean-Loïc Le Quellec: A comment that supports your point about the representations. When we have representations, we don't know if they depict a real or a mythical fight. There are several examples. In South Africa, the Battle Cave site is considered by some to be the representation of an actual fight, and by others, who follow D. Lewis-Williams, as a shamanic encounter happening in another world. I'm not taking sides, it's just that the same image can be interpreted in two ways. And in the Sahara, there is an overabundance of scenes that are clearly battle scenes, with archers facing each other, arrows flying, it's very well represented. Some of these are interesting because you can identify female archers among the fighters. One panel in Sefar has even been called the "Amazon Panel" because it features only women. And there is also a panel in Tirehart that depicts a fight between a group of baboons on one side and a group of canid-headed therianthropes on the other. In this case, it is clearly a mythical fight.

Jean-Marc Pétillon: Beyond that, the question is: is it possible to imagine mythical fights if there are no actual fights in society? In that case, even if mythical battles are depicted, it means that people can conceive such event. I find it hard to imagine that it can be done if they never happened in reality.

Pierre Lemonnier: I am not familiar with this literature. What allows B. Boulestin, for the Charente, to say that the victims came from elsewhere? Because you are probably familiar with this reference, for the Fore, mad cow disease, etc., there are the texts of J. Whitfield. It is an extraordinary ethnography about how people are cut up and eaten. In that case, what rules out the possibility of funerary cannibalism?

J.-M. P.: I'm not the only one in this room who can answer that! One of the key arguments is the presence of skulls which, again, according to the historical and ethnographic references cited by the authors, almost always refer to "victory celebrations" following a battle. One possible objection is that this could be an ancestor cult—where skulls or skull fragments are removed precisely because they belonged to ancestors. The counter-argument of B. Boulestin and D. Henry-Gambier is that some of these skull cups are made from children's skulls... and children are never ancestors. When children die, they are not the object of a cult because they died too young. This therefore necessarily refers to the other hypothesis, that these were victory feasts. I will repeat their line of argument; once again, I am no expert. We cannot say that they came from elsewhere. On the other hand, the treatment of the bodies suggests a practice of a celebrating victory over enemies, and the bodies of one's own group or community are not treated in this way.

Isabelle Crevecoeur: Has there been any isotopic or strontium or other analysis?

J.-M. P.: No, there haven't been any. The Placard is a difficult case. It is a site with very thick stratigraphy, excavated a long time ago and in a completely disorganised manner, before J. Clottes' "modern" excavations. The sample studied is very small compared to the large amount of human bones likely still hidden in the rubble from the old excavations. The C14 dates are quite scattered. It is clearly not a single episode. It is a behavior that occurred over a certain period of time. But the archaeological context is not good.

Alexandre Hamez: I have a question about the methodology. As a computer scientist, I really like the decision tree. I would like to know if this approach is widely used, or if very few people use it. My second question is: can weights or percentages be assigned to each branch?

J.-M. P.: Actually, these are the arguments that are commonly used. However, as far as I know, they have never been presented in this way. This is what I have tried to do based on my readings, by attempting to formalize the reasoning that sometimes remains somewhat implicit in certain publications. As for assigning weights to the branches, yes, why not.

Christophe Darmangeat: I wonder if, eventually, the only questionable point in the book by B. Boulestin and D. Henry-Gambier is not the title: "Cannibalism and War". I am always picky about definitions, but all in all, the authors probably demonstrate a series of hostile episodes towards an external group, during which one, two or three people were killed. These are hostile, violent acts, no doubt about that, but not really war in the strict sense. This echoes Christian's earlier talk about what happened in the Neolithic period, where there is much uncertainty about war. There are no battles, no large groups of combatants, not even relatively large groups. There is evidence of conflict. But actual war is something else entirely.

I. C.: I understand the argument, but as a paleoanthropologist, it is almost reassuring to have this title because I get the impression that we sometimes refrain from considering this possibility in cases of cannibalism, even much older ones. And ultimately, such a well documented and clear case, allows us to do so. I am thinking of Neanderthal instances, in particular. I'm thinking of the Goyet site, which I worked on with H. Rougier, which presents a case of commensal cannibalism and evidence of exocannibalism, because the isotopes indicate that the people were not local. But until now, we have been almost afraid to openly consider the idea that these could have been raids where people were captured.

J.-M. P.: You mentioned some very old cases that I haven't dealt with at all, because I don't know much about them. The same goes for cases that are a little more recent than the Placard, which I showed on the map. Some of these groups were studied a long time ago or are still being studied. But one or two have been studied recently by specialists who are very careful not to raise the question. I don't know if it's a deliberate choice to avoid considering this hypothesis or not, but they only talk about

"mortuary practices", and that's all. The hypothesis is not even mentioned, not even to be dismissed, even though these sites are very similar to the Placard.

C. D.: The possibility of exocannibalism and, let's say, hostile relations, is not really a problem- or at least, it shouldn't be. I would also point out that there are cases of cannibalism in Australia. In my work on the subject, I focused on the "hostilities" aspect, trying to identify the range of hostilities (including war). But in many regions, enemies were conscientiously devoured, with unambiguous ethnographic descriptions: the settler who sees the guys with one arm and one leg on their shoulder returning, in a totally uninhibited manner. Then the whole question is whether you wage war and once the enemy is defeated, you eat him to show that he is nothing, that you have annihilated him, or whether you launch operations—let's call them "wars" or not—to capture people to eat. It's not quite the same thing. The second case is much rarer than the first. I'm thinking of the Tupinamba, to some extent the Iroquois because although it hasn't been said, the Iroquois practiced cannibalism as well. In addition to torturing prisoners, they also ate them. But I think that this is a relatively rare case, whereas the more common case is eating the defeated enemy, once victory has been achieved, to signify their total annihilation.