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To be or not to be? That is not the question

Variability description of lithic assemblage

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***Abstract* – Based on the study of two collections from ancient excavations, the Grotte des Morts (Corrèze, France) and Plasenn-al-Lomm (Cotes-d'Armor, France), this paper focus on the description of the variability of the Raysse method through petroarchaeological and technological study of Raysse burins-core and associated by-products. In order to discuss the homogeneity of the Raysse technical tradition through the characterization of the technical variability of the Raysse elements, we propose a reading grid combining technological and petrological criteria.**

Techno-petrological analysis can also be applied to compare technical concepts such as tertiary modification burins with the Raysse method, wich seems to be technologically linked.

I. INTRODUCTION

The mode of typological attribution of lithic assemblages refers to a binary system: an artefact belongs or does not belong to a typological class. Lithic technology has, over the last twenty years or so, provided the tools to account for the diversity within assemblages. However, it seems difficult to get rid of a binary reasoning in our classification method. In this paper, we will present a technological reading grid, which has been under development for several years on the collections of sites with Raysse burin-cores (fig. 1). The aim of this grid is to highlight the technical variability of what appears like a rigid standardised production method, by associating data from the analysis of raw materials.

As the acquisition of raw materials is an integral part of the manufacturing process, the aim is to combine materials with techniques by attempting to highlight 1) the existence of a choice in the materials used for the implementation of a technique, 2) a differential treatment of materials for the same method, 3) or even a techno-economic link between initially distinct technical schemas.

II. CONTEXT

In France, the Middle Gravettian is subdivided into two entities: the Noaillian followed by the Rayssian. The initial distinction between them is the predominance of Noailles burins within the so-called 'Noaillian' lithic assemblages, followed by a predominance of Raysse burin-core within the so-called 'Rayssian' assemblages. One of the issues surrounding this period concerns the filiation between these technical traditions, as the two burin typologies probably coexisted for some time. The Middle Gravettian thus appears to be an ideal candidate for questioning the notions of archaeological cultures and territories, and their use in Prehistory. The study of technical variability is one of the gateways leading to this type of questioning since it allows not only to test the homogeneity of the model (e.g. the "Rayssian" entity) but also to highlight its different expressions. Studies of the origin of materials also have their contribution to make.

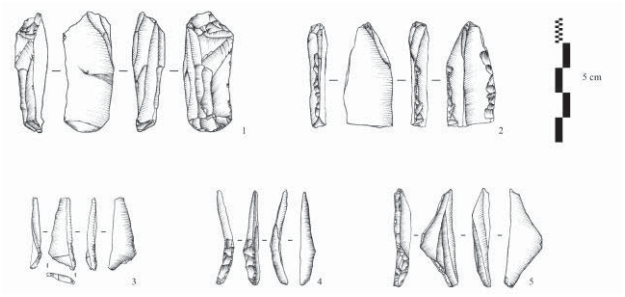

Fig. 1. 1 and 2: Raysse burin-cores ; 3: Picardie bladelet ; 4 and 5: Raysse burin-cores by-products (drawing : C. Sarrazin)

Indeed, the precise definition of collection areas allows a new appreciation of the territory experienced by the prehistoric collectives. Furthermore, the diversity of

materials used is a source of possible variations within a technical tradition.

Our contribution is based on the studies of the sites of the Grotte des Morts (Corrèze) and Plasenn-al-Lomm (Côtes-d'Armor) who are both attributed to the Rayssian period. This attribution is based on the identification of an operating concept called "the Raysse method" [1][2] within the lithic assemblages, represented here by certain elements: the Raysse burins-cores and their products (i.e. Raysse and Picardie bladelets). Other elements can be associated with them, such as burins with tertiary modification, identified on these two sites and about which we will develop here concerning their technical link with the Raysse burin-cores. Our aim is to observe how this model is expressed on the sites of La Grotte des Morts and Plasenn-al-Lomm: 1) by verifying the homogeneity of the Raysse technical tradition through the characterisation of the technical variability of the Raysse elements, and 2) by associating a petrological analysis of the silicites with the technological study.

The description of the technical variability of assemblages is a key issue in understanding the dynamics in the evolution of technical traditions. Seemingly homogeneous, they are by definition subject to change as they are put into practice [3]. It is then a question of considering variation in a horizontal mode[1] ('horizontal diversity', [4]), the vertical declination of the Raysse method having already been dealt with through the question of learning [5]. Our contribution will therefore focus on methodological issues in order to account for the technical variability of the Raysse method.

Thus, we will expose the method of petrological analysis of silicites as developed by P. Fernandes, J.-P. Raynal, M. Piboule and V. Delvigne, as well as the technological analysis grid based on the description of the occurrences of technical criteria [6][9]. The results presented are derived from these different studies but also from two ongoing thesis on the subject.

III. METHODS

The petrological characterisation of the Rayssian elements of the Grotte des Morts and Plasenn-al-Lomm integrates the recent concepts of silicite petrology. This consists of filling in three observation and description grids[2] that were developed on the basis of the concept of the evolutionary chain of silicites[3] [11][12][13]14]. This was formalised following the observation of the evolution and transformation of this type of material during its natural course and more particularly after its genesis. In fact, following their outcrop, these rocks will undergo alterations of chemical and/or mechanical origin during their journey, each of which will be characteristic of the different environments they pass through. On the archaeological material, other alterations may be superimposed on the previous ones during the burial phase on the archaeological site. From then on, the petrographic characterisation work will aim not only to identify these different alterations, but also to distinguish those that precede burial (pre-depositional phase) from those that follow it (post-depositional phase).

The detailed description (with a binocular magnifying glass) of the composition and structure of the silicites allows the distinction of genetic[4] and geological types which will then be compared with the actualist geological references allowing the elaboration of hypotheses of origin. By its precision, this method offers the possibility of defining the place of collection of materials by prehistoric men and women.

[1] These notions of vertical declension versus horizontal diversity [17] consist of two ways of conceiving the actors: the first considers that these actors will replicate a way of doing things identically, the variations observed would then be due to differences in terms of know-how, whereas the second takes into consideration inter-individual differences. From this point of view, identical replication according to an ideal model is no longer compulsory, individuals can choose whether or not to reproduce an operating scheme in its entirety. This distinction operates a change in the agency conferred to individuals.

[2] These grids were developed by P. Fernandes, V. Delvigne and C. Tufféry in the framework of the work of the GDR "Silex". They are the subject of several publications, some of which are under press.

[3] All rocks that have undergone silicification of chemical, biochemical or diagenetic origin [14]. It allows us to get rid of the term flint, which can be controversial depending on its use by different specialists.

[4] The genetic type refers to the genesis of the rock or its formation. A distinction is made between genetic type and geological type, which designate the silicites from their primary position to their secondary positions, which may be more or less distant from their formation zone. There are as many potential collection sites as there are geological types for each genetic type.

Type of formation	Type of raw material	Primary stratigraphic origin	Primary geographic origin	Eff. BMT	%	Eff. B-ndR	%
marine	11	Lower Senonian	Sud-Est Périgord	16	28,07	89	25,65
marine	12	Lower Senonian	Sud-Est Périgord	2	3,51	28	8,07
marine	13	Senonian	-	0	0,00	1	0,29
marine	1.X	Lower Senonian	Sud-Est Périgord	0	0,00	5	1,44
marine	21	Lower Senonian	Sud-Est Périgord	4	7,02	25	7,20
marine	22	Lower Senonian	Sud-Est Périgord	2	3,51	7	2,02
marine	61	Upper Senonian	Sud-Est Périgord	8	14,04	65	18,73
marine	62	Upper Senonian	Sud-Est Périgord	6	10,53	10	2,88
marine	15	Lower Campanian	Sud Périgord	0	0,00	2	0,58
marine	3	Lower Senonian	-	0	0,00	1	0,29
marine	71	Lower Turonian	Mareuil-sur-Cher/Valençay	5	8,77	36	10,37
marine	72	Lower Turonian	Vallée du Cher	0	0,00	1	0,29
marine	73	Lower Turonian	Vallée du Nahon		0,00		0,00
marine	101	Upper Turonian	Le Grand-Pressigny	6	10,53	39	11,24
marine	102	Upper Turonian	Le Grand-Pressigny	3	5,26	9	2,59
marine	10.X	Upper Turonian	indéterminé	1	1,75	0	0,00
marine	111	Bajocian	Vallée de la Dordogne	0	0,00	2	0,58
marine	112	Bajocian	Vallée de la Dordogne	0	0,00	1	0,29
marine	113	Bajocian-Bathonian	Bassin de Brive *s.l.*	0	0,00	1	0,29
marine	122	Upper Campanian	vallée de la Seyze	0	0,00	8	2,31
marine	123	Upper Campanian ?	-	0	0,00	4	1,15
marine	124	Upper Campanian	Bergeracois *s.l.*	3	5,26	2	0,58
marine	14	Coniaco-santonian	nticlinal de Jonzac (Charent	1	1,75	4	1,15
silcrete	131	eo-oligocene	Haut-Agenais/Bouriane	0	0,00	1	0,29
hydrothermal	17	Hettangian	vallée de la Tourmente	0	0,00	1	0,29
marine	63	Upper Cretaceous	-	0	0,00	1	0,29
lacustrine	8	-	-	0	0,00	1	0,29
marine	121	Upper Cretaceous	-	0	0,00	1	0,29
marine	16	Cretaceous	Ribérac ou Mussidan	0	0,00	2	0,58
			Total	57	100,00	347	100,00

Table 1. Numbers and percentages of tertiary-modified burins (BMT) and Raysse burins-cores (B-ndR) by material type

The observation and systematic description of the technical criteria characterising the Raysse burins-cores makes it possible to integrate a greater variability of artefacts into the "Raysse burins" group. The technical criteria used to identify Raysse burins-cores and their products and by-products were selected on the basis of the abundant literature on this subject, largely attributed to L. Klaric (see in particular Klaric, [1-2]). On the basis of these criteria, we have constructed an analysis grid based on the occurrence of the criteria. This grid of occurrences is considered to be a tool that has the advantage of describing the entire population of Raysse burins-cores and their by-products without having initialy to decide whether or not they belong to this type[5] . By describing all the Raysse burins-cores, we believe that we can effectively account for the variability of this type. The absence of certain criteria does not automatically

exclude these pieces from the conceptual scheme but rather initiates a reflection on the presence or absence of technical modalities. Moreover, a criterion has little value on its own, it is the association between them that will be significant.

The cross-referencing of lithological data with technology consists of observing the number of people per type of raw material (number of pieces) or the representation of a technical criterion per material. The objective is to compare the data by material in order to detect possible variations. Between two distinct productions, it is more a question of evaluating the types of material represented in each of them. Their representation will then be a source of rapprochement or opposition between two types of object.

At the Grotte des Morts, as at Plasenn-al-Lomm, there are numerous examples of burins with tertiary modification and Burin-Points [7]. These types are very similar to the Raysse method in terms of technical and conceptual modalities, and share a similar simplified operating scheme. Raysse burins-core and burins with tertiary modification share in some cases the same support [16][7]. These burins have not been the subject of as much attention as the Raysse burin-cores, which makes the development of an adapted analysis grid more complex. On the other hand, the proven comparison with the Raysse method can allow us to discuss the diversity of implementation of this method while accounting for the variability within this population of burins with tertiary modification. In this case, the lithological data are then used to confirm or refute the hypothesis of a technical link, or even a transfer, between these two operating schemes.

[5] Although membership in the "Raysse burin" group is not decided in advance, only pieces compatible with this typology are included in the analysis.

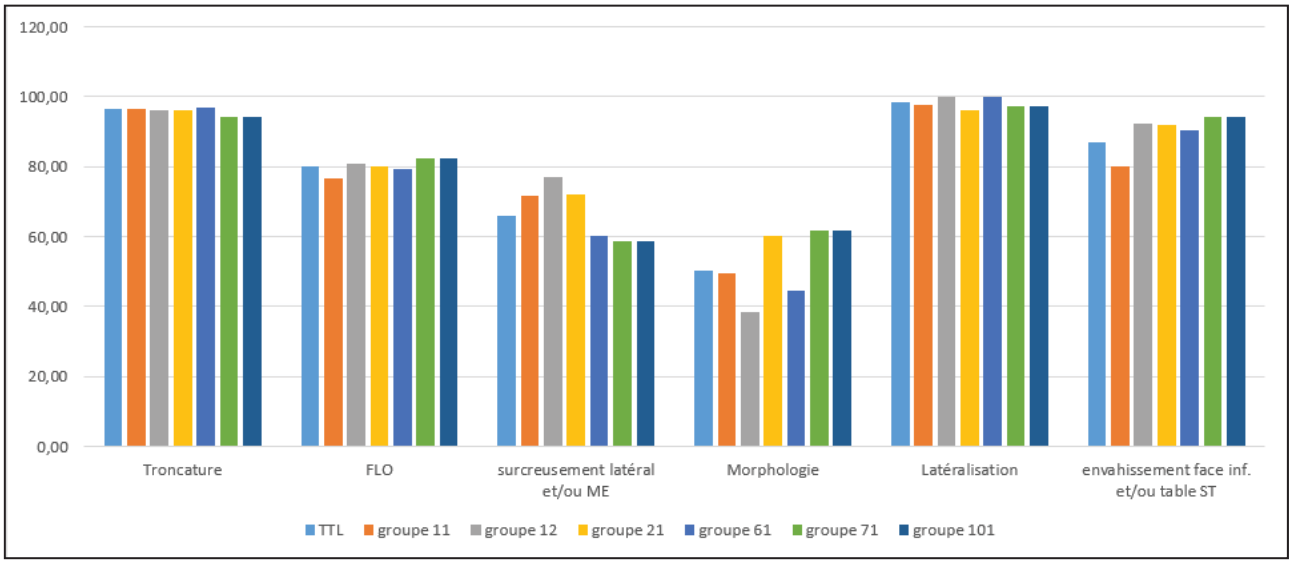

Fig. 2. Representation of technical criteria associated with Raysse burin-core by type of raw material in percentage.

IV. DISCUSSION

Although this methodological proposal seems to us to be adapted to the description of technical variability, this grid remains limited to a few criteria and is once again based on binary choices of presence/absence. This is why it is not set in stone and is constantly being improved so that it can also be taking into account some technical particularities.

So far, our approach has made it possible to highlight a certain link between the Raysse method and the materials of the Parisian basin, which for the moment seems to represent an important part of the materials used among the lithic assemblages. It should be noted, however, that depending on the location of the site, this technique invests other types of materials sometimes present in the closer environment. This is the case of Plasenn-al-Lomm, whose location is very isolated from the rest of the Raysse burin-core sites, pushing back the northern limits of their distribution, and which remains far from the supply areas identified among the other lithic series. A very large majority of the material used to make the Raysse flakes consists of coastal flint pebbles, while no material from the south of the Paris basin has yet been identified. While great distances seem to have been covered to obtain these materials (as is the case for the Grotte des Morts), it would seem that other cases demonstrate a choice to adapt a technique to other types of materials. These questions of borrowing and reappropriation are addressed in the thesis in progress of one of us (MP) on the circulation of technical knowledge in the Palaeolithic period, with the case study of bladelet debitage on Raysse burin-core. The aim is to examine the way in which technical knowledge circulates materially, spatially and temporally, through the study of technical variability and materials and, consequently, of supply sites.

V. CONCLUSION

By highlighting the links between technical modalities from different types of artefacts, it is possible to account for technical diversity on a different scale. The Upper Palaeolithic technocomplexes were built, like the typologies, on rigid models: a site either belongs or does not belong to a technocomplex [17]. The consequence of this model is that marginal sites are excluded, i.e. sites without clear chrono-cultural markers or recording a singular technology. The technical modalities are described and compared in detail in the framework of a thesis (CS) in an attempt to incorporate these sites, which are currently not included in the reflections on the construction of the Upper Palaeolithic.

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