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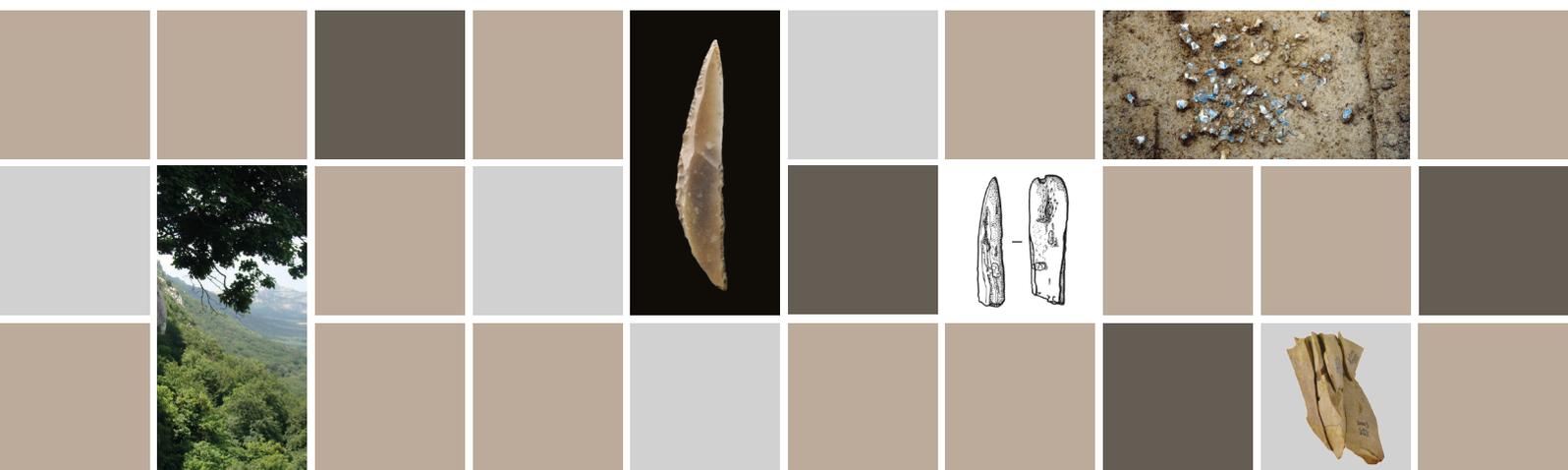
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**New Insights into Mesolithic Cultures**



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## WHAT ROLE DOES THE MESOLITHIC SUBSTRATUM PLAY IN THE NEOLITHIZATION OF THE GRANDS CAUSSES?

Study of the Lithic Industry of Combe-Grèze  
(Cresse Commune, Aveyron)

Elsa DEFRANOULD

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## WHAT ROLE DOES THE MESOLITHIC SUBSTRATUM PLAY IN THE NEOLITHIZATION OF THE GRANDS CAUSSES?

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Elsa DEFRANOULD

### Abstract

*In the Grands Causses region, south of the Massif Central, there are a few sites attributed to the original Early Neolithic, (6<sup>th</sup> millennium). Due to their position at the edge of the region in which the southern Cardial emerged, they play an important role in debates concerning the Neolithization of southern France. Were these autochthonous sites with a production economy invented without influence from the Cardial domain? Or were they occupied by acculturated Mesolithic groups? Were their facies peripheral to the Cardial?*

*The site of Combe-Grèze, excavated in the 1970's by Jean Maury and Georges Costantini, was used like the others to develop these different theoretical models. For this reason, it appeared useful to reexamine the lithic assemblage of this site with the aim of distinguishing the different techno-typological entities based on a reconstruction of their 'chaînes opératoires' (reduction sequences). This study can be considered as an additional element of response to questions concerning the borrowing and transmitting of technical know-how between the horizons of the Second Mesolithic and the Early Neolithic. It is also intended to explore the role of the Mesolithic substratum in the emergence of a production economy in this region that is peripheral to the Mediterranean zone considered to be fully Neolithic.*

### Keywords

*Neolithization, Aveyron, Combe-Grèze, mixed facies, lithic industry.*

The term 'Neolithization' is generally seen to designate all of the historic steps in the transition from a predation economy to a production economy, from the last hunter-gatherer-collector communities to the first farming societies. In archaeology, we can perceive this process through the observation of changes in subsistence economies and material culture. In this manner, analyses of the variability of lithic industries contribute to our understanding of this historic process over the long term since they were associated with both the last predation societies and the first agro-pastoralist communities, in contrast to pottery, which most often does not appear until the full Early Neolithic.

The Early Neolithic in the French Mediterranean zone (5 800-4 500 cal BC) can be divided into three distinct entities: *Impressa*, Cardial and *Épicardial*, which are not articulated with each other in a strictly chronological manner: though one succeeds the other, it is by phenomena that are still poorly understood, indicating a nonlinear evolution of the settlement of these regions by the first agriculturalists (Manen, Guilaine, 2010). In the French Midi region, we distinguish three main

phases in the settlement and development of the first farming societies. This process began with a first occupation of the coast, believed to have resulted from the arrival of pioneers from the Italian coasts through cabotage (the *Impressa facies*), followed by a larger territorial domination and expansion toward the Rhône Valley and the western Languedoc region, and finally, a second and later wave of settlement toward the inland regions, in particular the Massif Central.

One of the questions underlying interpretations of the Neolithization process concerns the role of the Mesolithic substratum in this phenomenon. What became of the last hunting societies? Were there interactions between the Mesolithic and Neolithic spheres? To detect possible borrowings and transmissions of technical know-how between these two worlds, it is thus useful to take a long-term approach, and thus to explore the material culture productions of the Second Mesolithic. However, the core region of the southern Early Neolithic has yielded only fragmentary data on these contexts (Perrin, 2014). On the contrary, the margins of this zone have yielded numerous sites from the Second Mesolithic, enabling us to address this question.

## 1 - Regional context around the end of the 6<sup>th</sup> Millenium

The southern foothills of the Massif Central, and particularly the Aveyron department, have yielded numerous sites at which the material culture remains are different from those found in the Mediterranean Early Neolithic sphere *sensu stricto*.

In this region, a theoretical model of autochthonous Neolithization was developed in the 1970's by Julia Roussot-Larroque based on the site of Martinet (Lot-et-Garonne) and Level C of Roucadour in the Lot department (Roussot-Larroque, 1977, 1990), and extended to the Grands Causses region by Gaston-Bernard Arnal (Arnal, 1987, 1995). These same authors then extended this cultural facies, known as the Roucadourian, over the entire peripheral zone of the southern Early Neolithic. The sites used to support this model were thought to associate a so-called crude pottery type that had little decoration and was poorly fired, with a lithic industry typical of the Second Mesolithic, leading the authors to identify an early and autonomous Neolithization process in this region. These continental facies would thus be specific in their double composition, having both typical Mesolithic and Neolithic features. The "mixed" nature of this industry was historically considered as a reflection of acculturated hunter-gatherers.

The Combe-Grèze rock shelter is located in the eastern part of the Aveyron department, on a sinkhole on the Causse Noir plateau. The site was discovered by Marcel Lacas, who excavated the inside of the diverticulum in the early 1960's. Three occupations were recognized at this time: "Chalcolithic", "Late Tardenoisian" and "Classic Mesolithic" (Maury, Lacas, 1965). Jean Maury and Georges Costantini then explored the outside of the rockshelter during three field seasons between 1979 and 1981 (figure 1). They described a stratigraphy 2 meters deep (figure 2). Levels 1, 2 and 3 were nearly sterile, or at least had very few artifacts and could not be considered as undisturbed archaeological levels. They attributed Level 4 to the Early Neolithic. This level yielded the majority of the artifacts and contained associated pottery and lithic artifacts. Level 5 was much more cautiously qualified by the excavators as "Protoneolithic" (Costantini, Maury, 1986), following the definition of Jean Guilaine at the time as a period "following the true Mesolithic, immediately before the Cardial. The term Protoneolithic can also be understood in economic terms given that the presence of *ovicaprids* might suggest a possible orientation towards breeding and thus a process of Neolithization" (Guilaine, 1979: 124-125). Finally, Level 6 is composed of sterile sand and was excavated to 80 cm in depth, where the Bathonian substratum was reached.

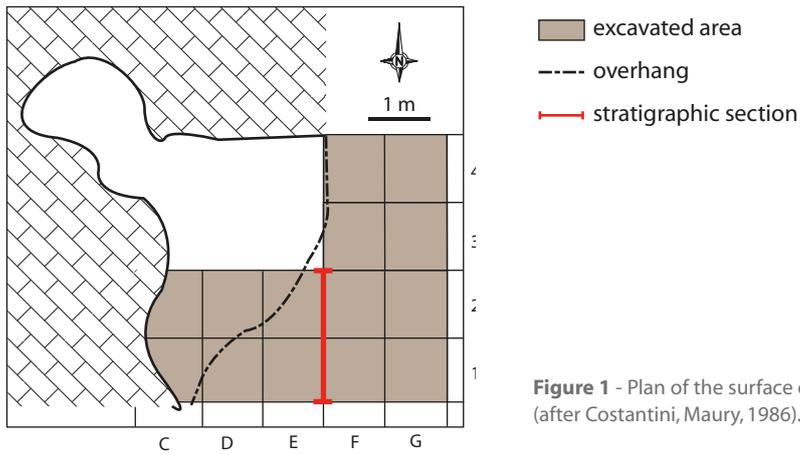


Figure 1 - Plan of the surface excavated between 1979 and 1981 (after Costantini, Maury, 1986).

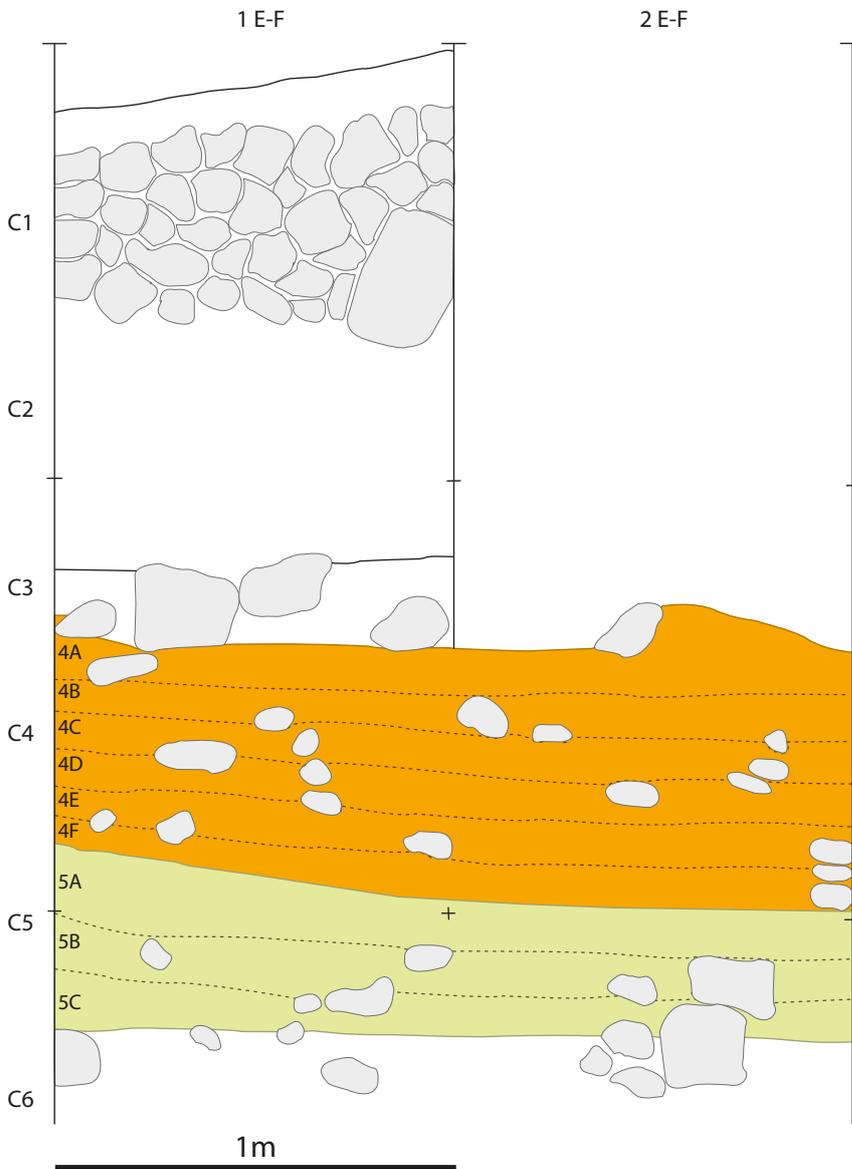


Figure 2 - Stratigraphy determined during the excavations by Costantini and Maury (after Costantini, Maury, 1986).

Levels 4 and 5 were distinguished only by a difference in sediment colors and the site was excavated by arbitrary levels of 10cm, which in no way reflects the true sedimentary configurations. We can thus justifiably doubt the reliability of the stratigraphy identified during the excavation. This is why this study did not at first take into account the spatial positions of the artifacts, and there was no discussion of their altitudes until later.

We have only one radiocarbon date for this site, obtained during the first excavation seasons in the 1960's, for a level attributed to the Late Tardenoisian:  $6\,420 \pm 180$  BP (Gif-446), situating this level between 5 600 and 5 200 BC in calibrated dates (calibration at  $1\sigma$  with the IntCal09 curve).

The zooarchaeological study realized by Thérèse Poulain indicates the presence of sheep and pig, though the levels in which these domestic faunal remains were found in majority are not stated. Moreover, these remains represent “*between half and one third of the fauna*”, despite a continuation of intensive hunting practices (Costantini, Maury, 1986: 450). No vegetal macro-remains were identified, preventing us from knowing if agriculture was practiced. Most of the recovered pottery fragments were found in Level 4. A recent study of the pottery manufacturing sequences (*chaînes opératoires*) at Combe-Grèze seems to indicate a high skill-level for the production of vases, challenging the idea of acculturated and inexperienced potters (Caro, 2013).

## 2 - The *chaînes opératoires* (reduction sequences) present

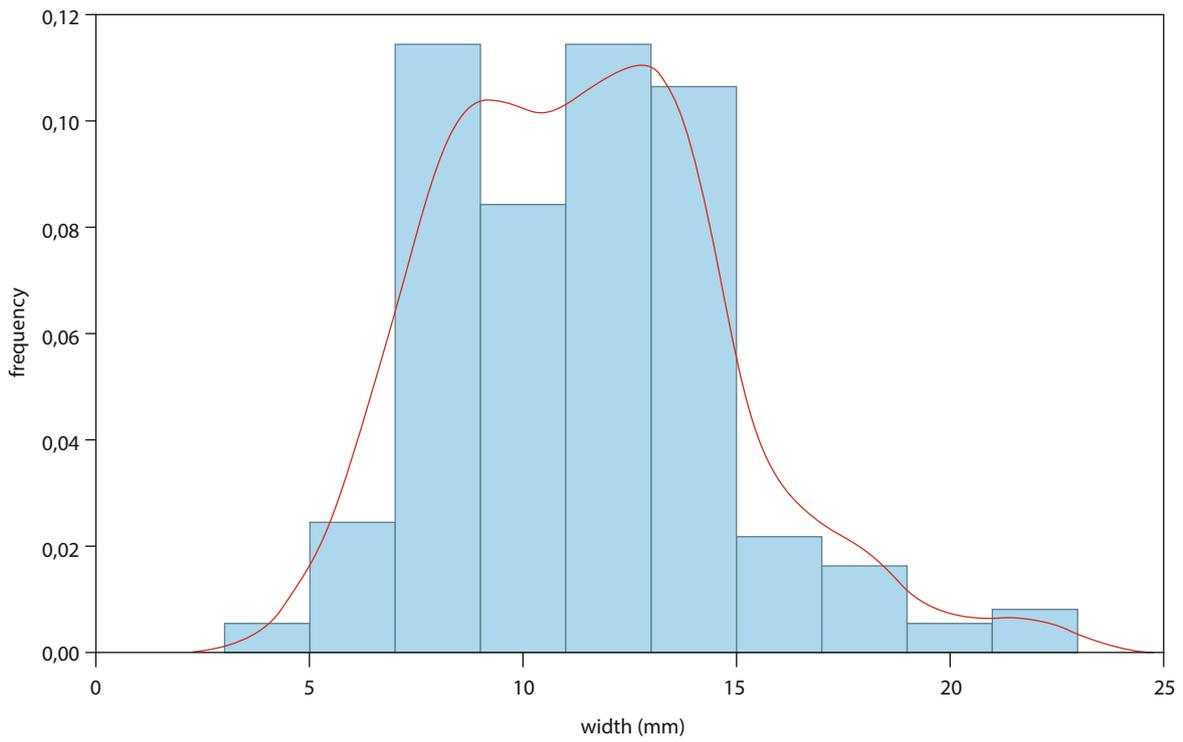
The aim of this study of the lithic industry is to distinguish the different techno-typological entities and reconstruct the *chaînes opératoires* present in order to ultimately propose a chrono-cultural attribution of the flaked stone industries of Combe-Grèze.

The large number of burned pieces made the petrographic analysis of many of them difficult, generally preventing us from identifying their nature, in which case it was only possible to distinguish between chert and flint. In any case, due to the dominance of Bajocian cherts in the assemblage (80% of the collection, taking into account the undetermined pieces), we chose not to divide the industries in function of the different raw materials used, but to rather consider the assemblage as a whole, given that siliceous materials other than chert were rarely used.

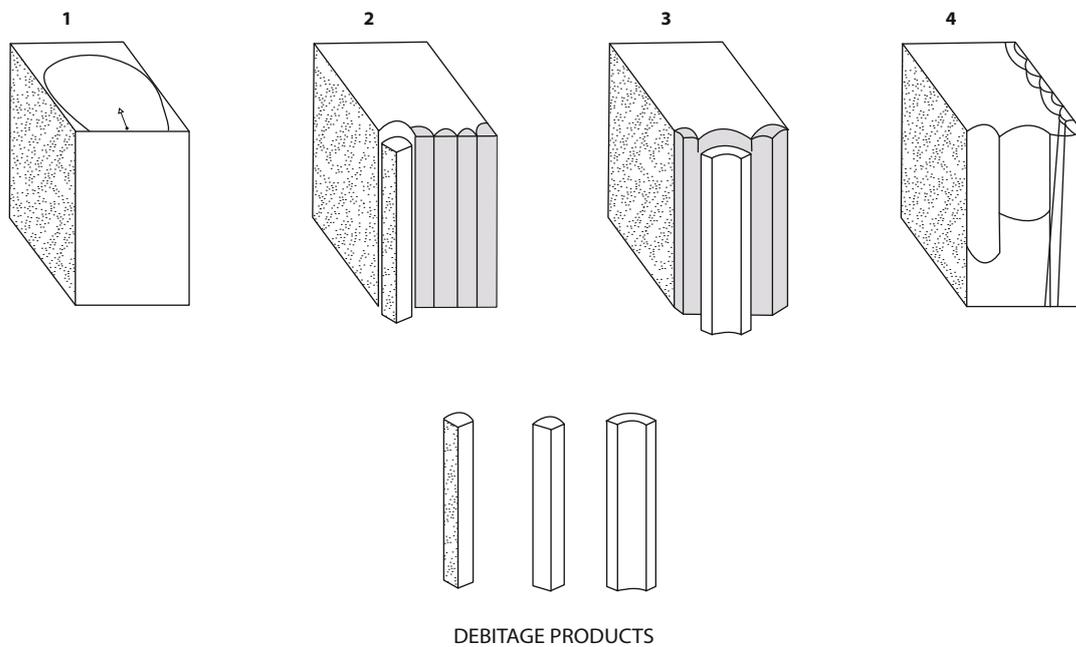
The great majority of the assemblage corresponds to the manufacturing of blade blanks, detached by indirect percussion. We observe a bimodal distribution of the width of the pieces (figure 3), with part of the blank widths centered around 9mm and the other around 12-13 mm, the widest blanks most often having three surfaces. The differentiated production of two blade types thus enables the distinction of two different *chaînes opératoires*.

The first employs a core with a striking platform and unidirectional or bidirectional flaking (figure 4), according to the typology of Thomas Perrin for the study of cores (Perrin, 2001). The high number of blades with a natural surface suggests flaking on a restricted surface, thus on the narrow face of a block, which would be situated between two wide, natural surfaces. A variant of this *chaîne opératoire* may be suggested by certain features of the cores: once the first flaking surface is abandoned, a new flaking sequence is sometimes initiated on the wide face of the initial block, following the same procedure. The great majority of the products obtained display traces characteristic of indirect percussion, with deliberately plain or concave butts. In addition, there is no specific preparation of the impact point – no abrasion or removal of the overhang on the cores or blanks.

This type of flaking enables the detachment of wide blanks with parallel edges and regular ridges, sometimes with three surfaces. The relatively small number of blades with three surfaces, relative to the rest of the assemblage, is probably due to the narrow width of the flaking surfaces, which does not permit a serial production of this type of blank since it is frequently necessary to repair or maintain the flaking surface.



**Figure 3** - Frequency histogram of the widths of whole blanks using a frequency interval of 2 mm (in blue) and a density curve of these widths (in red).



DEBITAGE PRODUCTS

**Figure 4** - Diagram of chaîne opératoire #1. **Sequence 1:** conception and selection of a narrow volume. A natural surface serves as the striking platform or one is created by detaching a thick flake (hypothesized modalities for creating a striking platform). **Sequence 2:** initiation of a flaking surface. The blades obtained retain parts of the original stone surface on their upper face. **Sequence 3:** full-flaking phase, blade production. The narrow flaking surface explains the low number of blades with three surfaces. **Sequence 4:** variant of the method: after abandoning the narrow face, a second face is used and a new flaking sequence is initiated.

One of the uses of these wide blades (around 13 mm) could have been as blanks for geometric bi-truncations, also known as *flèches-tranchantes*, which have flat, direct retouch on their upper face, and are generally associated with the Early Neolithic (figure 5). Meanwhile, we must admit that these weapon elements are not really standardized and that only one or two specimens can be considered as true “Montclus Arrowheads”.

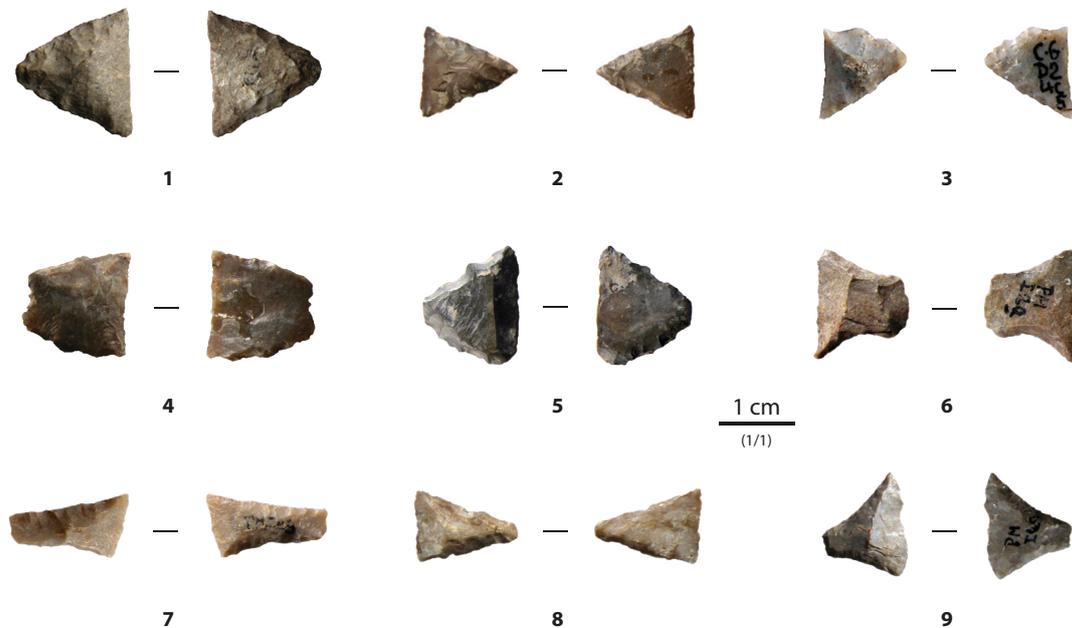


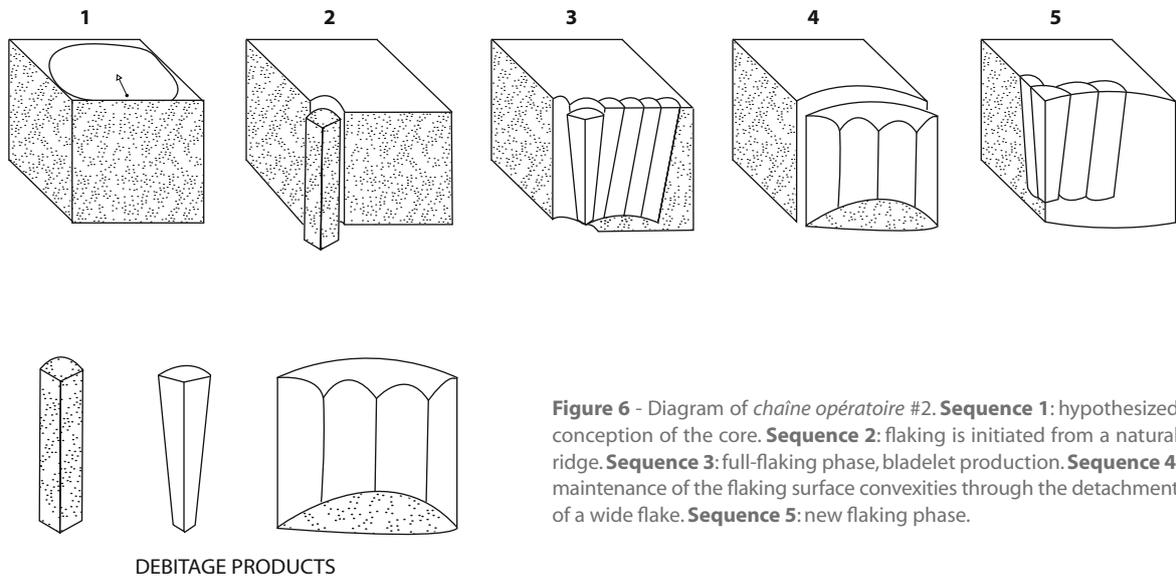
Figure 5 - Geometric bi-truncated weapon elements with an abrupt truncation and flat, direct retouch.

We can already affirm that the production of narrow bladelets (around 9 mm wide), with a triangular section and convergent edges, corresponds to a *chaîne opératoire* distinct from the preceding one (figure 6). It does consist simply of a reduction in the size of the pieces resulting from a reduction of the size of the cores at the end of the reduction sequence. Several arguments permit us to affirm this: first, the last removals from the cores with one striking platform, characteristic of *chaîne opératoire* 1, are always too wide; these cores are usually reduced until exhaustion and could not have been used to produce narrower blanks; and second, we observe a clear dichotomy between the dimensions of the two blank types, which would be impossible in the case of a single *chaîne opératoire* (the size would be reduced in a linear and continuous manner).

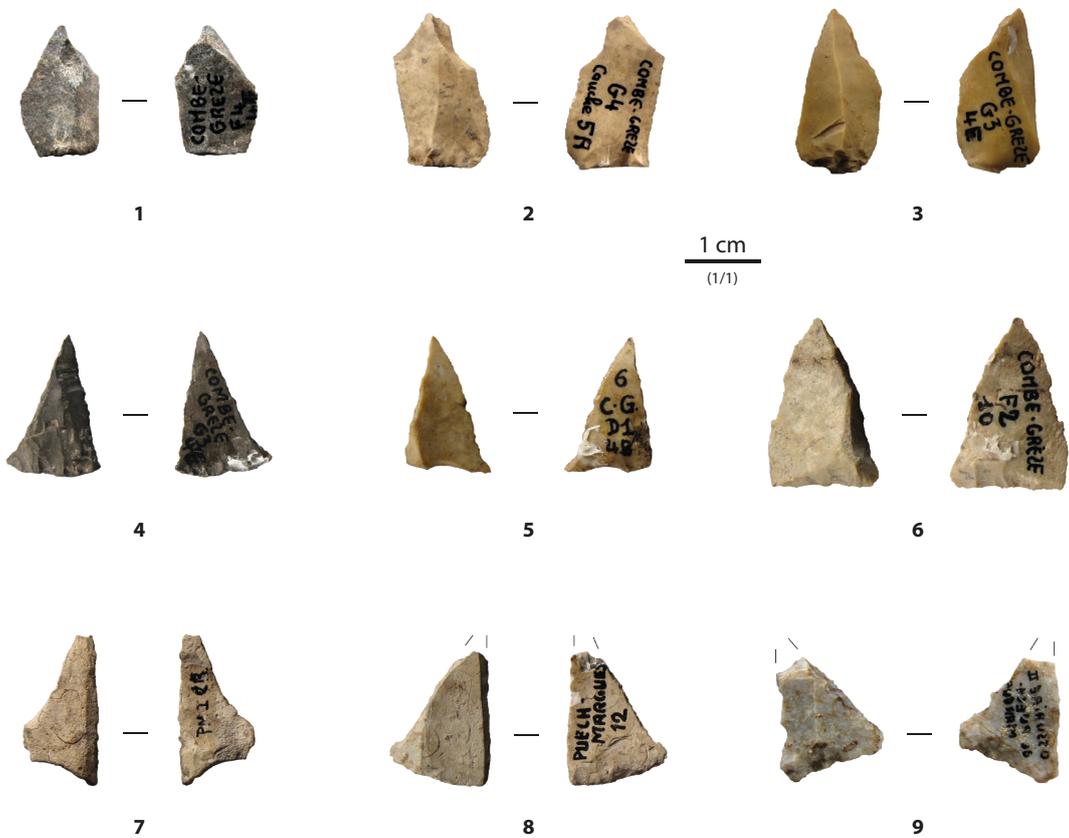
We did not observe any cores that appeared to correspond exclusively to this type of production. Therefore, our understanding of the flaking strategies, their rhythm, and the core preparations is considerably limited.

Wide, curved flakes with cortex on their distal part indicate a phase of maintenance of the flaking surface. Their function would have been to reduce the curvature of the flaking surface in order to produce blanks with a relatively straight profile. They also indicate that cores were not prismatic in shape, but that they had more rectangular flaking surfaces, since it was necessary to maintain their convexities during flaking.

Though we cannot establish a strict correlation, it is possible that this *chaîne opératoire* was used to manufacture trapezoidal weapon elements using the microburin technique (these represent 15% of the tools) and flat, inverse retouch on the base (figure 7). These Martinet trapezes are usually attributed to the techno-typological realm of the Second Mesolithic.



**Figure 6** - Diagram of *chaîne opératoire* #2. **Sequence 1:** hypothesized conception of the core. **Sequence 2:** flaking is initiated from a natural ridge. **Sequence 3:** full-flaking phase, bladelet production. **Sequence 4:** maintenance of the flaking surface convexities through the detachment of a wide flake. **Sequence 5:** new flaking phase.



**Figure 7** - 1-3: Microburins and 4-9: geometric bi-truncated weapon elements with flat inverse retouch.

The third *chaîne opératoire* identified corresponds to around thirty pieces. It provides evidence for the manufacturing of micro-bladelets, with an average width of approximately 6 mm. Only one core corresponds to this *chaîne opératoire*. It is small, made from a thick flake on an exotic flint, and was flaked in two orthogonal directions. The bladelets were detached by marginal percussion with an organic billet. The blanks were sometimes modified with abrupt retouch to create a back. This microlithic production is usually attributed to the techno-typological realm of the First Mesolithic.

### 3 - Stratigraphic distribution of the artifacts

Observations of the stratigraphic distribution of the elements associated with these three *chaînes opératoires* can provide arguments in favor of the diachronic or synchronic nature of these different manufacturing strategies. The graph made based on the diagnostic elements of these *chaînes opératoires* (figure 8) shows that there is indeed an altitudinal distribution of these technical strategies, even if no interruption can be detected. The elements associated with the micro-bladelets, indicating a First Mesolithic occupation, are mostly found at the bottom of the sequence. The central part of the stratigraphy contains a higher number of elements associated with the manufacturing of bladelets and trapezes, indicating a Second Mesolithic occupation. Finally, the upper part of the sequence is dominated by elements related to the manufacturing of wide bladelets, which, in association with the appearance of pottery, suggests an Early Neolithic occupation.

It therefore appears that the identification of a mixed Mesolithic-Early Neolithic facies is more likely the result of a stratigraphic mixing, at Combe-Grèze at least, of two successive occupations associated with industries that have specific technological features. At present, this study thus contests the existence of a hybrid industry in the Grands Causses region, with Mesolithic cultural traits persisting into the Neolithic. The hypothesis of a Neolithization of this region through acculturation can now be refuted at Combe-Grèze. Nonetheless, in order to better understand this Early Neolithic in the Aveyron region, we must explore its relationships with the more Mediterranean spheres. A synthetic approach will also require a more systematic inclusion of faunal and ceramic data, new datings, and new excavations in contexts offering more reliable sedimentary information.

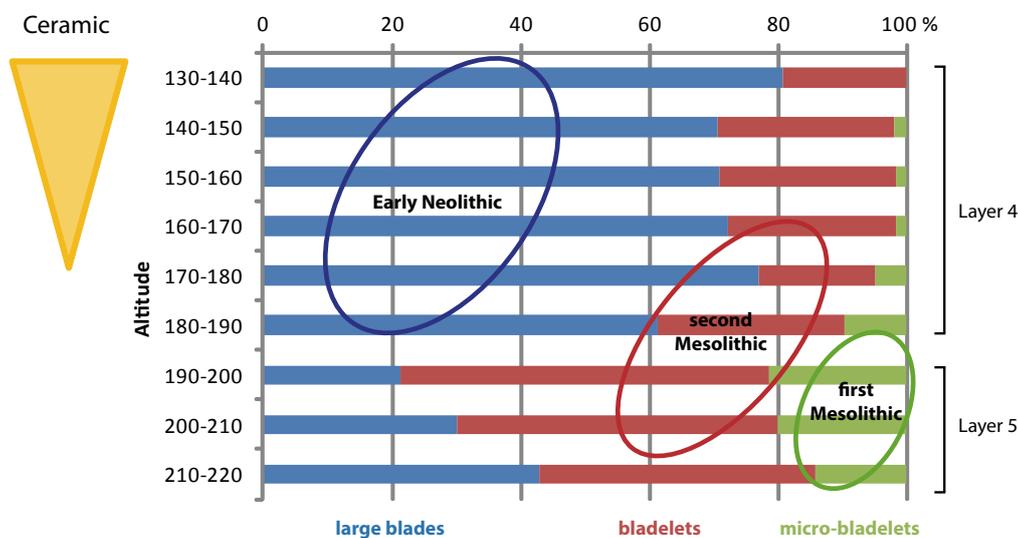


Figure 8 - Proportions of the different *chaînes opératoires* in relation to their depth.

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