

## Reflexions on the First to Second Mesolithic transition based on the stratigraphy from the Cuzoul de Gramat rock shelter (south-west France)

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### ABSTRACT

At the turn of the 7<sup>th</sup> millennium cal. BC the European Mesolithic underwent a major transformation in its technical traditions. This break is marked by a complete renewal of the lithic industries, with the disappearance of the production of bladelets (or slim flakes) obtained by direct percussion, used for the shaping of narrow armatures, and the appearance of standardised blades production, obtained by indirect percussion or pressure, used for the manufacture of trapeze armatures or notched blades. This break allows for a clear distinction between the First and Second Mesolithic.

Recent work has been undertaken on this question, including collective works in collaborative programs (in particular those undertaken by T. Perrin) and the excavation of sites documenting this period. New analysis offers a fresh look at this key moment of the European Mesolithic.

In light of recent evidences gathered in the Cuzoul of Gramat site (where excavations have been resumed since 2005 under the direction of N. Valdeyron), this paper propose to reassess the question of this transition between First and Second Mesolithic.

### KEYWORDS

Mesolithic, transition, lithics, stratigraphy, continuity, break

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### Introduction

This paper deals with the question of the transition between the First and Second Mesolithic, based on the Cuzoul de Gramat rock shelter (Gramat, Midi-Pyrénées / Occitanie, France), located in south-west France.

#### French Mesolithic

In France, the Mesolithic cultures correspond to the development of the last hunter-gatherer-collector societies appearing at the beginning of the Holocene and lasting throughout the Preboreal, Boreal and the beginning of the Early Atlantic periods, or in other words between 9700 and 5500 cal. BC.

While the study of the Mesolithic began very early in Scandinavia and in the northern European countries, the French Mesolithic perceived as a transition period, was not of great interest to researchers for the best part of the 19<sup>th</sup> and 20<sup>th</sup> centuries. Until the end of the

20<sup>th</sup> century, studies focused mainly on typological schemes of the armatures to establish a chrono-cultural framework. The techno-typological approach emerged in the mid-1980s, thanks in particular to Binder's work on the Mesolithic and Neolithic evidence (Binder 1987).

The Sauveterrian is the first Mesolithic techno-complex in southwestern France. It is defined by hyper-microlithisation and triangles armatures, that seem to have no technological links with the previous Azilian and Laborian technologies and being a very different lithic package (Langlais et al., 2014). Long-distance acquisitions persisted to varying degrees during the Azilian and Laborian periods. However, the Mesolithic technologies are characterized by disappearance of these long-distance acquisitions to the benefit of local and regional procurement.

In the current sense, the Mesolithic was formally identified at the very beginning of the 20<sup>th</sup> century (Morgan 1909; although the first mention of the Mesolithic appeared as early as 1869 in a publication by Reboux) and was divided into several separate facies. The first cultural facies identified on the basis of the typology of armatures was the Tardenoisian (a term developed by Mortillet; the Mesolithic was perceived as a "period" of the Neolithic, whose geometric armatures are the proof of an invasion; Mortillet 1897, 193, 250; Perrin, Defranould 2016) and was extensively discussed by Octobon for a decade in a series of 7 articles entitled "La question Tardenoisienne" from 1922 to 1933. Without any known origin, the Tardenoisian (essentially characterised by the trapeze armatures industry) was then perceived as connected to the Late Upper Palaeolithic substrate, influenced by various migrations and evolving until the Neolithic (Octobon 1933; Marchand 2014). The period between the end of the Upper Palaeolithic and the Tardenoisian remained poorly known because of a gap in both knowledge and in chronology (Octobon 1933, 173), not allowing Tardenoisian to be connected with the latest Palaeolithic period. Thanks to the work of Coulonges at the Sauveterre-La-Lémance sites (Le Martinet and Roc Allan; Coulonges 1928; 1935; Valdeyron 2000, 24), the Sauveterrian period that precedes the Tardenoisian was identified. It is characterised by a triangular armatures industry. At the same time, the Tardenoisian was split into three distinct facies. The typological studies then highlighted a facies with triangular hyper-microlithic armatures that preceded a facies with trapezoidal large armatures, allowing for a differentiation between Sauveterrian and Tardenoisian. The split of the Tardenoisian follows Octobon viewpoint of evolution, where this techno-cultural complexe starts with short trapezes rectangles – non-sequent bi-truncations – (trapèzes rectangles – Tardenoisian I), evolving thereafter to "trapèzes du Martinet" characterised by "an exaggeration of the trapeze's truncation, in its left part, bringing a slight notch to the base" (Tardenoisian II) until the Neolithic (Tardenoisian III). All of this is essentially based on the typological observations of armatures (Coulonges 1935; Valdeyron 2000).

This split between Sauveterrian and Tardenoisian persisted in later works. For example, Barrière in 1956 and J.G.D. Clark in 1958 for a synthesis of Tardenoisian industries associated with trapezes; S.K. Kozłowski in 1976 for S and K components (Sauveterrian and Tardenoisian); J.G. Rozoy in 1978 regarding Coincy (Sauveterrian technology) and Montbani (Tardenoisian technology) débitage, but with the coexistence of these two methods of débitage for a while. It is also with the work of J. G. Rozoy that a cultural mosaic begins to emerge.

In the 1990s, A. Thévenin proposed a slightly different vision, presenting a division between Early Mesolithic (characterised by isosceles triangles, corresponding to the Preboreal), a Middle Mesolithic (characterised by scalene triangles, corresponding to the Boreal),

a Late Mesolithic and a Final Mesolithic (respectively characterised by the emergence of trapezes, then trapezes and other armatures with flat inverse retouches, corresponding to a part of the Atlantic). A. Thévenin's vision was that each change of armatures corresponded to different cultural facies, all related to palynozones (Thevenin 1995; 2004; Marchand 2014a; 2014b).

G. Marchand theorised in 2004, and subsequently published in 2006 (Costa, Marchand 2006 and in 2008) a new model that proposed to split the Mesolithic to two, the First and Second Mesolithic (to avoid any confusion with the Early and Late Mesolithic hitherto used, although, according to the author, this model is substantially close to the division between the "Early" and "Late Mesolithic" of Northern Europe). This bipartition is based on considerations of a technical nature. A direct debitage with hammerstones was used for the production of narrow and short bladelets in the First Mesolithic resulting in the manufacture of a triangles industry, while indirect and/or pressure debitage was used for the production of thin and large blades with parallel edges and straight profiles in the Second Mesolithic, resulting in the manufacture of a trapezes industry (Marchand 2014, 15). Therefore, G. Marchand is close to the observations previously made by J. G. Rozoy (1978). His split between Coincy (Sauveterrian) and Montbani (Tardenoisian) debitage is in fact based on technological considerations.

#### The question of change between First and Second Mesolithic

The process of transition between the triangles phase and the trapezes phase (now called First and Second Mesolithic) is one of the main questions in the Mesolithic studies in France and Europe (*e.g.* Coulonges 1935; Lacam et al. 1944; Barrière 1956; Clark 1958; Kozłowski 1976; Rozoy 1978; Roussot-Larroque 1985; Marchand 2014; Perrin, Defranould 2016).

Two theories have emerged about the changes involved in the techno-economic organisation of the two Mesolithic groups, questioning the nature of the transition from one to the other. The first highlighted a break between the two technological complexes, without any contemporaneity between triangles (Sauveterrian/First Mesolithic) and trapezes (Tardenoisian I & II/Second Mesolithic). This theory explains the break as being caused by a population displacement process. The second theory espoused a progressive transition, including an evolution of armatures and the coexistence of triangles and trapezes for a period of time (fig. 1).

These two models emerged in the second quarter of the 20<sup>th</sup> century thanks to the 1923 excavations of two major and fundamental for the Mesolithic of southern France sites: The Martinet cave (Sauveterre-la-Lémance, Lot-et-Garonne, France), excavated by L. Coulonges, and the Cuzoul de Gramat rock shelter (Gramat, Lot, France), excavated by R. Lacam and A. Niederlander. These models are based on typo-technological analyses, mainly of armatures (triangles and trapezes), coupled with the observation and interpretation of stratigraphies within which the coexistence, or lack of lithic elements characteristic for the First Mesolithic (Sauveterrian) or the Second Mesolithic (Tardenoisian I & II) was crucial. Coulonges perceived a break between the Sauveterrian and the Tardenoisian facies at the site of Martinet (Coulonges 1928, 1935, 1954; Roussot-Larroque 1977, 1985, 2009), while Lacam observed a transition between these two facies at the site of Cuzoul de Gramat (Lacam et al. 1944; Rozoy 1978; Valdeyron 2000).

The recent excavations at the Cuzoul de Gramat rock shelter (Gramat, Lot, France) enabled the revision of the initial findings provided by R. Lacam in his 1944 monograph.

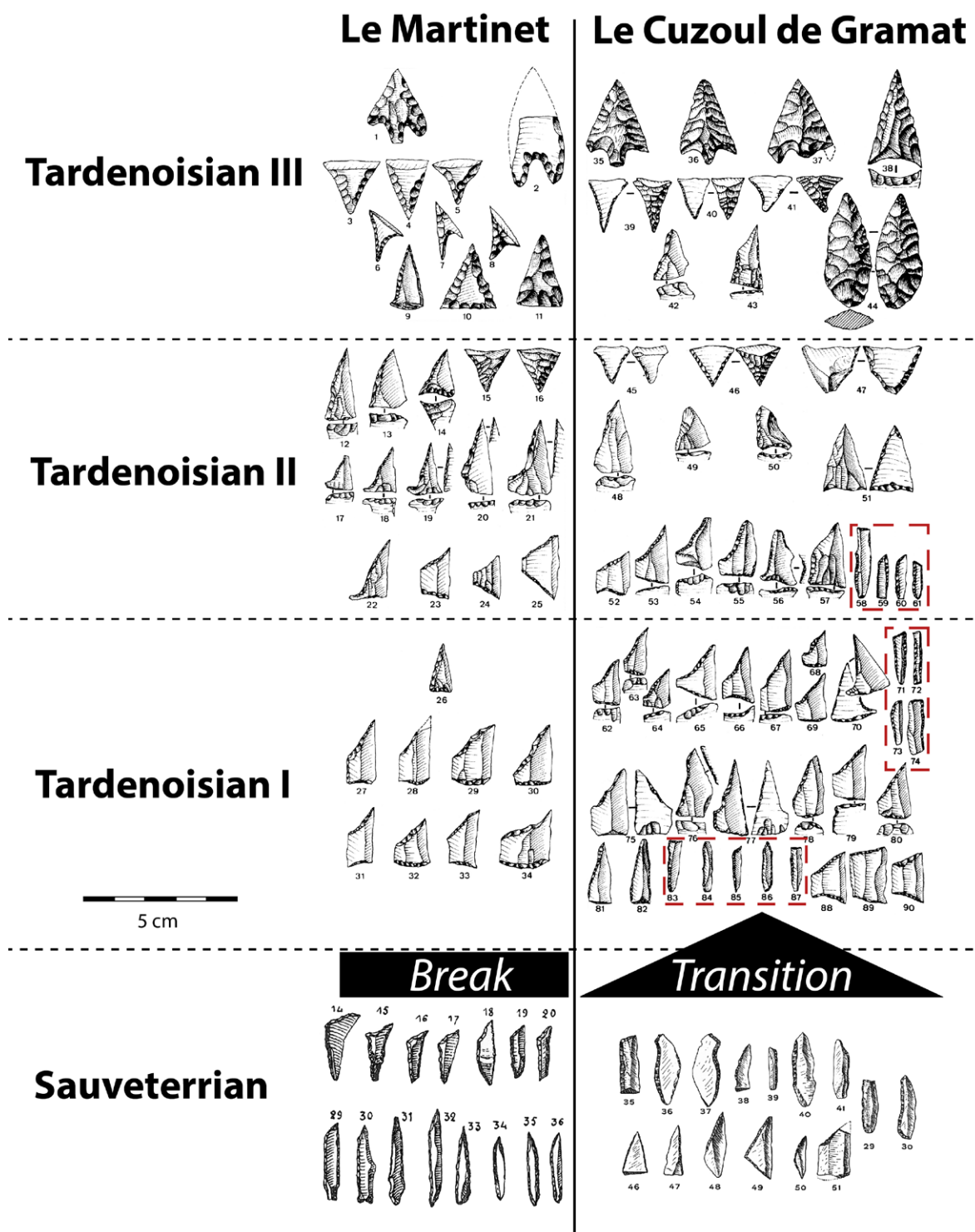


Fig. 1. Schematisation of the two theories regarding the transition between the triangles phase and the trapezes phase. Red box highlight intrusive Sauveterrian armatures (triangles; bladelets with sequent bi-truncation) in the Second Mesolithic assemblages (drawing by J.-G. Rozoy 1978; figure by G. Constans)

Обр. 1. Схема на двете теории за прехода между фазита на геометричните микролити – триъгълници и трапеци. В червен цвят са отбелязани Sauveterrian елементи (триъгълници и пластинки с двойно напречно затъпяване), привнесени в ансамблите от втория мезолитна фазиес (рисунок J.-G. Rozoy 1978; композиция G. Constans)

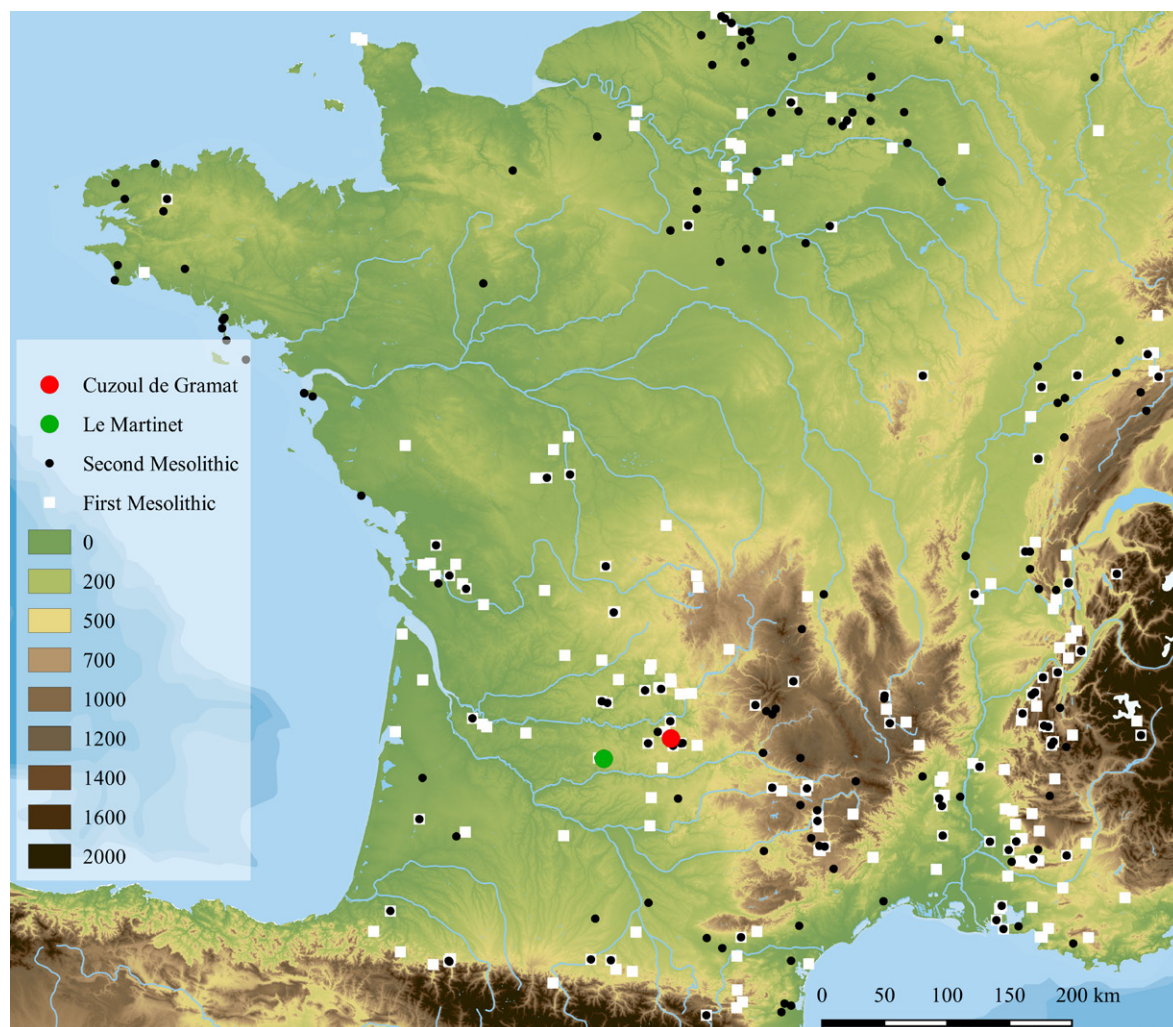


Fig. 2. Location of the Martinet and Cuzoul de Gramat sites (map by G. Constans)  
 Обр. 2. Местоположение на обектите Мартине и Cuzoul de Gramat (карта G. Constans)

They also present a fresh look at the transition between the two phases of the Mesolithic, thanks to new analyses of the material as well as of the stratigraphy of the site.

### Contextualisation of the Cuzoul de Gramat rock shelter

The Cuzoul de Gramat rock shelter is located in the south-west of France, in the Quercy Region, south of the Lot Department, in the middle of the “Causse de Gramat”. This landscape is shaped by two principal valleys (the Lot Valley to the south and the Dordogne Valley to the north) and by several Jurassic limestone plateaus forming the different Causses (Causses of Martel, Gramat, Gréalou and Limogne). These plateaus have many karst formations (caves, sinkholes, igues – type of pit-cave in the Lot Region in France) as well as several dry valleys. This region is now very well documented, thanks to many geological, geomorphological and archaeological studies (Jarry et al. 2013), allowing a better understanding of the techno-cultural changes, from the Late Glacial until the end of the Mesolithic (fig. 2). The site is located at 330 masl and 17 km to south of the Dordogne River, at the bottom of a vast sinkhole. This rock shelter has been known for a long time. There is a shallow water table below the surface and in the 18th century a well was dug at the bot-

tom of the shelter. The site was first excavated by R. Lacam and A. Niederlender between 1923-1933. In 1928, a burial dating to the Second Mesolithic was discovered, contributing to the reputation of the site. The skeleton is currently deposited at the Institute of Human Palaeontology (IPH) in Paris. The site has subsequently benefited from two short excavations, in 1947 and 1954. Excavations started again in 2005 under the direction of N. Valdeyron (Toulouse 2 Jean Jaurès University, UMR 5608, TRACES) and are ongoing (Valdeyron et al. 2008; 2010; 2011; 2014; Valdeyron 2013).

#### Cuzoul de Gramat rock shelter

The first excavations yielded a stratigraphic sequence with 7 layers, corresponding to three chrono-cultural groups:

- The deepest level, Layer I, was defined by Lacam as an “Azilo-Sauveterrian”, then as “post-Azilian evolved” and “Sauveterrian”. This assemblage was thus initially perceived as a transitional facies between Azilian and Sauveterrian, based on the observations of a lithic industry containing Azilian points in association with triangles, but without a perceptible change of layer. Lacam was not able at the time to dissociate these two assemblages by stratigraphy and we now know that this Layer I is actually a succession of these two techno-cultural assemblages (Valdeyron et al. 2010).
- Layers II and III have been attributed to Tardenoisian I while Layers IV and V have been identified as Tardenoisian II, both assemblages are currently considered as belonging to the Second Mesolithic.
- Layer VI was attributed to Tardenoisian III (already perceived as Neolithic; Coulonges 1935).
- Layer VII was perceived as entirely Neolithic, but associated with Protohistoric, Antique and some Mesolithic remains, indicating some taphonomic disturbances in the layers closest to the surface.
- Layer VIII has been considered as a mixed layer of several Prehistoric and Historical periods.

These early works gave the Cuzoul de Gramat rock-shelter an important place in the establishment of the chrono-cultural sequence for the French Mesolithic, together with the sites of Martinet and Roc Allan (Sauveterre-la-Lémance, France), excavated by L. Coulonges at the same time (Coulonges 1928; 1935). These famous sequences have been used many times for the development of different explanatory models for the end of the Mesolithic (Valdeyron 2000).

#### Cuzoul de Gramat transition

Shortly before Lacam’s publication (1944), L. Coulonges had already proposed in 1935 a ‘break model’, based on the lithic industry of the Martinet Cave (Sauveterre-la-Lémance, Lot-et-Garonne). The study of the lithic assemblage allowed the identification of the Sauveterrian and the division of the Tardenoisian in three facies. Coulonges had observed major technological differences in the lithic industry, as well as in the fauna assemblage. He did not detect any typological links between the Sauveterrian and the Tardenoisian layers. According to his original observations, there no triangular geometric armatures, typical of the older phase (Sauveterrian), in the layers with trapezes (Tardenoisian). This observation allowed him to affirm that there was a break between these two Mesolithic groups.

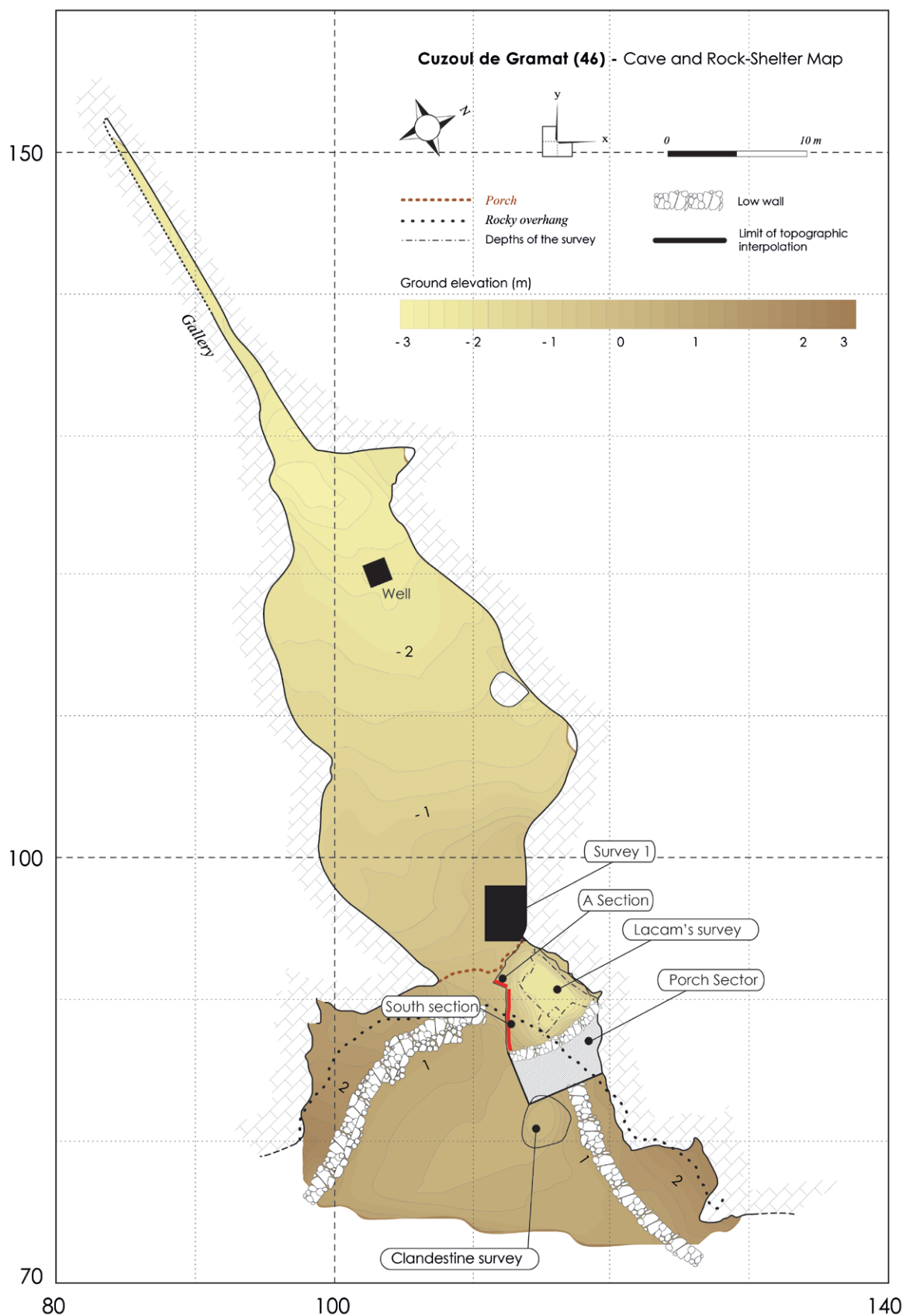


Fig. 3. Location of the sectors on the site of Cuzoul de Gramat (CAD by Archéosphère)  
 Обр. 3. Местоположение на секторите в обекта Cuzoul de Gramat (CAD Archéosphère)

However, the work carried out in the Cuzoul de Gramat site by Lacam indicated a typo-technological continuity between Sauveterrian and Tardenoisian, thanks to the coexistence of characteristic lithic tools of these two technological complexes. For Lacam, the lithic industry suggests an evolution of the Sauveterrian technique and several points of convergence and persistence from layer I (Sauveterrian) to levels II and III (Tardenoisian I). These last two layers are characterised by the joint presence of Sauveterrian artefacts (narrow backed bladelets and scalene triangles) and Tardenoisian elements. Layer IV (Tardenoisian II) also maintains the characteristics of the underlying layers (some triangles and backed bladelets associated with asymmetric trapezes and “trapèzes du Martinet”). It is only in layer V (evolved Tardenoisian II) that the triangles disappear, whereas the Montclus arrowheads appear. Consequently, Lacam and his colleagues refused to separate the Tardenoisian facies from the technology of the Sauveterrian substrate, which they saw as merging with that of the Tardenoisian I from layer II of Cuzoul de Gramat. Lacam said: “our conclusion is therefore opposed point by point to that of L. Coulonges” (Lacam et al. 1944: 45). By looking at the stratigraphic sequence of the Cuzoul de Gramat site from the perspective of a progressive evolution over time, Lacam and his colleagues introduced the first alternative scenario to the Coulonges model (Valdeyron 2000).

Lacam thus set forward the hypothesis of continuity between the two phases of the Mesolithic (as well as from the end of the Upper Palaeolithic) in the form of a gradual transition, that in this sense was opposed to Coulonges’ conclusions. The latter stated that “the so-called Sauveterrian industry cannot be assimilated either to the Azilian industries or to the Tardenoisian industries” (Coulonges 1954, 71). To Lacam, the mixed character of the assemblage comprising lithic artefacts (armatures in particular) belonging to the two successive phases was considered determinant.

## Materials and Methods

The Cuzoul de Gramat site is currently divided into four excavation areas (fig. 3). The first is located inside the cavity, about ten meters from the entrance and has been named “Cave Sector”. To date, this area has produced material from the Second Mesolithic. The strata of the First Mesolithic have not yet been reached but appear to be very close. The two areas below the entrance have been named “Porch Sector” for the area to the northeast and “South Sector” for the area facing it to the south. These two sectors have yielded Protohistoric layers (Bronze Age), probably a short Neolithic occupation, and finally the entire sequence of the Second Mesolithic. The latter is still in process of excavation and it has a substantial sedimentation depth. The levels of the First Mesolithic are yet to be reached. Finally, the “A Sector” located between the “Cave Sector” and the “South Sector”, contains the stratigraphic profile of reference for the archaeological site. It is in this Sector that we have accessed material from the First Mesolithic and have been able to establish a stratigraphic comparison with the data provided by Lacam. The material studied in this paper comes from this sector.

Finally, the areas excavated since 2005 have been systematically truncated by the previous excavations of the 20<sup>th</sup> century (Lacam survey). Lacam and his collaborators excavated the core of the site, located just below the “Porch Sector”, covering an area of about 28m<sup>2</sup> in total. The stratigraphic sequences are, therefore, partially truncated.

This new study focuses on the First and Second Mesolithic layers from the “A Sector” and aims to compare the lithic and stratigraphic data from the previous excavations with

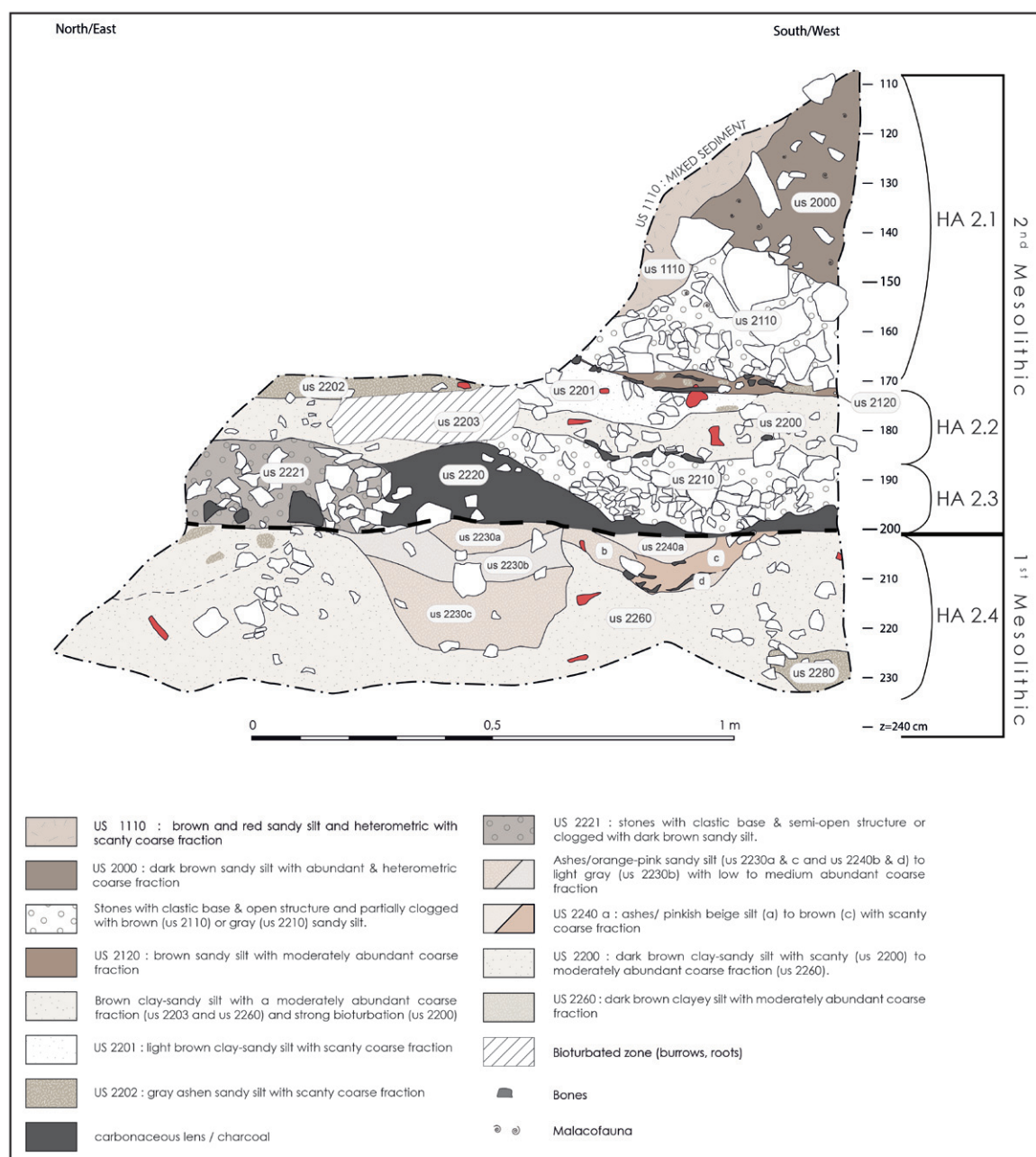


Fig. 4. Stratigraphic cut from "A Sector" (2009) (drawing by G. Delfour)  
 Обр. 4. Стратиграфски разрез на „A Sector“ (2009) (рисунок G. Delfour)

the analyses and observations from the current excavations, in order to clarify the transition between the two Mesolithic cultural groups at the Cuzoul de Gramat site.

The stratigraphic sequence studied is quite complex (fig. 4). The top part includes the stratigraphic unit HA2.1 ("Horizon Archéologique" in French), which is not taken into account since it is not representative. It is subdivided into two sub-sets differentiated by the density of stones. HA2.2 is immediately below and consists of succession of hearth structures, similar to HA2.3, which also contains a succession of three contiguous hearth structures. During the excavations this stratigraphically deep assemblage was considered as the Second Mesolithic.

It is followed by the HA2.4 assemblage and its subsets, including the "hearth struc-

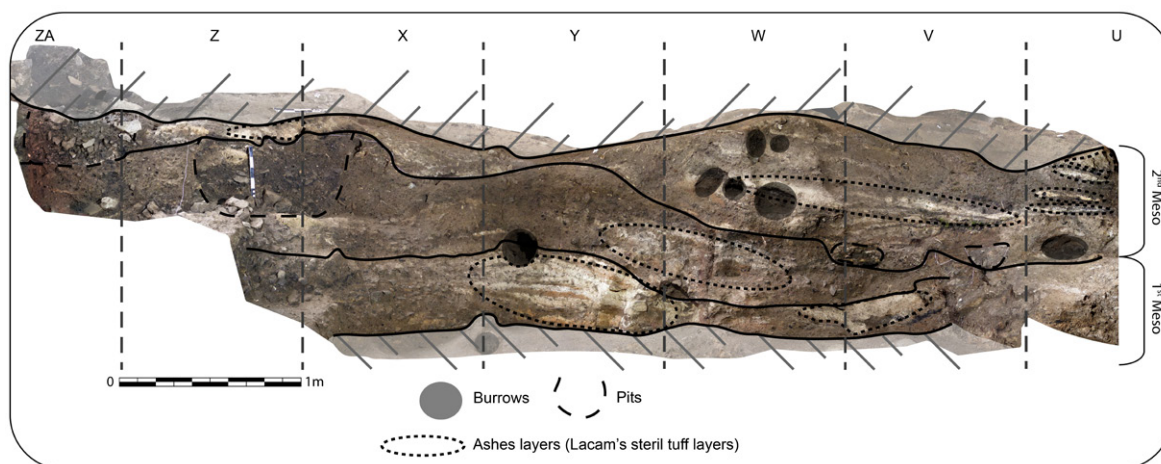


Fig. 5. Stratigraphic cut, located close to the "A Sector" (drawing by G. Constans)  
 Обр. 5. Стратиграфски разрез, разположен в близост до „A Sector“ (рисунок G. Constans)

ture 3 / F3". The latter was initially thought to be a dug-into structure due to a change in sedimentation, however according to the geo-archaeologists, the transformation was due to rubefaction and not digging. The "F3" assemblage is therefore attributable to the First Mesolithic. The various other subsets are not visible in the following stratigraphic sequence due to sloping in this sector.

We chose to use the term "chert" for the analysed siliceous material, the term "flint" can refer to a specific geological formation (Mesozoic), while the term "chert" refers to all conchoidal broken siliceous rocks (hydrothermal, continental, lacustrine formation, etc.).

## Results

Recent studies have focussed on a review of the Mesolithic stratigraphy of the site, in order to specify the typo-technological assemblages and to verify the sedimentary coherence. The analysis of raw materials also provides additional clues for the identification of the two Mesolithic assemblages.

### Lithic analyses according to stratigraphic units.

The present lithic assemblage contains a total of 1245 chert artefacts, obtained from ten main stratigraphic units, eight of which were attributed to the 1<sup>st</sup> Mesolithic and two to the 2<sup>nd</sup> Mesolithic. Each of these units also contained several hearth structures. Furthermore, numerous radiocarbon dates support our interpretations.

The lithic artefacts have been subjected to typo-technological and petrographic analyses. The differentiation of the material between the two Mesolithic facies stems from the observation of the percussion techniques (direct/indirect), the width of the blades and bladelets products (8 mm is the maximum width of the products from the First Mesolithic that were found at the site), and armatures. Non-characteristic debris was considered ubiquitous. Moreover, the single or double backed bladelets and bladelets less than 8mm thick are absent in the industries of the Second Mesolithic in France.

Only characteristic artefacts were taken into account to assess the degree of reliability in the interpretation of the different layers (table 1). The distinctive elements of the Second Mesolithic are the trapeze armatures, the non-standard "batard" points, the truncation

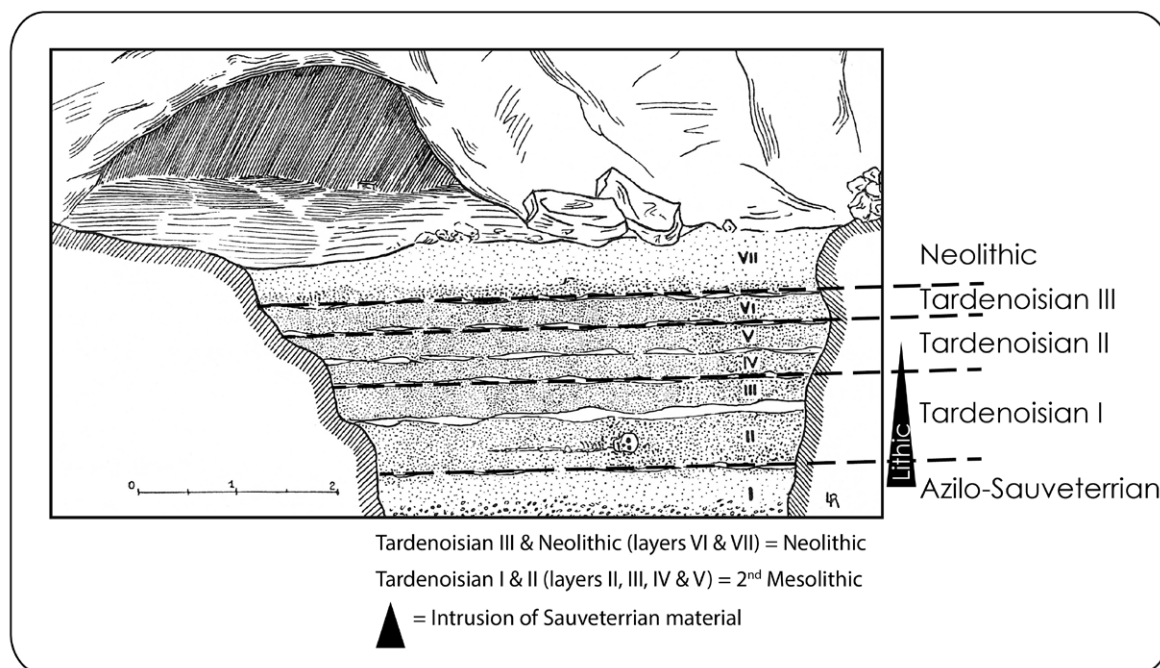


Fig. 6. Cuzoul de Gramat rock shelter stratigraphy according to Lacam (drawing by Lacam et al. 1944, edited by G. Constans)

Обр. 6. Стратиграфия на скалния навес Cuzoul de Gramat Кузул де Грамат според Ласат (рисуника Lacam et al. 1944, адаптирана от G. Constans)

points and the large and regular blades obtained by indirect percussion.

The stratigraphic unit HA2.2, considered as the Second Mesolithic during excavation, yielded mainly armatures: two armature fragments, two non-standard “batard” points, four “trapèzes du Martinet”, three truncation points, four microburins, several large blades and two Montclus arrowheads. The two elements from the First Mesolithic are a bladelets and a backed bladelet.

The stratigraphic unit HA2.3 contained only a few characteristic elements, mainly blades from the Second Mesolithic (including three micro-burins) and a bladelet from the First Mesolithic.

The stratigraphic units HA2.4, HA2.4.1, HA2.4.2, HA2.4.4, HA2.4.5, HA2.4.6, HA2.4.7 & HA2.4.8 were considered during the excavations to derive from the First Mesolithic, based on the observation of the archaeological material. All of these stratigraphic units are characterised by lighter-coloured sedimentary levels and a more pronounced level of anthropic influence without any sterile layers, thus making the separation into subsets difficult. Hearth structures are also very numerous (at least six were identified). The lithic industry is characterised by numerous narrow bladelets and by several triangles, all of which are indisputably from the First Mesolithic. However, there are several intrusive elements from the Second Mesolithic.

The stratigraphic unit HA2.4 appears to be very mixed and yielded a combination of triangles and narrow bladelets from the First Mesolithic as well as several large blades and one trapeze from the Second Mesolithic, in a similar manner to stratigraphic unit HA2.4.1.

Stratigraphic units HA2.4.2 and HA2.4.4 are not statistically representative. On the other hand, the stratigraphic units HA2.4.5 and HA2.4.6 contain several intrusive artefacts attributable to the Second Mesolithic (several blade and bladelets from the two stratigraphic

| Layers  | Chronoculture | Number    | 1st Meso elements |     | 2nd Meso elements |     |
|---------|---------------|-----------|-------------------|-----|-------------------|-----|
| HA2.2   | 2nd Meso      | <b>40</b> | 2                 | 5%  | 38                | 95% |
| HA2.3   | 2nd Meso      | <b>7</b>  | 1                 |     | 6                 |     |
| HA2.4   | 1st Meso      | <b>29</b> | 12                | 41% | 17                | 59% |
| HA2.4.1 | 1st Meso      | <b>16</b> | 9                 |     | 7                 |     |
| HA2.4.2 | 1st Meso      | <b>3</b>  | 3                 |     | 0                 |     |
| HA2.4.4 | 1st Meso      | <b>1</b>  | 0                 |     | 1                 |     |
| HA2.4.5 | 1st Meso      | <b>51</b> | 41                | 80% | 10                | 20% |
| HA2.4.6 | 1st Meso      | <b>94</b> | 89                | 95% | 5                 | 5%  |
| HA2.4.7 | 1st Meso      | <b>23</b> | 23                |     | 0                 |     |
| HA2.4.8 | 1st Meso      | <b>3</b>  | 3                 |     | 0                 |     |

*Table 1. Representation of characteristic lithic artefacts for each stratigraphic unit and Mesolithic facies. The intrusive artefacts are highlighted*

*Таблица 1. Кремъчни артефакти, характерни за всяка стратиграфска единица и мезолитен фацис. Привнесените артефакти са оцветени в сиво*

ic units, and two trapezes and one truncation point from HA2.4.5). If HA2.4.5 appears very mixed, the disturbances would appear to be greatly reduced in HA2.4.6.

The stratigraphic units HA2.4.7 and HA2.4.8 do not contain any specific elements from the Second Mesolithic and are considered to be homogeneous.

#### Synthesis of lithic analysis

The raw materials spectrum identified (table 2) for the entire lithic series, together with the techno-cultural particularities indicates exclusively local (bathonian chert only, which acquisition area is located 2 km from the site) and regional procurement (sources located at a maximum of 60 km from the site as the crow flies). In detail, the two Mesolithic assemblages are dominated by Tertiary and Senonian cherts, sometimes with high proportion of undetermined Marin chert (probably from mainly Senonian formations, but without certitude). The cortical artefacts indicate that the vast majority of Tertiary and all Jurassic cherts (including Jurassic jasper) comes from alluviums, probably from the ancient terraces of the Dordogne River located approximately 17 km from the site. Some Tertiary cherts may have come from primary deposits, although their precise identification remains difficult, due to the lack of characteristic microfossils. The exploited primary deposits are estimated to have been at a distance of 25 to 30 km, possibly more. The Senonian sources are the most distant, located about 60 km from the site.

Senonian and Tertiary cherts are the two important raw materials. There does not appear to be a preferential use between them. The indeterminate cherts amount to 30% of the studied series (1246 cherts) which is about 66% rubified in the two Mesolithic assemblages.

The lithic industry from stratigraphic units, identified during the excavations as the 1<sup>st</sup> Mesolithic, contains a high proportion of Bathonian chert (from 12% to 22% depending on the stratigraphic units considered to be the First Mesolithic except for HA2.4.1 with just 4%; and a maximum of 3% for stratigraphic units considered as the Second Mesolithic). The sources of Bathonian yield centimetric nodules (from 5 to 10 cm maximum), which do not permit the production of large blades, mostly used during the Second Mesolithic, but suitable for the production of the narrow bladelets used during the First Mesolithic. Thus, the

|         | 2nd Meso |       |       |         | 1st Meso |         |         |         |         |         | Total |
|---------|----------|-------|-------|---------|----------|---------|---------|---------|---------|---------|-------|
|         | HA2.2    | HA2.3 | HA2.4 | HA2.4.1 | HA2.4.2  | HA2.4.4 | HA2.4.5 | HA2.4.6 | HA2.4.7 | HA2.4.8 |       |
| BAJ     |          |       |       | 1       |          |         |         |         |         |         | 1     |
| BAJ?    |          |       | 1     |         |          |         |         |         |         |         | 1     |
| BATH    | 6        | 1     | 33    | 4       | 1        |         | 37      | 56      | 17      |         | 155   |
| CRET    | 1        |       | 11    |         |          |         | 2       | 3       |         |         | 17    |
| UND     | 44       | 20    | 68    | 25      | 2        | 1       | 91      | 97      | 21      | 5       | 374   |
| JUR JSP | 3        | 1     | 10    | 2       |          |         | 5       | 4       | 1       |         | 26    |
| JUR     |          |       |       | 2       |          |         |         | 1       |         |         | 3     |
| JUR ?   |          |       |       |         |          |         |         | 2       | 1       |         | 3     |
| MAR     | 38       | 7     | 67    | 24      | 7        |         | 31      | 27      | 5       | 1       | 207   |
| MAR ?   | 1        |       |       |         |          |         |         | 2       |         |         | 3     |
| SEN     | 41       | 6     | 44    | 22      | 2        | 1       | 48      | 49      | 16      | 2       | 231   |
| SEN?    |          |       | 1     |         |          |         |         | 1       |         |         | 2     |
| TER     | 38       | 8     | 41    | 26      | 2        | 3       | 35      | 52      | 16      | 1       | 222   |
| TER?    |          |       |       |         |          |         |         | 1       |         |         | 1     |
| Total   | 172      | 43    | 276   | 106     | 14       | 5       | 249     | 295     | 77      | 9       | 1246  |

Table 2. Raw materials from the first & second Mesolithic. BAJ: Bajocian; BATH: Bathonian; CRET: Cretaceous; UND: Undetermined; JUR JSP: Jurassic Jasper; JUR: Jurassic; MARIN: Marin; SEN: Senonian; TER: Tertiary

Таблица 2. Суровини от първа и втора фаза на мезолита по периоди. BAJ: Байос; BATH: Бат; CRET: Крета; UND: неопределен; JUR JSP: юрски яспис; JUR: Юра; MARIN: морски; SEN: Сенон; TER: Терциер

proportion of Bathonian chert and its typo-technological analysis can be a good indicator for determining the chrono-cultural attribution of layers. Bathonian cherts are often anecdotal throughout the entire sequence of Mesolithic levels from the Second Mesolithic (in this study as well as in the study of the “Cave Sector” that is still in progress).

Regarding the “*chaîne opératoire*”, 76% of the lithic assemblage (952 cherts) is devoid of cortex and 74.5% (928 cherts) are debris (mainly consisting of splinters, but also chert fragments which are often rubified). There are only five cores, all from 1<sup>st</sup> Mesolithic. The most numerous cortical artefacts are manufactured from Bathonian flint (84 pieces, 7% of the total, and 29% of the cortical chert). According to the study of the newly acquired material, there appear to be many more cores in the 1<sup>st</sup> Mesolithic, mostly of Bathonian chert (which could be explained by the proximity of the acquisition area). Decortication and knapping-preparation flakes are rare, as are all the elements that indicate shaping or rejuvenation operation. Knapping waste, present among the debris, is also rather rare, suggesting re-touching operations and the refreshing of tools. Nothing in this analysis indicates intensive knapping in this part of the site. Based on the techno-typological data, the studied industry appears mainly oriented towards the cinegenic sphere and the production of armatures.

## Discussion of the current stratigraphy

In each of the stratigraphic units studied and considered to be the Second Mesolithic, we have identified the continuing existence of a few narrow bladelets that can be linked

to the Sauveterrian toolkit. Conversely, in assemblages perceived as Sauveterrian, there is a very clear presence of Second Mesolithic armatures (trapezes) and large blades, some of which were obtained by indirect percussion. Only stratigraphic units HA2.4.7 and HA2.4.8 seem homogeneous as far as the First Mesolithic is concerned, without any indication of a mixed industry between the two Mesolithic assemblages.

While this vision could argue for Lacam's model of technological continuity between the two industries, the current study of the stratigraphy of the "A sector" provides additional data. Areas of bioturbation had already been identified in 2006 in the sagittal section of the sector, associated with numerous hearth structures. A more detailed analysis of the section in 2009 (fig. 4), and later, in 2016, allowed the disturbed areas to be clearly defined. The analysis of a new area of "A Sector" in 2016 (fig. 5) brought to light three main stratigraphic levels and the presence of anthropic excavations (pits and hearth structures) sometimes difficult to discern, as well as numerous burrows (especially in ash layers considered sterile by Lacam). All of this contributes to a relatively complex taphonomic life of the site. Thus, the interpenetrations of characteristic lithic artefacts in the different layers cannot be considered definitive proof of continuity between the Mesolithic levels.

#### Back to the previous data and stratigraphic interpretation

In the 1944 publication, many characteristic armatures of the First Mesolithic (Tardenoisian I) are present in the assemblages identified by Lacam as entirely coming from the Second Mesolithic (Tardenoisian II & III, fig. 6).

For Lacam, the lithic industry from layer I was characterised by typically Sauveterrian artefacts (triangles and narrow bladelets) and Azilian lithics artefacts (curved backed points on thick blanks) and a few rare armatures from Second Mesolithic (presence of trapezes).

In layers II and III, within the industry of the Second Mesolithic (Tardenoisian I) that is mainly composed of large and regular blades and trapezes, Lacam noted the presence of Sauveterrian narrow bladelets and triangles. These lithic elements seem to decrease and disappear in Layers IV and V.

Thus, through the excavation Lacam perceived a progressive transition, first between the Azilian and Sauveterrian in Layer I, then between the Sauveterrian and Tardenoisian thanks to the early appearance of trapezes, followed by the persistence of Sauveterrian armatures in the Tardenoisian I layers with gradual disappearance of the narrow armatures.

Regarding the Azilo-Sauveterrian facies, Lacam was well aware that the assemblage could be problematic. He had identified a final Azilian on the basis of comparisons with other sites of Quercy, but the presence of a Sauveterrian industry prompted him to align with the definition of Abbé Breuil who stated that "Neither the term Tardenoisian, nor the term Azilian, are sufficiently comprehensive to understand the totality of these small industries, which can clearly be distinguished one from another. The Azilian represents a rather old phase [...], the Tardenoisian with its trapezes a later one" Breuil 1913, 233; Lacam et al. 1944). Lacam did not clearly understand the stratigraphic succession between the Azilian and the Sauveterrian and believed in continuity between them based on the coexistence of lithic assemblage deriving from two facies. To date, no Azilian complex has been excavated during the activities resumed since 2005 (only Mesolithic layers are currently explored, the Azilian is too deep), but it is clear that Lacam was not able to accurately distinguish the stratigraphic succession. Moreover, there is some Laborian clues ("Malaurie" point) in Lacam's collection (Azilo-Sauveterrian assemblage). The stratigraphic sequence seems more complex than Lacam had perceived. Only the continuation of the excavation in the

| Sector     | Layer           | Reference               | Age (BP) | Std. Dev. | Two sigmas ranges |       | Sample   |
|------------|-----------------|-------------------------|----------|-----------|-------------------|-------|----------|
| A Sect.    | F1 (HA2.2)      | Ly-14204                | 6200     | 45        | -5298             | -5039 | charcoal |
| A Sect.    | F2b (HA2.3)     | Ly-14459                | 6760     | 60        | -5751             | -5558 | charcoal |
| A Sect.    | F2c (HA2.3)     | Ly-5856(OxA)            | 6980     | 40        | -5980             | -5753 | charcoal |
| A Sect.    | F3h (HA2.4)     | Ly-14920                | 7575     | 35        | -6475             | -6393 | charcoal |
| A Sect.    | F4<br>(HA2.4.5) | Ly-6704<br>(SacA 18247) | 7840     | 80        | -7029             | -6503 | charcoal |
| A Sect.    | HA 2.4.6        | Ly-14922                | 7730     | 40        | -6638             | -6478 | charcoal |
| Cave Sect. | SG5311          | Beta_428096             | 6920     | 30        | -5877             | -5731 | bone     |
| Cave Sect. | SG5110          | Ly-14921                | 6780     | 45        | -5731             | -5624 | charcoal |
| Cave Sect. | SG5200          | Ly-14458                | 6815     | 40        | -5763             | -5633 | charcoal |

Table 3. Calibrated dating of the “A Sector” and “Cave Sector” (cal BC)  
Таблица 3. Калибровани дати от „A Sector” и „Cave Sector” (cal BC)

coming years will enable the characterization of the Epipalaeolithic occupation.

Moreover, in his excavation notes of 1920-1930, Lacam declared to have identified “sterile tuff” layers separating the different occupation layers. It is likely that these tuff layers were actually ash lenses, which are very numerous and can be ten centimetres thick. Their use is still not clearly defined but they are by no means sterile. These ash layers contain material and are an integral part of the anthropised layers of the site. This misinterpretation of the stratigraphy no doubt contributed to Lacam’s conclusions.

This vision of continuity between the Mesolithic facies is explained by numerous biases. The absence of sieving during the first half of the 20<sup>th</sup> century was very common, and was quite detrimental for Mesolithic sites, characterised by the microlithisation. Moreover, despite that the descriptions are as precise as possible, the complexity of Holocene sedimentation at the site (homogeneous over long periods) and the lack of identification of the various pits and burrows have probably contributed to the difficulty of identifying the different layers and their limits. Therefore, all these elements explain Lacam’s interpretations and the hypothesis of the continuity between the Mesolithic techno-complexes.

### Radiocarbon dating and the sequence of Mesolithic assemblages

The radiocarbon dates (table 3 & fig. 7) also clarify our understanding of the different Mesolithic occupations and improve our knowledge about the sequence of technological assemblages.

Since the new excavations have begun in 2005, nearly twenty <sup>14</sup>C dates had been obtained. They were first carried out on charcoal, after species identification to avoid the old wood effect. Short-lived samples were initially dated by the Lyon laboratory for a conventional gas meter dating. Subsequently AMS dates were obtained on charcoal or bone material (Lyon radiocarbon dating center, ARTEMIS accelerator, UMS 2572). For the last three years dating was carried on bone, with Beta Analytic, thanks to the PROCOME ANR (dir. C. Manen, UMR5608, TRACES, UT2J), to which the Cuzoul de Gramat is associated. The calibration was done to two sigmas using Calib online software and the IntCal 13 curve.

The assemblage from upper part of the Second Mesolithic in “A Sector”, has been dated to 5299-5029 cal. BC (Ly-14204) by a sample from the hearth structure F1 (HA2.2). This date, associated with a material devoid of any Neolithic artefacts, marks the final Mesolithic

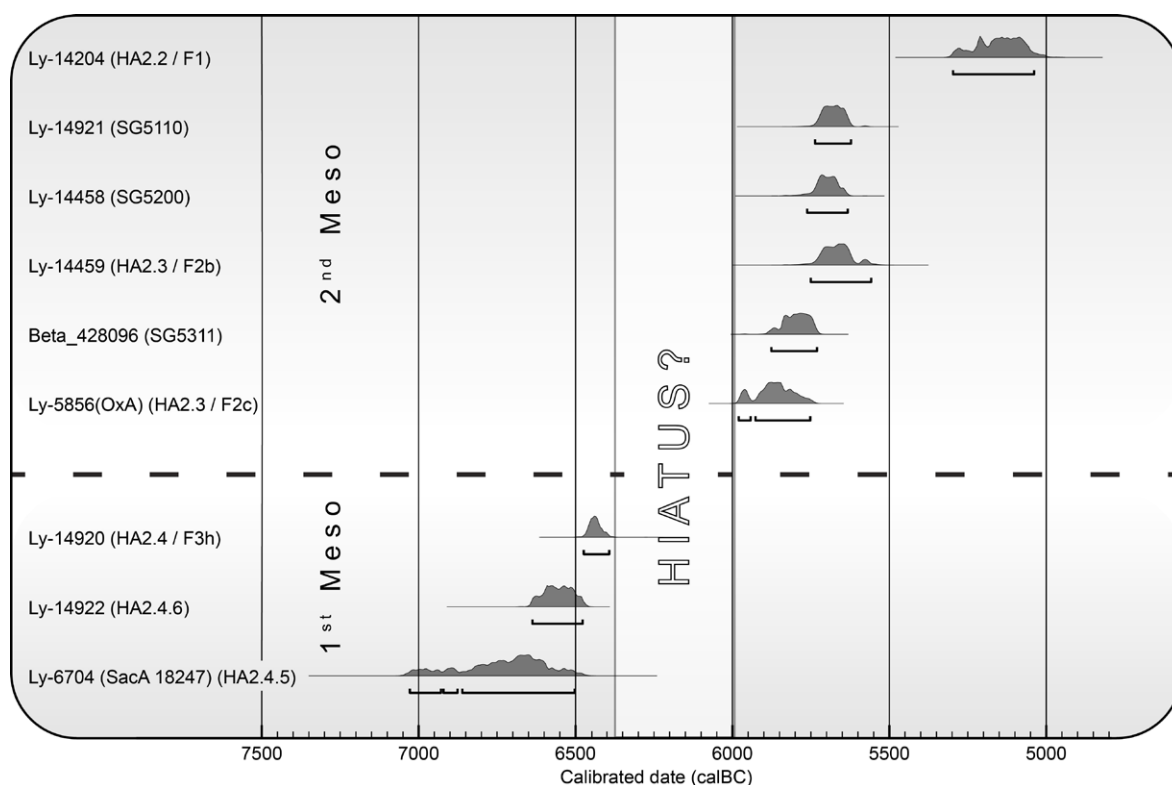


Fig. 7. Calibrated dating from the two Mesolithic assemblages (figure by G. Constans; Oxcal v4.3.2 Bronk Ramsey 2017; r:5 IntCal13 atmospheric curve by Reimer et al 2013)

Обр. 7. Калибрирани дати на двата мезолитни ансамбъла (графика G. Constans; Oxcal v4.3.2 Bronk Ramsey 2017; r:5 IntCal13 atmospheric curve by Reimer et al 2013)

period at the Cuzoul de Gramat site. The associated lithic assemblages appear to be fairly homogeneous. Other dates from the other sectors (not presented here) show a chronological continuity throughout the 2nd Mesolithic without interruption. The gap that seems to appear between this date and the following ones is only the result of a lack of dating in this part of the site. The following two dates were obtained for the lower part of this assemblage: 5725-5621 cal BC (Ly-14459) for hearth structure F2b (HA2.3) and 5980-5753 cal. BC (Ly-5856) for hearth structure F2c (HA2.3). In this lower part, however, the same types of objects as those present at the top (Second Mesolithic) are associated with few thin and narrow backed bladelets (single or double) and with very narrow micro-burins (the width of the narrowest is 2.8 mm).

If the presence of these few elements recalling the Sauveterrian could once again validate Lacam's point of view, we should not forget the above-mentioned taphonomic conditions and the scarcity of this material that is undoubtedly a result of contamination and disturbances.

Three dates have been obtained for the Sauveterrian part of the Mesolithic sequence. The first, 6474-6393 cal. BC (Ly-14920) for the hearth structure F3h (HA2.4) has yielded lithic artefacts that are mostly ubiquitous. If the presence of narrow bladelets and triangles is attested, there are also trapezes and large blades, sometimes associated with indirect percussion. This Level contains mostly debris and fragments that can belong to any of the assemblages.

The dates of 6638-6478 cal. BC (Ly-14922) for the horizontal cut 29 (HA2.4.6) and of 7029-6502 cal. BC (Ly-6704) for the hearth structures F4 (HA2.4.5) are associated with much

more pronounced Sauveterrian lithic material (bladelets obtained by direct percussion associated with typical triangular armatures).

Nevertheless, some very ubiquitous artefacts are present and the stratigraphic unit HA2.4.5 includes several objects from the Second Mesolithic, notably trapezes and truncation points. In this respect, stratigraphic unit HA2.4.6 appears much more homogeneous and the Second Mesolithic elements disappear. Stratigraphic unit HA2.4.7 (for which there is no date) appears to be the most homogeneous and no longer contains any elements that can be identified as Second Mesolithic. Finally, stratigraphic unit HA2.4.8, although homogeneous, has produced only a very poor lithic assemblage and is therefore not really representative.

The lithic tools and armatures that can be considered as intrusive artefacts are for the most part in stratigraphic proximity to the transition between the two Mesolithic facies, confirming taphonomic disturbances that are sometimes difficult to perceive.

The “Cave Sector” consolidates the stratigraphic sequence of the site. The latter was excavated between 2007 and 2017 and is attributable to the Second Mesolithic contemporary to that in the “A Sector”. It has the following dates: 5731-5624 cal. BC (Ly-14921) for SG5110; 5743-5638 cal. BC (Ly 14458) for SG5200 and 5876-5731 cal. BC (Beta\_428096) for SG5311. This sector has produced no Sauveterrian element, demonstrating a total lack of mixing between the two techno-cultural assemblages. The presence of Sauveterrian armatures in the “A Sector” layers that are considered contemporary with the layers from the “Cave sector” without Sauveterrian elements is most likely due to the taphonomic processes in the “A Sector”. The taphonomic disturbances are probably related to the hearth structures and take the form of burrows and pits in this sector. All of this contributed to mixing of the sediments with the material which they contained. The idea of a continuous transition developed by R. Lacam, which for a time, could have appeared reinforced by the recent discoveries, seems today very debatable.

The dates from the “A Sector” and “Cave Sector” confirm the chronological continuity of the two Mesolithic assemblages. The most recent Sauveterrian is dated to 6474-6393 cal. BC (Ly-14920, HA2.4), while the oldest Second Mesolithic is dated to 5980-5753 cal. BC (Ly-5856, HA2.3). Between the end of the Sauveterrian with its triangles (probably the Middle Sauveterrian, final Montclusian) centred in the middle of the sixth millennium and the 2<sup>nd</sup> Mesolithic with its trapezes, there is a gap of 450 to 690 years. These dates therefore appear to validate the hypothesis regarding taphonomic disturbances that have affected Lacam’s interpretations.

## Conclusions

Cuzoul de Gramat rock shelter was the last Mesolithic site witnessing a gradual transition between the First and the Second Mesolithic in France. The new stratigraphic and technologic analyses offered here do not settle the contention between the continuity model and the break model. No site allows to observe a transition between the Mesolithic periods and there is a gap on all French Mesolithic sites between the two facies. Nevertheless, today it is certain that the transition initially perceived by Lacam during the first quarter of 20<sup>th</sup> century does not exist but is the result of taphonomic disturbances (unnoticed at that time), coupled with the difficulty to determine precisely the limits of the different archaeological layers. The recognition of a Sauveterrian complex with trapeze armatures is based on taphonomic bias. The presence of Sauveterrian lithic artefacts in layers of the Second

Mesolithic, and the presence of artefacts from the Second Mesolithic in Sauveterrian layers prompted an interpenetration of the archaeological material. The new interpretation currently envisaged through the study of the material, appears to admit a break between the two assemblages. No technologic affiliations have been detected between the triangles phase and the trapezes phase. However, the radiometric context which highlights a gap, necessitates a cautionary tale that for the moment, it is impossible to determine this key moment between the two Mesolithic assemblages. In fact, there are no Mesolithic sites presenting a transition between First and Second Mesolithic. This fact allows us to question the demographic continuation to the Second Mesolithic.

This new analysis shows the difficulties in dealing with the taphonomy of complex stratified sites, especially when there are numerous dug-into structures. Many formerly excavated sites (e.g. Perrin, Defranould 2016) have been re-examined in recent years, that have resulted in new and more reliable models.

At present, very few Sauveterrian levels have been excavated at the site, but the analysis of the new stratigraphic section (2017) leads to anticipation of very interesting results that will not only enrich the discussion regarding the transition between the two Mesolithic assemblages, but also for the place and characteristics of the French south-western Sauveterrian. We also hope to investigate the Epipalaeolithic sequence in order to better understand the occupation of the site. The clues we have been able to gather so far suggest the presence of one or more occupations of the Azilian and the Laborian. Observation of the Lacam's collections, but also the sieving of the excavated sediment from the former 20<sup>th</sup> century excavations, reveal the presence of numerous Azilian points, as well as few rare Laborian artefacts (truncated backed pieces).

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## References

- Barrière, C., 1956. *Les civilisations tardenoisennes en Europe occidentale*. Bordeaux: Bière.
- Binder, D., 1987. *Le Néolithique ancien provençal: typologie et technologie des outillages lithiques*. Monograph in Gallia, suppl. 24, Paris : Editions du Centre national de la recherche.
- Breuil, H., 1913. Les subdivisions du paléolithique supérieur et leur signification. In Waldemar, D. (ed.) *Congrès international d'anthropologie et d'archéologie préhistoriques - compte-rendu de la XIVème session, Genève, 1912*. Kündig: Waldemar, 165-238.
- Bronk Ramsey, C., 2017. Methods for Summarizing Radiocarbon Datasets. *Radiocarbon*, 59(2), 1809-1833.
- Clark, J.G.D., 1958. Blade and Trapeze Industries of the European Stone Age. *Proceedings of the Prehistoric Society* 24, 24-42. <https://doi.org/10.1017/S0079497X00016716>
- Costa, L.J., Marchand, G., 2006. Transformations des productions lithiques du premier au

- second Mésolithique en Bretagne et en Irlande. *Bulletin de la Société préhistorique française* 103, 275-290. <https://doi.org/10.3406/bspf.2006.13433>
- Coulonges, L., 1928. Le gisement préhistorique du Martinet à Sauveterre-la-Lémance (Lot-et-Garonne). *L'anthropologie* 38, 495-503.
- Coulonges, L., 1935. *Les gisements préhistoriques de Sauveterre-la-Lémance, Lot-et-Garonne*. Paris: Masson et C<sup>ie</sup> éditeurs.
- Coulonges, L., 1954. Le Sauveterrien. *Bulletin de la Société préhistorique française* 51, 70-71. <https://doi.org/10.3406/bspf.1954.12414>
- Jarry, M., Brugal, J.-P., Ferrier, C., 2013. *Modalité d'occupation et exploitation des milieux au Paléolithique dans le Sud-Ouest de la France*, Monograph in Paléo suppl. 4, Les Eyzies-de-Tayac-Sireuil : Musée National de Préhistoire.
- Kozłowski, S.K., 1976. Les Courants interculturels dans le Mésolithique de l'Europe occidentale. In Kozłowski, S.K (ed.) *Les Civilisations du 8e au 5e millénaire avant notre ère en Europe : paléoenvironnement, structures d'habitat, outillages, économie*. Prétirage des actes du XIXe colloque, Nice, 14 sept. 1976. Paris: Centre national de la recherche scientifique, 135-160.
- Lacam, R., Niederlender, A., Vallois, H.V., 1944. *Le gisement mésolithique du Cuzoul de Gramat*. Paris: Masson et C<sup>ie</sup> éditeurs.
- Langlais, M., Bonnet-Jacquement, P., Detrain, L., Valdeyron, N., 2014. Le Laborien : ultime sursaut technique du cycle évolutif paléolithique du sud-ouest de la France ? In Jaubert, J., Fourment, N., Depaepe, P. (dir.), *Transitions, ruptures et continuité en Préhistoire, XXVIIe congrès préhistorique de France – Bordeaux-Les Eyzies, 31 mai-5 juin 2010*. Paris: Société préhistorique française, 567-582.
- Marchand, G., 2008. Dynamique des changements techniques sur les marges du Massif armoricain de l'Azilien au Premier Mésolithique. In Fagnart, J.-P., Thévenin A., Ducrocq, T., Souffi, B., Coudret P. (eds) *Le début du Mésolithique en Europe du Nord-Ouest*. Actes de la table ronde d'Amiens, 9 et 10 octobre 2004. Paris : Société préhistorique française, 51-64.
- Marchand, G., 2014a. *Préhistoire atlantique: fonctionnement et évolution des sociétés, du Paléolithique au Néolithique*. Arles: Errance.
- Marchand, G., 2014b. Premier et second Mésolithique. *Palethnologie* 6, 9-22.
- Morgan (de), J., 1909. *Les premières civilisations: études sur la préhistoire et l'histoire jusqu'à la fin de l'Empire macédonien*. Paris: Ernest Leroux.
- Mortillet (de), G., 1897. *Formation de la nation française: textes, linguistique, palethnologie, anthropologie*. Paris: Félix Alcan.
- Octobon, C., 1933. La question tardenoisienne. Observations sur les industries à microlithe: Le Tardenoisien du Tardenois et le Tardenoisien français. *Bulletin de la Société préhistorique française* 30, 171-180. <https://doi.org/10.3406/bspf.1933.12136>
- Octobon, L.C., 1922. « La Question Tardenoisienne ». Questions de terminologie générale. *Bulletin de la Société préhistorique française* 19, 67-70. <https://doi.org/10.3406/bspf.1922.11973>
- Perrin, T., Defranould, E., 2016. The Montclus rock shelter (Gard) and the continuity hypothesis between First and Second Mesolithic in Southern France. *Quaternary International* 423, 230-241. <https://doi.org/10.1016/j.quaint.2015.09.046>
- Reboux, 1869. Paléontologie du bassin parisien. *Bulletins de la Société d'anthropologie de Paris* 4, 688-691. <https://doi.org/10.3406/bmsap.1869.4959>

- Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Grootes, P. M., Guilderson, T. P., Haflidason, H., Hajdas, I., HattŽ, C., Heaton, T. J., Hoffmann, D. L., Hogg, A. G., Hughen, K. A., Kaiser, K. F., Kromer, B., Manning, S. W., Niu, M., Reimer, R. W., Richards, D. A., Scott, E. M., Southon, J. R., Staff, R. A., Turney, C. S. M., van der Plicht, J., 2013. IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0-50,000 Years cal BP. *Radiocarbon*, 55(4), 1869-1887.
- Roussot-Larroque, J., 1977. Néolithisation et Néolithique ancien d'Aquitaine. *Bulletin de la Société préhistorique française* 74(2), 559-582.
- Roussot-Larroque, J., 1985. Seine-Oise-Marne, Artenac, Gord et les autres. *Revue archéologique de Picardie* 3, 9-25. <https://doi.org/10.3406/pica.1985.1469>
- Roussot-Larroque, J., 2009. Les complexes géométriques en Aquitaine. *El Mesolítico Geométrico en la Península Ibérica*, Monografías Arqueológicas 44, 279-306.
- Rozoy, J.-G., 1978. *Les derniers chasseurs: l'Épipaléolithique en France et en Belgique: essai de synthèse*. Reims: Société archéologique champenoise.
- Thevenin, A., 1995. Mésolithique récent, Mésolithique final, Néolithique ancien dans le quart nord-est de la France : pour une réinterprétation des données. *Revue archéologique de Picardie* 9, 3-15. <https://doi.org/10.3406/pica.1995.1828>
- Valdeyron, N., 2000. Géographie culturelle du Mésolithique récent/final dans le sud-ouest de la France. In Leduc, M., Valdeyron, N., Vaquer, J. (eds) *Sociétés et espaces*. Rencontres Méridionales de Préhistoire récente, Troisième session, Toulouse, 6-7 novembre 1998. Toulouse : Archives d'écologie préhistorique, 23-34.
- Valdeyron, N., 2013. *Of Men and Nuts. Essai sur le Mésolithique et sur la place qu'y tient le végétal*. Mémoire, habilitation à diriger des recherches. Toulouse: Université Toulouse Jean-Jaurès.
- Valdeyron, N., Bosc-Zanardo, B., Briand, T., 2008. Evolutions des armatures de pierre et dynamiques culturelles durant le Mésolithique dans le sud-ouest de la France. *Palethnologie* 12, 278-295.
- Valdeyron, N., Bosc-Zanardo, B., Briand, T., Henry, A., Marquebielle, B., Michel, S., 2011. Le gisement du Cuzoul de Gramat (Lot, France) : Présentation des nouveaux travaux et résultats préliminaires. In Sénépart, I., Perrin, T., Thirault, E., Bonnardin S. (eds) *Marges, frontières et transgressions*. Actes des huitièmes Rencontres Méridionales de Préhistoire Récente, Marseille, 7 et 8 novembre 2008. Toulouse : Archives d'Ecologie Préhistorique, 197-211.
- Valdeyron, N., Henry, A., Marquebielle, B., Bosc-Zanardo, B., Gassin, B., Michel, S., Philibert, S., 2015. Le Cuzoul de Gramat (Lot, France): A key sequence for the early Holocene in southwest France. In Foulds, F.W.F., Drinkall, H.C., Perri, A.R., Clinnick, D.T.G., Walker J.W.P. (eds) *Wild Things: Recent advances in Palaeolithic and Mesolithic research*. Oxford & Philadelphia: Oxbow Books, 94-105.
- Valdeyron, N., Manen, C., Bosc-Zanardo, B., 2013. Mésolithique récent/final et néolithisation du sud-ouest de la France : vers de nouvelles perspectives ? In Jaubert J., Fourment N., Depaepe P. (eds) *Transitions, Ruptures et continuité en Préhistoire*. XXVIIe congrès préhistorique de France, Bordeaux-Les Eyzies, 31 mai-5juin 2010. Paris: Société préhistorique française, 1-18.

## Бележки за прехода между първия и втория мезолитни технокомплекса по стратиграфски данни от скалния навес Cuzoul de Gramat (Югозападна Франция)

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(резюме)

В началото на VII-то хилядолетие пр. Хр. мезолитните техно-типологически традиции в Европа претърпяват голяма трансформация. Тя се характеризира с пълно обновяване на кремъчната индустрия, изразено както с изчезването на производството на пластинки и тънки отломъци, получени чрез директен удар и използвани за оформянето на върхове на метаттилно оръжие, така и с появата на стандартизирано производство на пластини, получени чрез индиректен удар (с посредник) или с натиск, и използвани за оформяне на трацеци и пластини с вдлъбнатини. Тази промяна разграничава ясно т. нар. „първи и втори“ мезолит в Европа<sup>1</sup>. За първи път това е отбелязано още в началото на 20-ти век от Coulonges през 1935 г., за обектите Martinet и Roc Allan (Sauveterre-la-Lémance, Occitanie, Lot-et-Garonne, Франция) и от R. Lacam през 1944 г. за Cuzoul de Gramat (Gramat, Occitanie, Lot, Франция). По-късно, през 1956 г. С. Barrière разглежда този въпрос в докторската си дисертация на тема „Tardenoisian“; през 1958 г. J.G.D. Clark теоретизира тази промяна на европейско ниво, а през 1976 г. S.K. Kozłowski свързва комплексите Sauveterrian, Tardenoisian и Castelnovian със специфични компоненти на теорията си за „вълна“ от интер-културни взаимодействия. След публикуването на отчетите на Coulonges и Lacam през 40-те години на 20-ти век е повдигнат въпросът за фундаменталния характер на този процес на трансформация. Съществуват две противоречащи си хипотези. От една страна, Coulonges свързва промяната с вероятността за смяна на населението. От друга страна, за Lacam, промяната е продължителен процес на приемственост, който се идентифицира с два археологически пласта със смесена кремъчна индустрия и демонстрира преходно явление между двете традиции в кремъчното производство. Тази хипотеза се радва на подновен интерес в колективни проучвания по съвместни програми (по-специално тези на Т. Perrin) и в разкопки на обекти, документиращи въпросния период. Тези нови анализи предлагат нов поглед към този ключов проблем на европейския мезолит.

Настоящата статия разглежда данните от обекта Cuzoul de Gramat (където разкопките са възобновени през 2005 г. под ръководството на N. Valdeyron) с акцент върху проблема за прехода между първия и втория фациес на мезолита. Предложена е преоценка на тезата за технологично-културния преход, на базата на нови стратиграфски данни и принадлежащите им кремъчни комплекси, открити в процеса на настоящите разкопки.

Анализът на кремъчните комплекси от прехода между двата обособени технокомплекса на мезолита позволява преоценка на данните. Изучаването на нови стратиграфски профили показва тафономични особености, които поставят под въпрос тълкуването на стратиграфската секвенция, предложено от Лакам. Не се открива сте-

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1 По настояване на авторите използваме термините първи и втори мезолит като самостоятелни периоди и културни явления. Допустимо е терминологично заместване с технокомплекс и/или фациес.

рилен слой между двата мезолитни фациеса, а и седиментните промени са едва забележими, което усложнява разделянето на двете нива. Наличието на ями, вкопани по време на втория фациес на мезолита, води до разместване на материалите, оставени от двете мезолитни групи и до създаването на местна смесена индустрия между двата фациеса. В допълнение може да се отбележи, че присъствието на древни дупки (биотурбационни) на гризачи е допринесло за смесването на материалите в много участъци на обекта. Комбинацията от ями и дупки затруднява разбирането на тафономията на обекта, като на определени места материалите от двете нива са смесени. На последно място, но не и по важност, датирането на двата мезолита показва разлика от 450 до 690 години.

Новите данни от проучването показват, че моделът на Lascaux за технологична приемственост между първия и втория мезолитни технокомплекса не е валиден и произхожда главно от неидентифицирани по време на разкопките тафономични проблеми. Скалният навес Cuzoul de Gramat, както и други обекти (напр. Martinet rock-shelter, Montclus rock-shelter, пещерата Rouffignac), демонстрират прекъсване между двата технокомплекса/фациеса и поставя нови въпроси относно разпространението на индустриите с пластини и трапеци.