



ISSN 2108-6532

**Auréade HENRY**  
**Benjamin MARQUEBIELLE**  
**Lorène CHESNAUX**  
**Sylvène MICHEL**

## New Insights into Mesolithic Cultures



*Review published by the P@lethnologie association, created and supported by the TRACES laboratory, Inrap and the Ministry of Culture and Communication.*

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## Translation

Auréade HENRY

Magen O'FARRELL

## Layout, graphics

Fabien TESSIER

## Contributions should be addressed to:

### REVUE P@LETHNOLOGIE

Vanessa LEA, Research associates

TRACES - UMR 5608 of the CNRS

Maison de la recherche

5 allées Antonio Machado

31058 Toulouse cedex 9, FRANCE

Phone: +33 (0)5 61 50 36 98

Fax: +33 (0)5 61 50 49 59

Email: [vanessa.lea@univ-tlse2.fr](mailto:vanessa.lea@univ-tlse2.fr)

**This digital publication received support from**



## BEYOND THE TECHNOLOGICAL DISTINCTION BETWEEN THE EARLY AND LATE MESOLITHIC

Grégor MARCHAND

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### To cite this article

Marchand G., 2014 - Beyond the Technological Distinction between the Early and Late Mesolithic, in Henry A., Marquebielle B., Chesnaux L., Michel S. (eds.), *Techniques and Territories: New Insights into Mesolithic Cultures*, Proceedings of the Round table, November 22-23 2012, Maison de la recherche, Toulouse (France), *P@lethnology*, 6, 9-22.

## BEYOND THE TECHNOLOGICAL DISTINCTION BETWEEN THE EARLY AND LATE MESOLITHIC

Grégor MARCHAND

### Abstract

*At the beginning of the 7<sup>th</sup> millennium BC, from Tunisia to Scandinavia and the Alps to the Atlantic, the technical baggage of Mesolithic societies underwent profound changes. Flaked artifact styles, tool types, weapon hafting techniques and the volumetric principles of stone flaking were modified by more than simple adjustments to the percussion techniques commonly used, with pressure flaking and indirect percussion replacing direct hard hammer percussion. This division of the Mesolithic in Western Europe has more to do with the technology used to transform lithic raw materials than with tool typology. This observation was in fact not lost to some archaeologists of the last century, such as E. Octobon and J. G. D. Clark, who accorded less importance to punctilious arrowhead classifications than to the general structure of flaked productions, or S. K. Kozłowski who described Mesolithic Europe as being split into two successive typological “trends” (the S and K components). In this article, I first present a summary of the changes observed in the early 7<sup>th</sup> millennium, as well as the enduring features of Mesolithic material culture. I then examine possible correlations with paleo-environmental and social phenomena to show that for the moment there are no clear links to these factors. While the ultimate goal is to clearly define this vast change in civilization, it is now necessary to work at more restricted spatial and temporal scales to enhance our understanding of this fundamental phenomenon in the history of techniques on the European continent.*

### Keywords

*Prehistoric Culture, France, Mesolithic, techniques, typology.*

Throughout the 20<sup>th</sup> century, one of the main objectives of research on the postglacial period by French authors was to attribute lithic assemblages to “cultures”. Starting in the mid 1980’s, the development of the technological approach to lithic industries led to an inevitable revolution in research concepts and manners of describing stone artefacts. In France, the application of this approach to the Mesolithic was delayed until the early 21<sup>st</sup> century, awaiting the maturation of a new generation and a change in paradigms. Two families of techniques, succeeding each other in time, then appeared in France and in some bordering countries, which I proposed to designate as the First and Second Mesolithic (Marchand, 2008). What are the bases of this distinction? What do they mean and why are they important? Are they accompanied by changes other than technical ones? And finally, how do they shape our understanding of societies and their evolution, as well as the models that we construct of them? To change words is to change perspectives, and to overturn the accepted hierarchies of analysis criteria. It is also to explore other historic scenarios teetering at the edge of Neolithization.

## 1 - The limitations of the “French” stylistic geography

The identification of different technical and stylistic groups among the Mesolithic lithic industries of a given area, and their denomination based on an eponymous site or region, was a very popular scientific process in the 1920's in France, and one that is perpetuated today in an approach that I will refer to here as “cultural geography”. While the designation of such entities responds to a need for communication between researchers, the choice of distinguishing criteria and the importance accorded to them are never neutral. The limitations of this practice are clearly seen in the variable composition of the entities created by different researchers. The contents and spatial extension of the Tardenoisian, Sauveterrian or Castelnavian, for example, vary depending on the publication. The absence of objective definitions shared by all authors obviously leads to problems, but these fluctuations also depend on the complexity of the cultural and social phenomena observed. Criticizing this classificatory system can moreover be seen as denying the “common sense” underlying the apparent efficacy of such a culturalistic organization since specialists of lithic industries can indeed easily observe differences in tool types in different regions, and non-random recurrences of assemblages through time. Yet as Mesolithic archaeology progresses in areas between the eponymous regions, these supposed intermediary zones reveal other dynamics that differ significantly from the outdated model of expansions starting from a center and diffusing toward the always indebted peripheries. The results of recent excavations and surveys clearly call for a reworking of this “cultural geography”.

A few of the postulates of these studies are also quite embarrassing... Though in 1978 J.-G. Rozoy (1978) insisted on taking into account multiple elements to describe archaeological entities, later approaches restricted their focus to arrowheads (Thévenin, 1995; Ghesquière, 2012). A small part of the human activities, and probably only a part of the Mesolithic society, is thus overemphasized in current models. In addition, this spatialization of stylistic “signifiers” incorporates a concept of territorial continuity and more or less strict notions of borders. Shifts in meaning are thus inevitable, and the distribution of an object type will thus become the cultural or ethnic signature of a population, without regard for the modes of diffusion of an object other than this display of identity (exchanges, trophies, functional adaptation of a tool). The Mesolithic culture thus begins to resemble a nation-state, especially when audacious lines and amorphous bubbles on maps emphasize – at least unconsciously – astonishing parallels between social, political and cultural entities, which obviously have nothing to do with each other. If we agree to broaden our perspectives to include materials other than stone, such as bone, techniques such as indirect percussion, procedures such as blade fracturing via notches (the microburin technique), behaviors such as the use, or not, of specific stones, or manners of burying the dead or organizing habitations, the mapping of cultural features becomes seriously muddled! Even if hunter-gatherer societies had territorial practices, they were certainly different from those of nation-states and their reflection in material remains is probably more varied than what we proclaim in studies of the Mesolithic in France: arrowheads are not battle flags, they were used and diffused according to specific rules whose homogeneity through time we can only presume.

The last obvious limitation of this classic manner of practicing cultural geography is that these entities are presumed to evolve in broad supraregional phases, and here as well, the simplified system currently adopted is far from reliable. It is largely inspired by the work of A. Thévenin, conducted during the 1990's and based on variations in the shapes of some arrowheads, both in space (at different scales) and time. He proposed the following sequence: during the Early Mesolithic, isosceles triangles; the Middle Mesolithic, scalene triangles; the Late Mesolithic, trapezes with abrupt retouch; and the Final Mesolithic, trapezes with flat retouch and so-called “evolved”

arrowheads. This evolution was then linked with palynological chronozones: the early phase of the Mesolithic thus developed in conjunction with the Preboreal, the middle phase with the Boreal, and the late and final phases with the Atlantic. Whether intended or not, this is to say that weapon elements mutated in conjunction with climatic changes (the contrary being a hypothesis that no one would dare put forward...). This weak consensus poses significant problems:

- segmenting a civilization and historic phenomena based on variations in the length of a truncation (isosceles vs scalene), or based on the development of a hafting technique (abrupt vs inverse retouch) can no longer be accepted. These criteria concern only an infinite part of the technical systems currently known and strongly limit our perception of human complexity;
- defining *a priori* three or four evolutionary phases, rather than seven or twelve, requires explanation;
- correlating minor typological changes in hunting weapons with climatic changes is dangerous from a conceptual point of view.

Envisioning the origin and development of cultures from a different perspective, based on their material remains, is a valid research objective requiring that we clearly distinguish the tools of analysis employed. We must also detach ourselves from evolutionary, economic and paleo-environmental suppositions in order to focus on the information contributed by each method and each analysis tool, as the mixing of categories can be very detrimental. We can begin this process of restructuration by taking a detour into the history of research in order to exhume other perceptions of these cultural phenomena and other denominations, which are always instructive and sometimes foundational.

## 2 - Tardenoisian vs Sauveterrian: the relevant debate of our predecessors

### A - Discontinuity

After the notion of an intermediary period between the Paleolithic and Neolithic laboriously emerged at the beginning of the 1880's, under the instigation of G. de Mortillet, researchers began to focus on the distinctions that could be made concerning this period. The industries of the first postglacial millennia were qualified as a degraded form of Paleolithic and remained in the shadows until the commanding officer F.-C. E. Octobon (1881-1969) extracted the concept of a Tardenoisian period from this amorphous gangue in publications realized between the two world wars ("the Tardenoisian question"). He did not change his mind on the nature of the process, which according to him could be attributed to a mix of intruding populations and evolutions continuing into the heart of the Neolithic (Octobon F.-C. E., 1921, 1926). In his mind, this was a short phase represented by small camp sites, which would be diluted upon contact with the first occupants.

In 1928, L. Coulonges distinguished a new technical entity based on his excavations in the eponymous district of Sauveterre-la-Lémance; the stratigraphies revealed by this work led him to situate this new entity before the industries with trapezes (Coulonges L., 1935). Coulonges, and then F.-C. E. Octobon, adhered to a triple division of the Tardenoisian, beginning with a pure phase (Tardenoisian I), followed by a Mesolithic/Neolithic phase (Tardenoisian II), and gradually dissolving into the Neolithic (Tardenoisian III). While L. Coulonges thought that the newcomers brought the Neolithic fauna with them, F.-C. E. Octobon was more cautious and proposed different possibilities, including that sheep and goat may have been present at the same time as hunted fauna.

The hypothesis that either the entire Mesolithic, or the Tardenoisian alone, originated in Africa was largely accepted by the Prehistorians in the early 20<sup>th</sup> century, with the idea that a new settlement of the continent was made possible by the warming climate. Though he is not familiar with the African continent, S. K. Kozłowski still retains the possibility of a migration from south to north when he speaks of “pushes” (also called intercultural trends during the 1970’s and 1980’s) during the 8<sup>th</sup> millennium BC for the Sauveterrian, and then during the 7<sup>th</sup> millennium for industries with trapezes (Kozłowski, 2009). This time, however, the subject was technical trends, instead of human beings: in any case, migration hypotheses are no longer fashionable in archaeology, perhaps being diluted by the racial archaeology promoted by the national-socialist ideology.

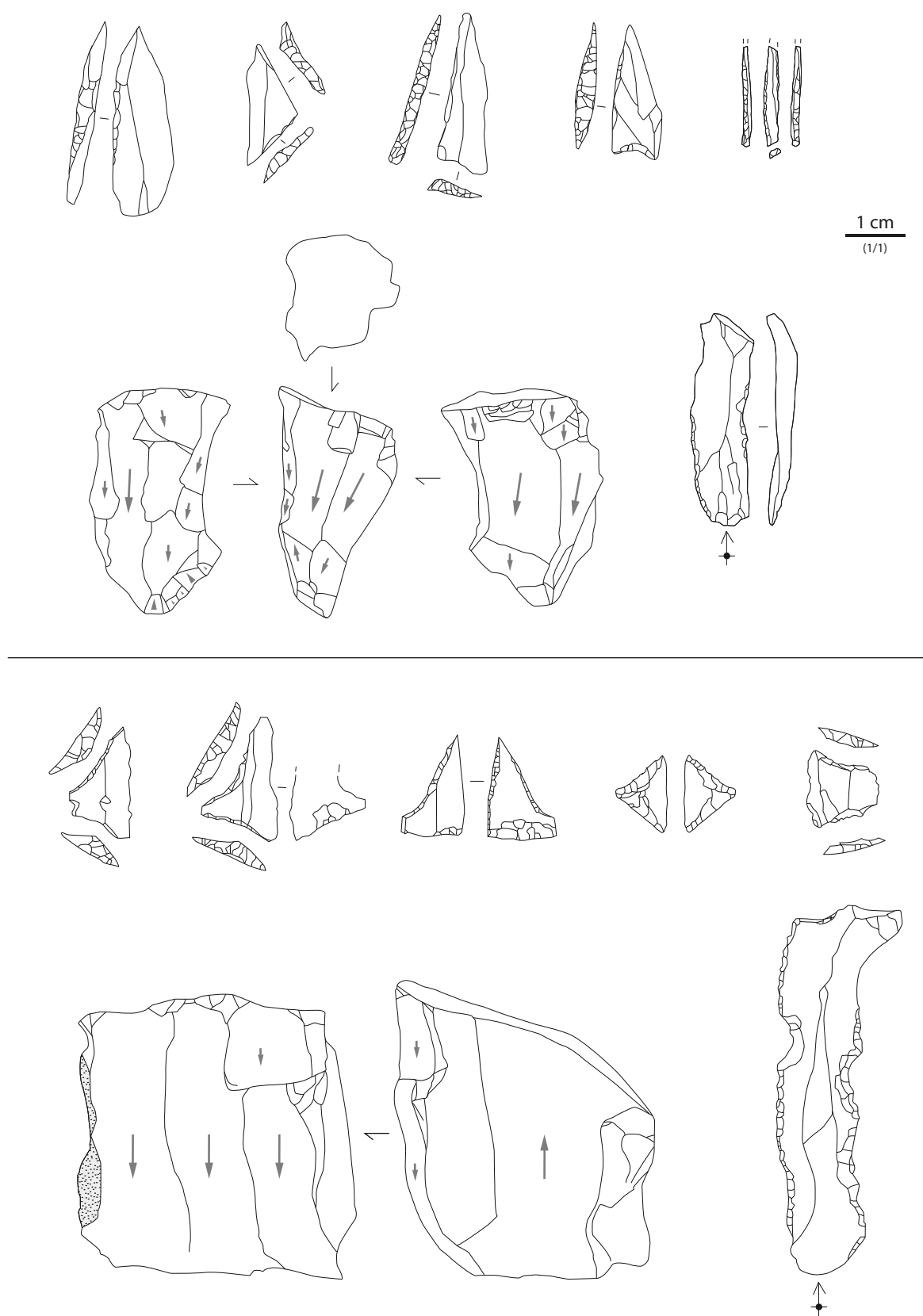
Seemingly independent of each other, C. Barrière in 1954 and J. G. D. Clark in 1958 proposed syntheses of these trapeze industries at the continental scale. The former continued to support an internal structuration of the Tardenoisian similar to that developed by L. Coulonges or F.-C. E. Octobon, but insisted that the origin of these industries was in southwestern France, arising from a Sauveterrian substrate. He again proposed this hypothesis in a publication of the excavations at Rouffignac in the early 1970’s. For the latter author, this dispersion of functionally innovative weapon elements could reflect the extension of a trend that was a precursor to the Neolithic, accompanied by the development of livestock farming in some regions, and arising from several possible sources.

## B - Continuity

Until the mid-20<sup>th</sup> century, it was thus clear to archaeologists that lithic industries made on regularized blades followed industries judged to be more rustic and that this was the most remarkable archaeological feature of this period. The true epistemological rupture must be credited to J.-G. Rozoy, who gave regional definitions to the preceding notions from the perspective of a cultural mosaic and continuous, long term development (Rozoy, 1978). The emergence of new, more regularized flaking modalities and trapezes would thus correspond to a very gradual intercultural phenomenon with an uncertain geographic origin, which would have occurred at around 6 600 BC. In such a continuum, the technical distinction of the Late Mesolithic was diminished. The idea of a major change returned a few years later in the writings of J. Roussot-Larroque who saw in the Tardenoisian of L. Coulonges and F.-C. E. Octobon, the reflection of an autochthonous Neolithization process known as the “Roucadourian cycle” (Roussot-Larroque, 1977), the archaeological foundations of which were later strongly criticized (Marchand, 1999).

In the current geographic zone of France, there are in effect two broad groups of lithic industries that succeed each other in time (figure 1). Earlier researchers named them the Sauveterrian and Tardenoisian, or component S and component K. J.-G. Rozoy distinguished major flaking styles, the most remarkable being the Coincy and Montbani styles: in this last point resides the very essence of the distinction that we propose between the First and Second Mesolithic. In France, the use of the terms “Early” and “Late” could be confused with the former system and we therefore proposed in 2004 to designate these entities as the First and Second Mesolithic (Marchand, 2008). This distinction evidently corresponds to that between the Early Mesolithic and Late Mesolithic used in northern Europe, and we thus use these terms in this English language publication. It will now be useful to understand the criteria underlying this distinction, before considering the new questions it raises for research.





**Figure 1** - The lithic industries of the Late Mesolithic (below) are distinguished from those of the Early Mesolithic (above) by laminar flaking using pressure or indirect percussion techniques, trapezoidal bi-truncations, cores with frontal flaking and notched blades (CAD: G. Marchand).

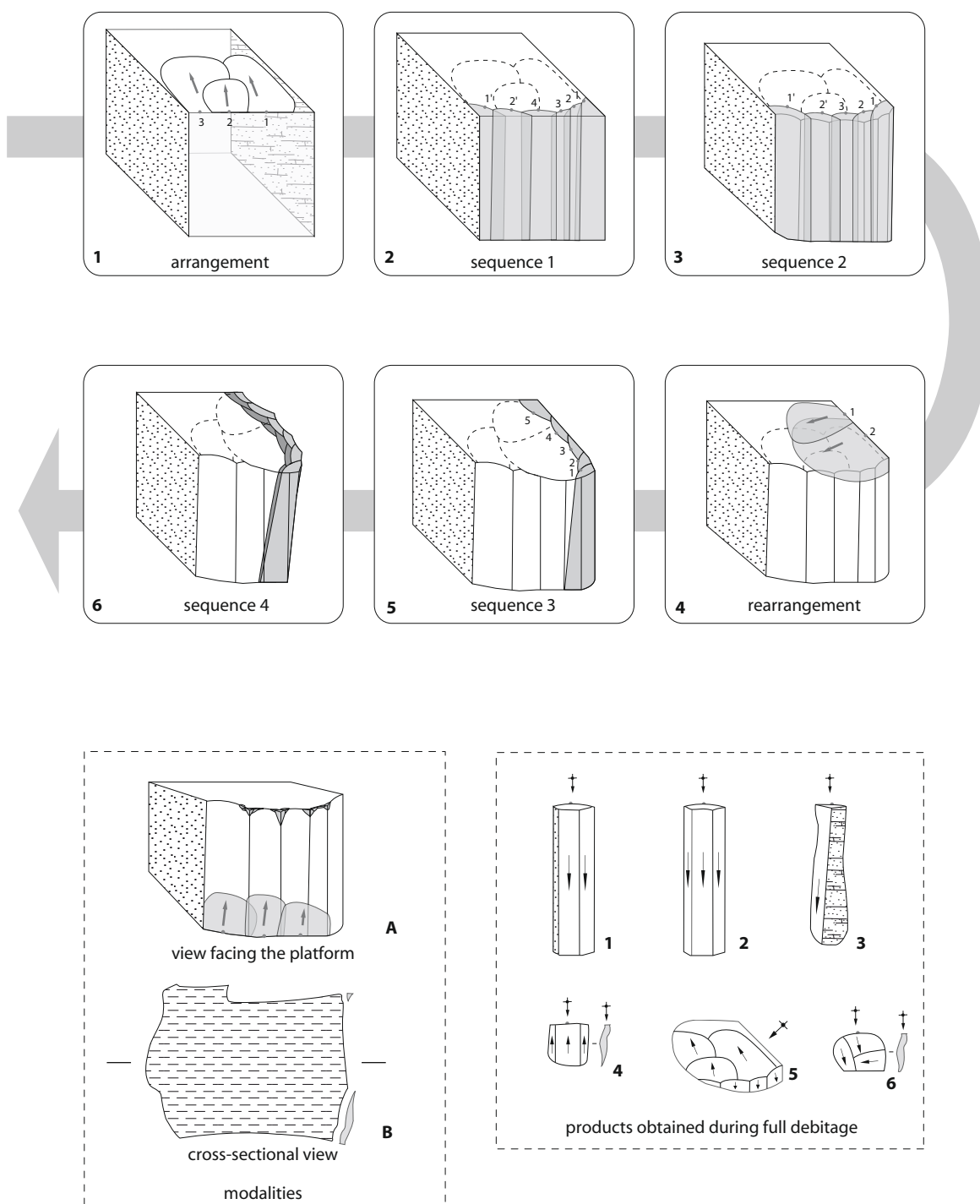


### 3 - Early and Late Mesolithic: a mainly technical distinction

#### A - Flaking techniques and methods

During the Early Mesolithic, the generalization of flaking with a stone hammer was accompanied by the manufacturing of short bladelets with sinuous ridges. Very diverse flaking methods were employed; the differences concerned the initial volume (large flakes, block fragments, raw blocks, alluvial cobbles), the number of striking platforms (most often one principal one, less often two or three), and the extension of the flaking onto one of the sides of the core or around its perimeter. Many types of direct hard hammer percussion were employed, with the use of a “soft stone” (soft limestone or sandstone) at the very beginning of the Early Mesolithic, and a “hard stone” (flint, granite, quartzite, quartz, etc.) for the rest of the period. This question of the nature of the hammerstone used was highly discussed first for the Final Paleolithic in the Paris Basin (Valentin, 2000), and then more recently for the Mesolithic (Paris *et al.*, 2012), with a convincing demonstration of changing practices through time. While this distinction is valid for a sedimentary basin where sandstone is often the available stone with an ideal tenacity, the question remains open for other geological substrates, where definitions of the rather imprecise notions of “soft stone”, “semi-soft stone” and “hard stone” will surely be more varied. In the Centre-Ouest of France and Brittany, only direct hard stone percussion has been identified (Michel, 2009; Nicolas *et al.*, 2012). The striking zone also underwent changes, such as in the abrasion or not of the lip, the angle of the striking platform and the movement of the hammer (internal or marginal). These parameters are obviously not independent: an inclined platform (thus with an acute angle) will incite a circular percussion movement and a strengthening of the striking zone by careful abrasion of its protruding lip. All of these variations in volumetric conceptions, techniques, modalities and procedures most often correspond to collective and normalized practices, and thus to stylistic territories that have rarely been designated as such, while maps showing the distribution of different arrowhead types abound...

During the Late Mesolithic, the flaking objective was to manufacture thin (in section), wide blades with parallel edges and a straight profile. In all known geographic zones, the core flaking surface forms an acute or orthogonal angle with the two sides of the core, hence the name *table resserrée* (narrowed surface) (figure 2). The flaking advances from the front, meaning that volume is reduced not by turning around the core, but by parallel planes. When the flaking is finished, the convexities are reduced and the general morphology is flat. The striking zone is relatively narrow (four to six blades wide) and can thus be created on many types of supports: blocks, slabs, flake edges or small cobbles. Though this volumetric concept is the easiest to implement and is adaptable to many support types, there is no strict technical determinism; on other continents, flaking methods with peripheral extensions (also called circular or conical) were preferred in technical systems in which regular blades were obtained by pressure flaking or indirect percussion. We can nonetheless remark that with this method of frontal flaking on a narrow surface, it is easy to obtain blades with regular ridges and moderate convexity, which are wide and, especially, thin in section, perhaps explaining its success in Late Mesolithic flaking conceptions. Blades were detached by the pressure technique in the Castelnovian in Provence (Binder, 1987) and around the western Mediterranean basin (Perrin *et al.*, 2009). Further north, indirect percussion (with a punch) was frequently used in the Centre-Ouest (Marchand, 1999, 2009), the Paris Basin (Allard, 2007), the Jura (Séara *et al.*, 2002) and Portugal (Marchand, 2001). Both techniques enable a precise application of force on a small surface and thus better flaking control. The preparation of the striking zone is sometimes accompanied by micro-faceting, such as in the Centre-Ouest, the Jura and Portugal. This procedure probably helped to stabilize the punch, but it is apparently not indispensable and is very rare, or even absent, in other industries.



**Figure 2** - Illustration of the laminar flaking sequences of the Late Mesolithic at the site of Essart in Poitiers, showing the sequences (above) and procedures sometimes used (below left) and the products obtained (below right). A narrow volume is selected, framed by a cortical side or a fissure or a previous flaking surface; the striking platform is created by the detachment of successive flakes, and the initial laminar flaking begins (sequence 1: the products retain on their upper face the traces of the anterior history of the volume), full laminar flaking phase (sequence 2: the flaking sequences continue, most often from a frontal direction), maintenance of the striking platform by the detachment of flakes and partial rejuvenation tablets, initiated from the future flaking surface (the new flaking surface is orthogonal to the first one), initial laminar flaking (sequence 3: the products retain the marks of the anterior history of the volume on their upper face), full laminar flaking phase (sequence 4: with a frontal advancement and a convergent rhythm for the removals; the sequences can succeed each other) (CAD: G. Marchand).

From the Early to the Late Mesolithic, we cannot speak of a revolution in flaking methods in comparison to the amplitude of changes that occurred with the later Neolithization. During the Mesolithic, the preparation of volumes never required great skill since the blade detachment surfaces could be easily created on appropriate convexities with no initialization crest. In both the Early Mesolithic (Guilbert, 2003) and Late Mesolithic (Marchand, 2009; Séara, Bostyn, 2009), large blocks were managed by heat or mechanical fracturing. Flakes were produced in addition to thin blades and bladelets, but the latter were made through integrated *chaînes opératoires* (reduction sequences). There was very little core maintenance during flaking, most often limited to distal neo-crests, lateral removals to maintain the transverse convexities, or the creation of a second striking platform to maintain the longitudinal convexities. Throughout the Mesolithic, the distribution of blanks intended to be retouched into tools not drastically change either. The question of an autonomous production of blades must be addressed, but it concerns facies in both the Early (blades with basal notches in the 9<sup>th</sup> millennium in middle of France) and Late Mesolithic (backed blades from the 6<sup>th</sup> millennium in southern Brittany). The technical distinction between the lithic productions of the Early and Late Mesolithic is significant only in the architecture of the core and the techniques used, as well as in the most emblematic tools, arrowheads.

## **B - New tools, new functions?**

Triangles, points, backed bladelets and segments are all present in the Early Mesolithic in the zone that we address here. Trapezes appear in the Late Mesolithic. We sometimes find them in association with the preceding types, but it is difficult to resolve the fundamental question of how this innovation was integrated into the previous tapestry due to rather mediocre sedimentary contexts, which could imply the mixing of non-contemporaneous industries.

The development of notched blades is another significant feature in the changes that are observed in Mesolithic tools during the Late Mesolithic. Also known as Montbani blades, we find them associated with trapezoidal arrowheads in France, northern Italy (Broglia, 1975), Spain (Fortéa Pérez, 1973), Portugal (Roche, 1972; Marchand, 2001) and the Upper Caspian of the Maghreb (Camps, 1975; Camps-Fabrer, 1975). Recent usewear analyses show that these notches were more likely made by bending retouch or percussion than by use, and that they were used to scrape mostly vegetal materials (Gassin *et al.*, 2013). The other tools are not highly standardized, making it difficult to compare them with tools from the Late Mesolithic.

## **4 - From technique to history**

### **A - A phenomenon in space and time**

The temporal aspect of this distinction is apparently due to a diffusion of industries with blades and trapezes. Today we have a clearer picture of it thanks to a research program led by T. Perrin (Perrin *et al.*, 2009). This work showed that a development in southern Italy at around 6800 BC – itself perhaps linked to environmental and social changes in Tunisia (Rahmani, 2003) – was followed by a rather rapid expansion leading to a distribution around the periphery of the Mediterranean between 6600 and 6200 BC, and an arrival on the Atlantic shores a bit later. Its ultimate epigones would travel as far as Germany and Denmark. To the north, around the Baltic Sea, the frequent use of the pressure technique on conical cores to obtain long blades reflects other cultural dynamics originating from the Russian plain as early as the 9<sup>th</sup> millennium BC (Sørensen *et al.*, 2013), that would eventually be mixed with the dynamic described here. In Central and

Eastern Europe, a similar extension of technical innovations very different from those developed in the west is thought to have occurred, also with a dynamic from the south to the north, but with a much less reliable chronology (Kozłowski, 2009: 526). S.K. Kozłowski thus distinguishes the “Castelnovisation A” in Western Europe from the “Castelnovisation B” in Central Europe. These diffusions would have followed favorable routes, the first by the Rhone Valley, called the “*Via Imperialis*”, and the second by the “Tartar Road”, from the Black Sea to the Vistula Basin.

Within the same geographic zone associated with industries with blades and trapezes during the Late Mesolithic, there are sometimes more than two groups of Mesolithic technical traditions. There are three, for example, in the southern Pyrenees:

- 10 600-8 200 BC: micro-bladelet tradition;
- 8 200-6 500 BC: horizon with notches and denticulates;
- 6 800-5 500 BC: industries with geometric arrowheads.

Industries with flakes and choppers interrupt the “leptolithic” trend in technical traditions in both Spain (Fortéa Pérez, 1973; Alday, 2006) and Portugal (Araújo, 2012), and have no parallel with the traditions known in France. North of the Seine and up to the north of the Rhine, the industries with “*feuilles de gui*” (“mistletoe leaf” arrowheads) could represent a technical tradition that would have existed between the Early and Late Mesolithic, between 7 200 and 6 600 BC (Ducrocq, 2001), but its nature remains to be clarified. Neither of these cases has consequences for the industries with trapezes, but rather for what occurs before, and therefore for the foundations of the transition. The Early and Late Mesolithic thus consist of technical distinctions that we would elsewhere refer to as techno-complexes or techno-groups, existing in a very specific history and place.

## B - The terms of the transition in France

In France, regular blades and trapezes suddenly appear at around 6 600-6 500 BC in levels 15 and 16 at Baume de Montclus (Montclus, Gard; Rozoy, 1978; Darmedru, Onoratini, 2003; Perrin *et al.*, 2009). This phenomenon concerns only symmetric trapezes with abrupt retouch, like on the Italian peninsula. More generally for the southern half of France, the work of D. Binder (1987) and N. Valdeyron (2000) favors models of a gradual transition.

In Atlantic France, three small sites on the Pointe Saint-Gildas (Préfailles, Loire-Atlantique) yielded an association of large scalene triangles and asymmetric or symmetric trapezes, accompanied by the soft hammer percussion technique and a semi-turning flaking organization more similar to those of the Early Mesolithic than the Late Mesolithic (Marchand, 1999; Dupont *et al.*, 2007). The radiocarbon dates, which are either very early or from stratigraphic locations that were poorly located or disturbed by the “oceanic reservoir effect”, appear to indicate an attribution to the mid-7<sup>th</sup> century BC. In the marshes of the Gères Valley, in Surgères (Charente-Maritime), the site of La Grange also yielded an association between an industry with asymmetric or symmetric trapezes with abrupt retouch and thin scalene triangles, found in compacted sedimentary levels (Laporte *et al.*, 2000). Finally, a fireplace excavated by R. Joussaume in the Abri des Rocs at Bellefonds, in the Seuil du Poitou, contained trapezes and a wide scalene triangle (Marchand, 1999; Michel, 2011). This fireplace was dated to 6 500-6 200 BC. These assemblages clearly contribute to our knowledge of the emergence of industries with trapezes in north-western France by showing us that they culminated in the mid-7<sup>th</sup> millennium BC. Unfortunately, their respective sedimentary limits prevent us from delving further into the nuances of the question.

## C - The invisible environmental influence

Though there is no doubt that the distinction between the Early and Late Mesolithic is cultural, it is relevant to look for possible links between climatic variations and the diffusion processes of their technical objects across Western Europe. From the start, the Atlantic chronozone was designated as contemporaneous with the development of trapeze industries, but the regional variants of corresponding ecosystems are particularly broad, extending from the Mediterranean zone to the shores of the Baltic. There are thus a multitude of different environmental adaptations, requiring analyses to be fragmented. Another climatic event cited by some, the abrupt cooling of 6 200 BC, is sometimes considered as the initiator of this movement, though without explaining its relationship to the tools or flaking methods at this time. Meanwhile, our current knowledge indicates that the Late Mesolithic emerged well before this cold snap, but it is possible that the rather brutal environmental change accentuated the social and technical mutations that developed in France during the second half of the 7<sup>th</sup> millennium. Though it is logical to suppose that an event such as this could have had an influence on food resources, and thus on human migrations, they would forcibly have been different depending on the geographic zone since while the Mediterranean basin was affected by an aridification, the shores of the northern Atlantic experienced an increase in humidity and decrease in temperatures.

## 5 - Beyond the techniques

As observed by our predecessors, the development of industries with trapezes and regular blades is clearly distinct from that of earlier industries. Its intrusive nature appears undeniable and a wave of diffusion from the south-east to the west can be shown. Claims for domestic animal remains in some Mesolithic sites have become less frequent with the progress of new studies of the archaeological levels concerned. It now appears certain that hunting is the only activity responsible for the faunal spectra found in the habitat sites of the Late Mesolithic. A stronger dependence on aquatic environments, river or sea, seems to have developed, but we must be cautious until this claim can be supported by large-scale geomorphological analyses. In Western Europe, we see the emergence of a system associating technique, style and function, consisting of the manufacturing of wide and regular blades using indirect percussion or pressure flaking techniques, the use of trapezoidal arrowheads in association with a new hafting method, and notched blades, all of which are related to new functions. Such a broad technical mutation incites its use as a major discriminating factor for understanding evolutionary processes at the supra-regional scale. This is just a first step, now calling for other reevaluations of the chrono-cultural classifications currently in use.

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**Grégor MARCHAND**

CNRS - UMR 6566

Centre de Recherche en Archéologie, Archéosciences, Histoire (CRéAAH)

Laboratoire d'Archéosciences - bâtiment 24-25

Université Rennes 1 - CS74205

35 042 Rennes cedex, FRANCE

gregor.marchand@univ-rennes1.fr

