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## Original Study

Simone Chisena\*, Christophe Delage

# On the Attribution of Palaeolithic Artworks: The Case of La Marche (Lussac-les-Châteaux, Vienne)<sup>1</sup>

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**Abstract:** In this paper, we have explored the possibility of assigning the human-themed engravings from La Marche to their authors, according to the method outlined by J.M. Apellaniz in the 1980s. The method employed here follows the first of the three stages postulated by Apellaniz: macroscopic observation, microscopic analysis and experimental protocol. From our study emerged a pattern of five groups and sixteen hands at work in this site. We believe, therefore, that it is possible to speak of La Marche as an “art workshop”, where portable art was produced and taught.

**Keywords:** Magdalenian art; portable art; La Marche; authorship; attribution

## 1 Introduction

The cave of La Marche, located in the town of Lussac-les-Châteaux in the French Département of Vienne (France), is by far one of the most intriguing portable prehistoric art discoveries of the 20th century. What makes this site outstanding in the European panorama is not just the amount of mobile art items (more than 3,000 engraved stones) but the fact that, out of these, numerous human representations may be encountered; so far, the largest concentration of human individual depictions in the whole Upper Palaeolithic in Europe.

In this paper, we focused on the human-themed engravings from La Marche, followed the lines traced on the plaquettes and boulders to read the portraits’ outlines and, by applying a variation of the method devised by J.M. Apellaniz (2004a), we tried to assign the engravings to specific authors. At the same time, we tried to determine whether or not it would be possible, for this archaeological context, to speak of an “art workshop”, by which expression we mean a place where art was not only produced, but also taught and learnt.

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<sup>1</sup> The research performed by Simone Chisena. Sections 3-6 are by Simone Chisena; Sections 1, 7 are by Simone Chisena and Christophe Delage; Section 2 is by Christophe Delage.

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**Article note:** This article is a part of Topical Issue on From Line to Colour: Social Context and Visual Communication of Prehistoric Art edited by Liliana Janik and Simon Kaner.

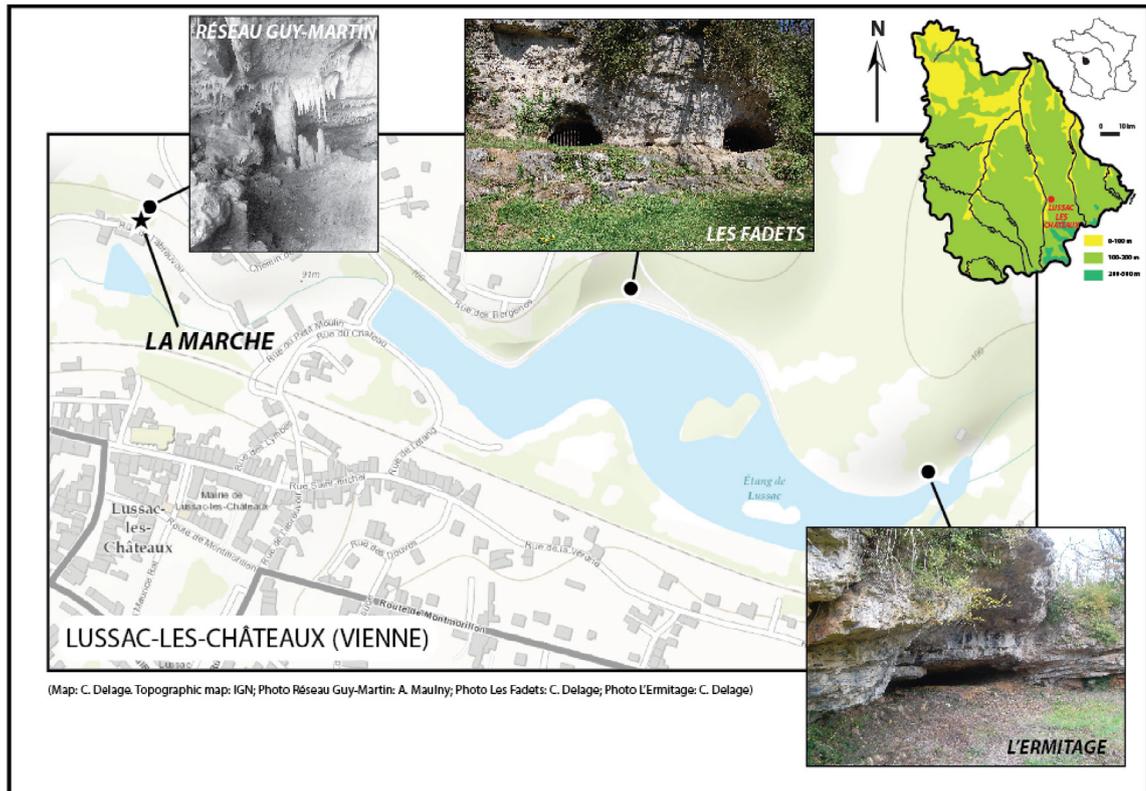
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## 2 La Marche: Setting, History of Research, Archaeological and Artistic Context

As properly described by its investigators, Léon Péricard and Stéphane Lwoff (1940, p. 156), La Marche is conveniently located on the northern slope of the valley called *Ruisseau du Petit Moulin*, at roughly 10 meters above the valley bottom. The small river, in this valley running East-West, is regularly underground due to the porous nature of the local karstic limestone terrain (Joubert et al., 1992), but resurfaces upstream notably at the cave of Fontserain (yielding early Upper Palaeolithic parietal art; Airvaux et al., 2001). La Marche is currently called a “cave”, but at the time of the prehistoric occupations (Magdalenian, ca. 14,500 uncal. BP) it would be better described as a deep rockshelter since the two huge limestone rocks that block most of the wide entrance collapsed at some time in the past (Late Pleistocene). The locale where La Marche is situated on this northern slope of the valley is in fact a complex karstic network of underground galleries. About 10m above La Marche a true cave, called Réseau Guy-Martin, was discovered in June 1990 and immediately excavated and analysed before being sealed to protect it against any illegal exploration. This upper cave yielded archaeological remains (e.g. lithic and osseous industries) and art (mobiliary and parietal) very similar to those of La Marche below (Airvaux, 1998; Airvaux et al., 2001). Most interestingly the parietal art was constituted of fine engravings representing a new born child and vulvae, associated to a mammoth and several horses. These data, further supported by comparable radiometric dates, document the contemporaneous occupation of both sites by the Middle Magdalenians ca. 14,500–14,000 uncal. BP. Other archaeologically interesting sites are also present in this valley: a few hundred metres upstream, the cave of Les Fadets contains a rich layer dated to the Middle Magdalenian (Magdalenian III according to Breuil’s classification; Breuil, 1913) with a lithic industry and mobiliary art very similar to those found at La Marche, in between thin layers attributed below to the Mousterian and above to the Upper Magdalenian (Airvaux & Chollet, 1985; Airvaux et al., 2001; Breuil, 1905; Lacy et al., in press; Lwoff, 1962a); and about a

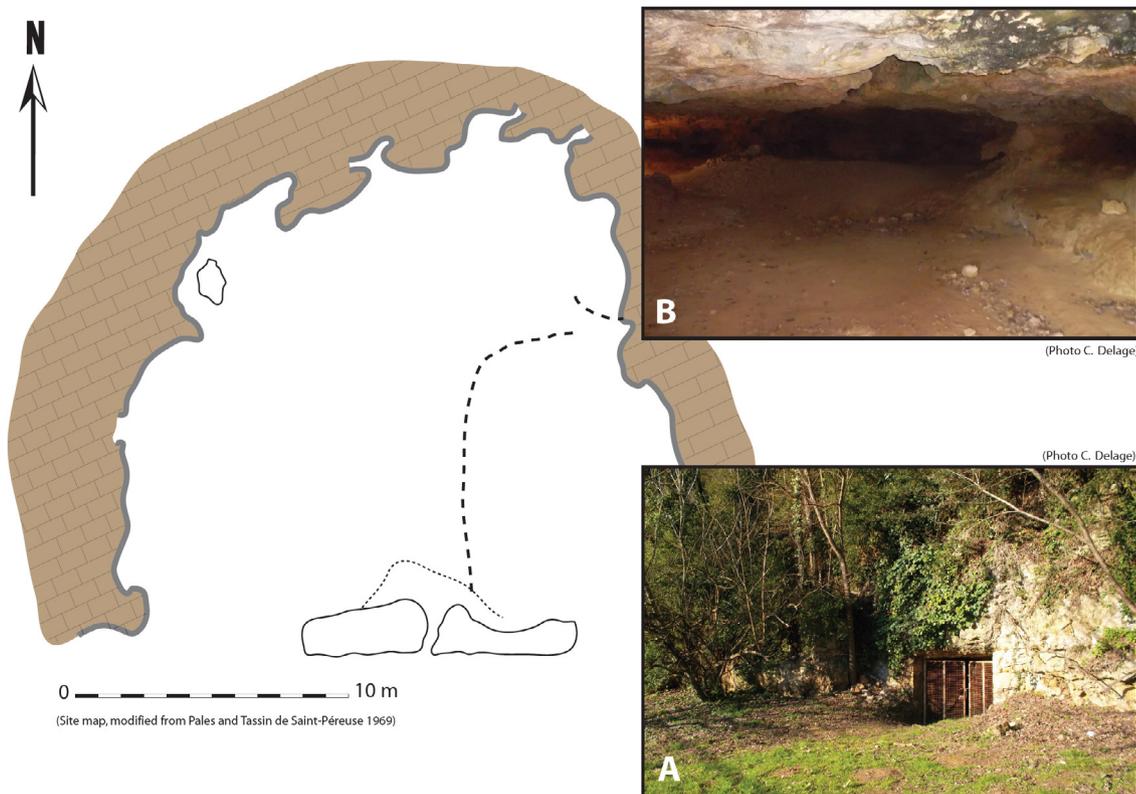


**Figure 1.** Map with the location of the prehistoric sites in Lussac-les-Châteaux mentioned in the text.

hundred metres further upstream the rockshelter of L'Ermitage, which has yielded a rich level with material remains dating to the Upper Mousterian covered with thin layers tentatively attributed to the Badegoulian and the Upper Magdalenian (Lwoff, 1957a; Pradel & Pradel, 1954).

La Marche has been explored by various generations of scholars (Delage, 2016). After several findings by local people (among whom H. Lavergne in 1914), the first excavations by a local miller, Léon Péricard (1889–1978), began in November 1937 (Péricard & Lwoff, 1940). Subsequently Stéphane Lwoff (1900–1992), who had studied at the school of the Louvre Museum, joined the excavation which lasted until the early 1940s. The site attained instant fame following the discovery of numerous limestone blocks yielding prehistoric (Magdalenian) engravings (i.e. complex patterns of intertwined engraved lines), most notably characterized by human-themed depictions (Fuentes, 2013a, 2013b, 2015, 2016a, 2016b; Lwoff, 1941, 1943, 1957b, 1976b; Pales & Tassin de Saint-Péreuse, 1976). It would then take several decades for S. Lwoff to study and publish the huge and diverse amount of archaeological remains exhumed (Lwoff, 1941, 1943, 1957b, 1959, 1962b, 1964, 1968, 1970-71, 1989). In 1957 Louis Pradel carried out a short field season (Pradel, 1960). Finally, between 1988 and 1993, Jean Airvaux excavated the deposits preserved between/under the huge blocks at the entrance of the rockshelter; he was thus able to observe and record for the first time the stratigraphic sequence of the site. He also sieved an enormous amount of spoiled heaps from the Péricard-Lwoff excavations (Airvaux et al., 2001). In sum, three phases of field explorations are known through publications, but we should be aware that local inhabitants of Lussac-les-Châteaux also explored the site on their own in a quest to exhume some unique stones with mobiliary art. This practice of looting stopped in the late 1980s when the site was finally closed.

The renowned French prehistorian and art specialist André Leroi-Gourhan was skeptical of the importance attributed to La Marche and its portable art (1965, p. 118). Indeed, he felt that the lack of details regarding the stratigraphic context of these art items dramatically reduced their scientific value. He even proposed that they should be excluded from any theories about Magdalenian art. In contrast, other scholars,



**Figure 2.** Site map with a view of La Marche from the terrace in front (A) and the inside of the cavity (B).

such as L. Pradel or J. Airvaux, were more confident about this stratigraphy, stressing the fact that at La Marche there was only one archaeological layer, dated to the classical Middle Magdalenian (Airvaux et al., 2001, p. 89). This position now seems to be accepted by most specialists. Yet it is clear from the pioneering work of L. Péricard and S. Lwoff that a layer attributed to the so-called Magdalenian IV, as shown by typical mobiliary art (“engravings on bones and geometrical patterns”; d’Errico, 1995; Marshack, 1972, 1991), existed above which was overlain by an Upper Magdalenian layer, itself covered by a rich level of historical periods (with tiles, potsherds, etc.). Thus the stratigraphic framework is far from clear. Furthermore, only one radiometric dating (Ly-2100:  $14,280 \pm 160$  BP) is available (Pradel, 1980). This measurement presents methodological issues (conventional C14 method, date obtained from several bones) that make us doubt its reliability (Delage, 2013). New radiometric datings are needed to better calibrate the sequence of human occupations.

Despite these discrepancies of opinions, there is no doubt that the main and richest layer of human occupation at La Marche corresponded to the Middle Magdalenian. Abundant lithic and osseous (e.g. spear points known as *fossiles directeurs* of this time period called “*sagaies de Lussac-Angles*”) industries, associated with faunal and human remains, pigments, body ornaments (e.g. imported perforated shells), engraved horse teeth, testify of human activities rarely documented elsewhere (Airvaux, 2011; Airvaux et al., 2001, 2013; Chehmana & Beyries, 2010; Granger & Airvaux, 2010; Henry-Gambier, 2010; Mazière & Buret, 2010).

The Péricard/Lwoff excavations appear to be the main source of information to document the diversity of human occupations and to reconstruct the Magdalenian settlement. Unfortunately in the late 1930s these excavations were not rigorously carried out and very little is known about any spatial distribution of activities. Some features (hearths; pavement of limestone slabs, many of them holding engravings) constitute the rare remains exhumed of a clearly complex settlement. We may wonder whether there were also huts (and thus traces of architecture, postholes, etc.) and burials. Indeed, one of us (CD) argued elsewhere that in fact La Marche, Réseau Guy-Martin and Les Fadets might constitute part of a single dense settlement that may have extended over several hundreds of metres along the northern slope of the valley during the Middle Magdalenian (Delage, 2013; Delage et al., 2016).

In this cultural context the Magdalenians developed a unique tradition of “art” production and transmission. With the very recent discovery of fine engravings on the ceiling at the back of the rockshelter (Bahn, 2016) the site itself was the recipient of parietal art, similar in that sense to the upper cave of Réseau Guy-Martin. But the Magdalenians demonstrated a very unique preference for portable art (Airvaux et al., 2001; Airvaux & Mélard, 2007; Airvaux & Pradel, 1984; Gaussein, 2012; Lwoff, 1941; Mélard, 2006, 2008; Pales & Tassin de Saint-Péreuse, 1967, 1968, 1969, 1976, 1981, 1989). At the moment it is possible to document about 3,000 art items; but this is a minimal estimate since private collections – that cannot be quantified – are not included and some spoiled heaps from Péricard-Lwoff excavations used to consolidate the terrace in front of the rockshelter still remain to be investigated. Thus a total number of more than 4,000–5,000 portable art pieces would be a fair estimate (de Saint-Mathurin et al., 1990, p. 3). Furthermore, if we consider that engravings on each stone could correspond to approximately 5 different depictions, we would end up with more than 20,000 subjects (abstract and figurative) represented, which constitutes a rather exceptional corpus of artistic and symbolic activity for the Late Pleistocene.

The main challenges for archaeologists and art historians interested in this topic have been: 1) to convince the scientific community and the general public of the authenticity of this unique art since this evidence has been subject to numerous attacks (Begouën, 1943; Breuil, 1942; Delage, 2016; Lwoff, 1942; Sandström, 2015); 2) to identify some meaningful depictions (either abstract or figurative) from the complex web of intertwined engraved lines on each stone; and 3) to discuss the theoretical issues related to the interpretation of this specific production. It appears quite obvious now that this site was the locale of intense and complex symbolic activities.

Stéphane Lwoff was the first to document the importance of portable art at La Marche (Lwoff, 1941). It is quite remarkable that he noticed, very early in the explorations of the rock shelter, these very fine engravings, usually hardly recognisable on the stones. Perhaps he was intrigued by the density of limestone

rocks present in the sediments, but it is most plausible that he was struck by the thin limestone slabs that did not seem of local origin. He was thus able to identify numerous animal depictions, but his attention was attracted by the human theme which was abundantly illustrated at La Marche, but a surprise for the time. This divergence from contemporary understanding would later inspire criticism. Unfortunately when we compare his drawings with more recent and rigorous studies (by L. Pales, J. Airvaux, or N. Mélard) we become aware of the subjectivity and freedom Lwoff was taking in following the lines to make sense of the engravings. This was another major source to inspire criticism of his analysis (Delage, 2016). H. Breuil (1942) supported and defended Lwoff's work against Count Bégouën (1943), and others. Nevertheless he must have known that this type of analysis could not have any scientific legacy. He certainly had in mind to take on this study himself after the Second World War but his wide-ranging academic responsibilities and research interests prevented him from carrying out an in-depth study of this immense corpus. In this context Léon Pales accepted Breuil's invitation to work seriously on this collection. Associated with Marie Tassin de Saint-Péreuse he would spend several decades studying the corpus of more than 1,500 items of portable art exhumed during the Péricard-Lwoff excavations. The four volumes published between 1969 and 1989 constitute the first exhaustive study of this corpus witnessing the diversity and richness of this specific art and the subjects represented. On a methodological level it is also a rare attempt for the time to apply more rigorous deciphering techniques on this very challenging material. This research had a lasting influence on the following generations of scholars working on Palaeolithic mobiliary art. About La Marche, this could be illustrated by the works of J. Airvaux or N. Mélard. These recent studies also applied new analytical procedures (micro-topography, micro-rugosity, SEM, 3D surface imaging). Nicolas Mélard (2006, 2008) recently produced a work of similar scope and ambition to that of Pales. He spent years analysing the corpus of ca. 1,400 items of mobiliary art recovered during Airvaux's investigations. Finally, we should also mention some other recent studies, notably focusing on the human representations that have played a prominent role in recent discussions and analysis of this portable art: for instance the works of Jean-Pierre Duhard (1992, pp. 145–146, figs. 13–16, 1993, pp. 83–85, figs. 1–2), and especially Oscar Fuentes. This latter scholar has now well documented the specificities of the symbolic use of human depictions, and we encourage the interested reader to look at his various publications (e.g. Fuentes, 2013a, 2013b, 2015, 2016a, 2016b).

Limestone blocks, of local and non-local origins, of various surficial textures and sizes, were acquired and used as blanks for fine engravings. The surface was often initially painted with a red ochre (haematite). Thin grooves were then created with appropriate stone tools (i.e. borers or burins; Lwoff, 1959, 1964). This operation was usually repeated numerous times producing confusing patterns of intertwining lines. The subjects depicted were thus barely recognisable. Nevertheless, numerous representations of animals are present (e.g. bear, lion, horses, bison, aurochs, mammoth, deer, reindeer, ibex, hare, seal, etc.). The outstanding artistic feature of this settlement is the presence of human depictions. Humans (both males and females) are illustrated by realistic representations: women are often pregnant and headless, may be associated to newborn infants, and may also be symbolized by vulvae; men are usually represented by their head alone. Moreover, humans dancing, in group, may also be encountered. Yet the vast majority of engravings are still a mystery and remain to be deciphered. The symbolic function of this production and its specific distribution in the rockshelter are difficult to assess. The famous French prehistorian, Henri Breuil, who regularly visited Péricard and Lwoff in the field in 1939 and 1940, qualified this artistic expression of "mobile parietal art" (Breuil, 1952). Yet a large number of these engraved slabs were intentionally broken, and many seem to have been assembled in a pavement, the engravings facing the ground.

### 3 The Theoretical Framework: Attribution of Palaeolithic Art

More than a decade ago Marc Groenen and his colleagues (2004) conducted a pioneering work on the identification of authorship (inspired by J.M. Apellaniz's studies) at La Marche, focusing on some specific engravings from Pales's publications to assess the reliability of this approach. Their conclusion was rather positive, but they did not pursue further their analysis. One of us (SC) too was prompted to study La Marche

from the authors' point of view by the paper published by J.M. Apellaniz (2004a). In this paper, condensing his work started in the 1980s, the author articulates a general critique of the "evolutionary" approach to Palaeolithic art, suggesting its replacement with a "formal" theory overcoming the contradictions of the current interpretive paradigm and outlining the technique of assigning prehistoric works of art to their authors.

The evolutionary approach, postulating the variation (similarities and differences) in representation as the result of generalized changes in styles over time is, according to the author, doubly flawed: it lacks any theory concerning form and is replete with misunderstandings and contradictions. The differences and similarities in representation are observed generally and globally, without analysing their formal nature, their magnitude, their characteristics and occurrence; comparison between representation has been carried out partially, not globally. This has led to the perception of differences, but not to the perception of their extent and importance; prehistoric art's general adherence to "naturalistic" representation was enough to apply the evolutionary paradigm and construct a "history", but not a theory capable of explaining the meaning and value of similarities and dissimilarities. Furthermore, the lack of any challenge to the hypothesis has led to its crystallization, therefore reducing its value against any other hypothesis that is "falsifiable" (2004a, pp. 63–4). The mistakes that followed were of a logical, "philosophical" and methodological nature: the hypothesis became the proof (hence the dating of "schematic" art to earlier stages of the Palaeolithic and more "naturalistic" examples to later stages); the scholars were unable to disentangle themselves from the Darwinian mindset that pervaded not only archaeology (considering art *a priori* as just another manifestation of the evolution of man) but also art criticism (for which the best art is the one that better imitates nature), without checking whether such a paradigm held any validity if applied to Palaeolithic art or such critical operation was justified; the approximate use of comparison between undated artworks (such as rock art) and dated ones (such as mobile art from cultural contexts), carried out by means of general rather than detailed comparison; the controversial use, by several eminent scholars, of the categories of "style", borrowed from art criticism (2004a, pp. 64–9).

But what can the evolutionary approach and the theory of style be replaced with? Apellaniz suggests his "theory of the Palaeolithic form", by which he means the set of formal qualities that gave the "image" of the figure, which Paleolithic society imposed on its members. These qualities are scattered through all the representations drawn by the artists, all of which have a common denominator. To recognize it, it is enough to compare the forms that a significant sample of them present and deduce it. For example: if we were to collect all the representation of horses produced across Upper Palaeolithic Europe, ideally place them in a stack on top of each other and look at them as through a series of glass panels, we would be able to identify the general outline of the Palaeolithic horse, together with the individual variations produced in every single one of its representation. It is easy to understand how, therefore, the combinations of variations on this general model are potentially endless; furthermore, as the author underlines, the statistical study of the variation over the horse form is enough, by itself, to disprove the theory of styles of Leroi-Gourhan (2004a, pp. 70–2). A similar point, expressed as the necessary conditions to attempt an attribution, is developed by Groenen et al., 2004, pp. 132–3).

It is in contrast with another of Leroi-Gourhan's opinions – the impossibility of recognising individuals in Palaeolithic art – that Apellaniz introduces his method of attribution of Palaeolithic artworks to its authors. The author candidly admits his bewilderment in the face of the scholars' resignation never to know the authors of prehistoric art: given the nature both of the graphic sign (conveying the natural movements of the author's hand) and of prehistoric art (where the graphic sign is particularly clear and readable), nothing prevents an attribution, if not from being achieved, at least from being attempted. The main parallel, in this sense, is writing: based on a general model (the Latin alphabet for Western people, Cyrillic for Eastern Europeans, etc.) individuals produce variations that sum up to a potentially infinite number of combinations, so much so that an entire discipline, graphology, has been developed to study the graphic sign of individuals. Stemming from these premises, the author develops his three-stage method: macroscopic observation, statistical study and experimental protocol (2004a, pp. 73–8), from which I took my inspiration for this work.

The problem of individuality, underlying Apellaniz' work, is also the object of a 2015 paper trying to investigate the issues of gender, apprenticeship and tradition, although with a slightly less critical tone. Acknowledging the difficulty of investigating individuality in Palaeolithic societies – especially on the subject of art – the authors suggest a turn towards a less broad view and instead approach the problem on a microscale level, trying to look behind art to observe those who created it (Fritz et al., 2015, pp. 1308–10). By applying microscopic analysis to portable art from the Magdalenian, the authors were able to investigate skill levels and the consequent level of expertise of prehistoric artists; an expert artist/maker would be able to control the three fundamental angles involved in the process of engraving (tool, front working and side working angles), lack of which will result in slips and mistakes in the execution; at the same time, an experienced engraver would take into account other important factors such as the location and the size of the engraving in relation to the structure and nature of the surface, together with the use of better quality raw materials. A beginner's artwork would, therefore, be characterized by lower quality raw materials and frequent mistakes: bad tool angles, poor positioning and understanding of support structure etc., making it possible to tell an expert's engraving from a beginner's. (Fritz et al., 2015, pp. 1317–9).

The authors also try to cast some further light on the concept of “art workshop” and its meaning in Palaeolithic art. Given that engraving technique is not an inborn skill but an acquired one, and that the sequence of movements used to create an engraving seems to remain constant throughout the Magdalenian period – from the front to the rear, with the head (including horns or antlers) coming first, followed by the chest, the back line, the front legs, the stomach, the back legs, the rear end (including the tail) last and details such as fur, marks, eyes or nostrils added after the outline was completed – the authors make the hypothesis that the learning process revolves around three elements: showing, imitation and practice, with the apprenticeship itself involving both the acquisition of technical know-how and the transmission of social codes connected with artistic productions (Fritz et al., 2015, p. 1320). Despite acknowledging that the apprenticeship of a Palaeolithic artist will likely never be fully understood, Fritz and her colleagues try even further to imagine how it might have worked: was there a specialised social group responsible for controlling the production and teaching of art? Were there rules regulating this skill transmission, such as age limitation or access to good quality materials? Did craftsmen hold any kind of social privilege? It is hard (if not impossible) to answer such questions, but the authors agree it is reasonable to imagine the artists of the Magdalenian holding a certain cultural or spiritual power connected to their skills (Fritz et al., 2015, pp. 1321–2).

Olivia Rivero, in a published extract from her doctoral thesis (Rivero, 2015, pp. 135–152) expands and enlarges the work of Fritz on the Magdalenian apprenticeship. By applying a microscopic analysis similar to that of Fritz et al., the author isolates a series of indexes (2015, pp. 62–3) that she uses to define three levels of expertise: expert engravers (2015, pp. 135–6), beginner engravers (2015, pp. 136–42) and engravers in training (2015, pp. 143–7). Table 1 summarises the characteristics peculiar to each level.

Although she does not go as far as Fritz et al. in formulating questions – or attempting answers – about the possible social role of Magdalenian artists, Olivero makes some interesting observations on how the possible apprenticeship of an Upper Palaeolithic artist might have unfolded. By comparison with the process of skill acquisition for flint knapping (Olivero, 2015, p. 151) she describes a possible initial phase, where children begin to discover the gestures and actions and practice them on low quality materials, followed by an intermediate one in which young adults have partially acquired the skills, yet remaining quite far from achieving complete mastery. This outline finds a parallel in the works of art from sites such as La Garma: artifacts of higher aesthetic value are also those showing the highest level of skill and are realized on bone, whereas lower skill paired with lower aesthetic qualities are found in artifacts on lithic support (2015, pp. 151–2). Furthermore, the lithic materials employed appear to have been easily accessed, probably collected on the cave's floor, as opposed to bone, requiring much higher efforts for its harvest and treatment (2015, p. 152). These observations, together with the fact that no rare materials have been found within the cave – thus disproving the hypothesis that high-quality artifacts might have been finished, rather than entirely executed, in the cave – bring the author to the conclusion that the presence of high-quality artworks on bone and low-quality artworks on stone at the same site and at the same time might be ascribed to other causes, namely the different degree of expertise of the artists responsible for their creation.

Finally, it is worth mentioning what the art historian Alexander Perrig says about drawing, echoing what Apellaniz himself says about the graphic sign. Perrig defines a drawing as a “stroke system”, a “purposefully organized system of movement traces” that reflect the style of drawing. The characteristics of the stroke system – comprising movement traces, contour and hatching – are the most important features in determining authorship, as they partially escape conscious control and, therefore, are impossible to imitate (Perrig, 1991, p. 15). If we pair these remarks with those by Apellaniz on handwriting mentioned *supra*, it can be concluded that not only two people drawing – or, in this case, engraving – the same thing will produce two different results from the same original model, but also that each individual result will be impossible to exactly reproduce by the other person.

**Table 1.** Characteristics associated with different degrees of expertise among Magdalenian engravers (elaborated from Rivero, 2015, p. 149).

Expert Engraver	Engraver in Training	Beginner Engraver
<b>No accidents</b>	Accidents in the form of ‘slips of the tool’	Several forms of accidents (‘slips of the tool, scratches, <i>accrochages</i> , issues with curved lines)
<b>No corrections</b>	Corrections	Corrections
<b>Variable profile incision (V, asymmetrical V, relief)</b>	Variable profile incision (V, asymmetrical V, relief)	Flat profile incision
<b>Deep incision (deep groove)</b>	Deep incision (deep groove)	Superficial incision (shallow groove)
<b>Surface preparation</b>	Surface preparation	No surface preparation

Table 1:

## 4 Method

The method I followed here, on the route traced by Apellaniz, is that of macroscopic observation. The observations have been conducted on the published tracings by Pales (1976) and the criteria I have used are very similar to the ones usually employed in the attribution of drawings, an example of which can be found in the volume by A. Perrig about Michelangelo’s drawings I have mentioned *supra* (1991).

The human head is the La Marche collection’s most represented subject, and is well-suited as the main criterion of attribution. Hence, I determined points of variation, by which I mean those areas of the human head where a variation in the strokes necessary to outline a shape are more likely to occur due to the perception and movement reflexes of the individual engraver (see fig. 3, 4 and 5). I have singled out 9 (nine) such points:

1. the forehead and its curve;
2. the nose;
3. the mouth and the chin (and the general prognathism of the jaw);
4. the cranial vault;
5. the back of the skull;
6. the neck;
7. the outline of the elix in the ear;
8. the lobe of the ear;
9. the eye.

After determining the points of variation in the anatomy of the human head, I observed the engravings and classified them into *Groups* and *Hands* according to recurring similarities and differences in the head outline, the presence of details (or lack thereof) and their number, the pairing of heads with bodies and the details in representing the human body. Apart from the anatomical details, I have taken into account the presence of hair (either on the head or on the face) and of items of clothing; in particular, following Pales (1976), I have focused on headwear (hats, hoods and bonnets).

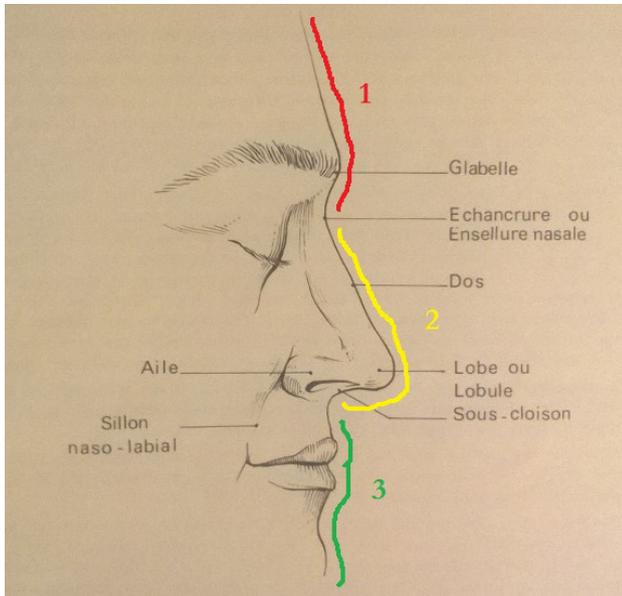


Figure 3. Points of variation for the face (from Pales, 1976).

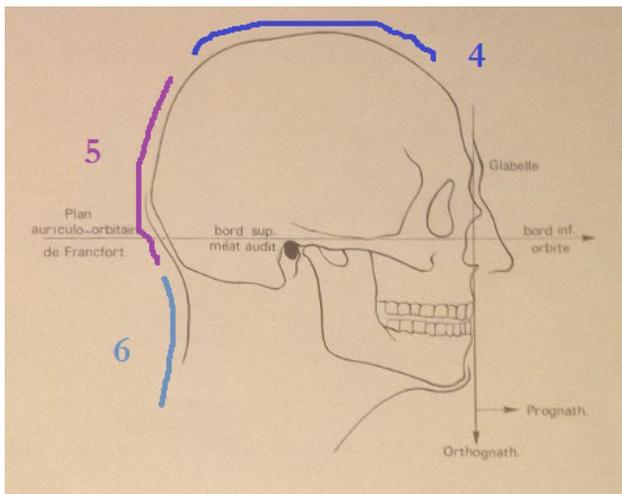


Figure 4. Points of variation for the head (from Pales, 1976).

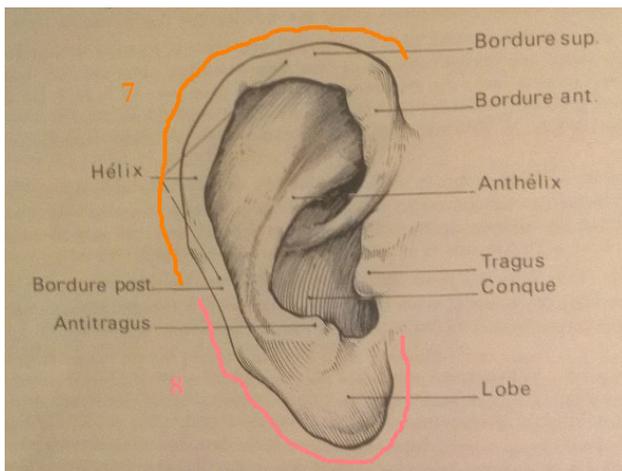


Figure 5. Points of variation for the ear (from Pales, 1976).

The criteria behind the formation of Groups and Hands are opposite but complementary: while Groups have been formed by *analogy*, meaning the commonality of subject or theme, the Hands have been formed by *difference*, that is, based on the variation in the representation of the common subject or theme shared by the Group.

The five Groups have been marked with the first five letters of the Greek alphabet ( $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  and  $\epsilon$ ), while the Hands are identified by their Group's Greek letter and a number ( $\alpha 1$ ,  $\alpha 2$  etc.).

Engravings are numbered and referred to according to the official publication of Pales and Tassin de Sainte-Pereuse (1976).

## 4.1 Problems

In trying to determine the nature of the site of La Marche and the authors of its engravings, I had in first place to determine whether or not there were the conditions to speak of “models”, from which the other engravings had been copied. A possible solution to this problem could be the amount of detail in the engravings: if, as can be observed in contemporary art teaching, the process of art instruction moves from simple, plain forms to more complex, detailed ones by means of accumulation (i.e. from two dimensions to three, adding of light, shade, decoration, surface details etc.), it is reasonable to suppose that a similar process might be reflected in the engravings at La Marche, allowing one to single out the most complete engravings as those of the “teachers” and, in a descending scale, those with less and less detail as authored by the “pupils”.

The second major problem is constituted by plaquettes bearing the work of more hands. The first, most intuitive explanation could be in terms of raw material economy: the need to use a slab of stone for more than just a single engraving. However, there is another possible explanation, suggested by the presence on the same plaquettes of two engravings belonging to different hands but showing remarkable similarities: the same plaquette might have been shared by both the master and the pupil (perhaps the most skilled) or by many different pupils. This last interpretation leads to a third problem which, at the present state of the research, remains unanswered: could the same hand have copied from different models and, therefore, be present in different groups (see *infra*, §4)? Macroscopic observation cannot, given the conditions of the materials, answer this question; however, the next steps of the research could cast some light on this issue (see *infra*, §6).

## 5 Results

### 5.1 Group $\alpha$

Group  $\alpha$  is the most numerous group at La Marche with over 30 engravings, characterised by a frequent representation of feminine bodies with the usual Palaeolithic features (generous bellies, bottoms and breasts) and a remarkable consistency of subject (long-haired, side-looking character); it shares with Group  $\beta$  the overlapping of human and animal representations.

At least six hands are identifiable in this group:

**Hand  $\alpha 1$**  – Obs. 3, 9, 30(III), 35(II), 37(I, III), 38(III), 40(I), 43(I), 45, 47, 49, 52(I): the most skilled of the group and the only one to consistently represent full human figures (head+body). The profiles are characterised by slightly bulging foreheads, French-style noses, anatomically correct eyes (oval) and what looks like a bonnet (or the space for it) (see fig. 6, 7 and 8);

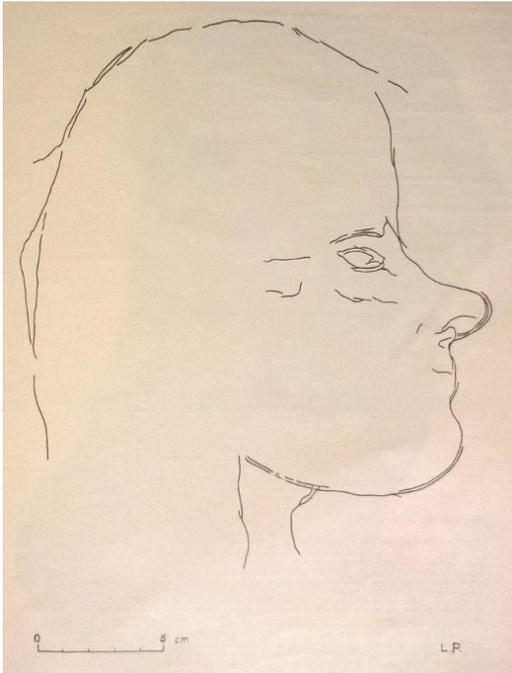
**Hand  $\alpha 2$**  – Obs. 8, 19(II), 62(III): shows less skill when it comes to body representation, but skill is more evident when faces are depicted. Profiles are characterised by strong mandibular prognathism, elongated eyes and a certain attempt at expression (see fig. 9 and 10);

**Hand  $\alpha 3$**  – Obs. 13, 19(I), 23(I-II), 26(I-III), 36(I): on a similar level of skill with  $\alpha 2$ , demonstrates better abilities in engraving bodies. Profiles are characterised by perfect prognathism, slightly bulging foreheads and the occasional omission of the eye. Possibly an attempt at composition (see fig. 11 and 12).

**Hand  $\alpha 4$**  – Obs. 15, 27(I-V): Pales nicknamed the engravings by this hand *les enfants*, probably because of the stark rotundity of the heads and the almost complete absence of any hair (or suggestion thereof). Orthognathism of profiles, round eyes and bulging back of the head complete the picture (see fig. 13);

**Hand  $\alpha$ 5** – Obs. 24(I-II): defined by Pales as a composition *en Janus*, this one example hand is characterised by “olympic” profiles, perfect orthognathism, globular eyes and a certain insistence on rendering long hair (see fig. 14);

**Hand  $\alpha$ 6** – Obs. 21(I-II), 22(I-II), 24(III), 38(I): bearing a curious resemblance to the Venus of Brassempouy, the engravings by this hand show (all but one) a tendency to bear the chin upwards, as if looking up. In one case, the two figures represented seem to look at each other, while in one case the figure is wearing a Phrygian hat (see fig. 15 and 16).



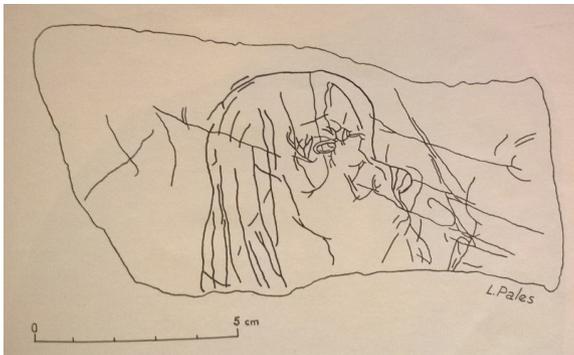
**Figure 6.** Group  $\alpha$ , examples of Hand  $\alpha$ 1: Obs. 3 (from Pales, 1976).



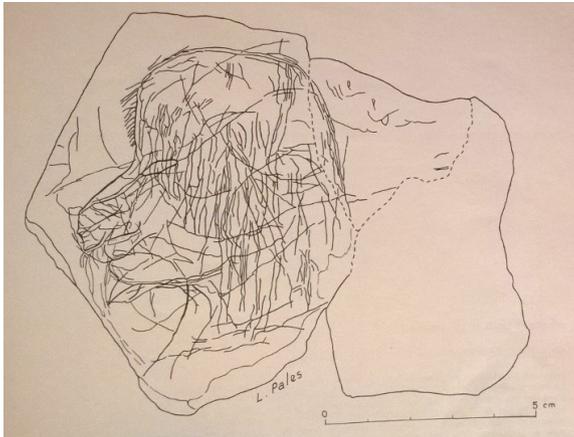
**Figure 7.** Group  $\alpha$ , examples of Hand  $\alpha$ 1: Obs. 43(I) (from Pales, 1976).



**Figure 8.** Group  $\alpha$ , examples of Hand  $\alpha$ 1: Obs. 40(I) (from Pales, 1976).



**Figure 9.** Group  $\alpha$ , examples of Hand  $\alpha 2$ : Obs. 19(II) (from Pales, 1976).



**Figure 10.** Group  $\alpha$ , examples of Hand  $\alpha 2$ : Obs. 8 (from Pales, 1976).



**Figure 11.** Group  $\alpha$ , examples of Hand  $\alpha 3$ : Obs. 36(I) (from Pales, 1976).

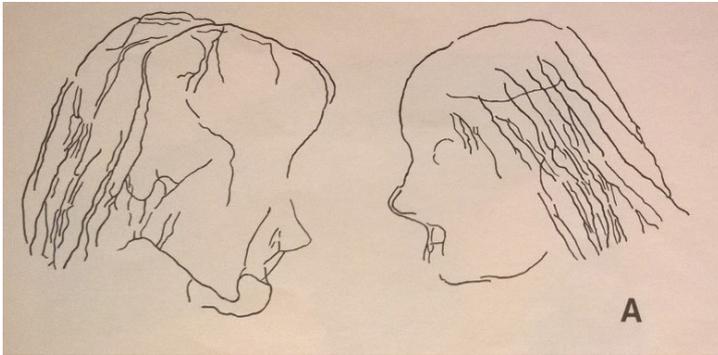


Figure 12. Group  $\alpha$ , examples of Hand  $\alpha_3$ : Obs. 23(I-II) (from Pales, 1976).

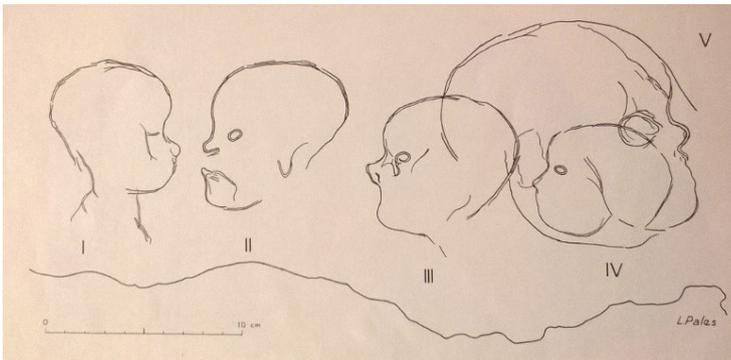


Figure 13. Group  $\alpha$ , examples of Hand  $\alpha_4$ : Obs. 27(I-V) (from Pales, 1976).

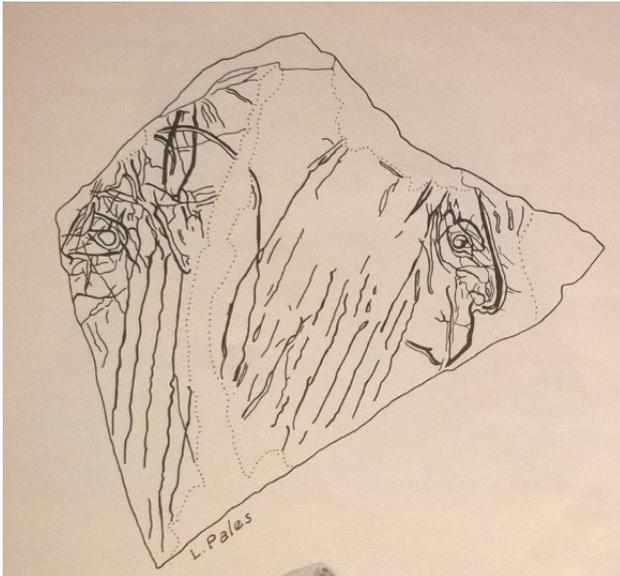


Figure 14. Group  $\alpha$ , examples of Hand  $\alpha_5$ : Obs. 24(I-II) (from Pales, 1976).



Figure 15. Group  $\alpha$ , example of Hand  $\alpha 6$ : Obs. 38(I) (from Pales, 1976).

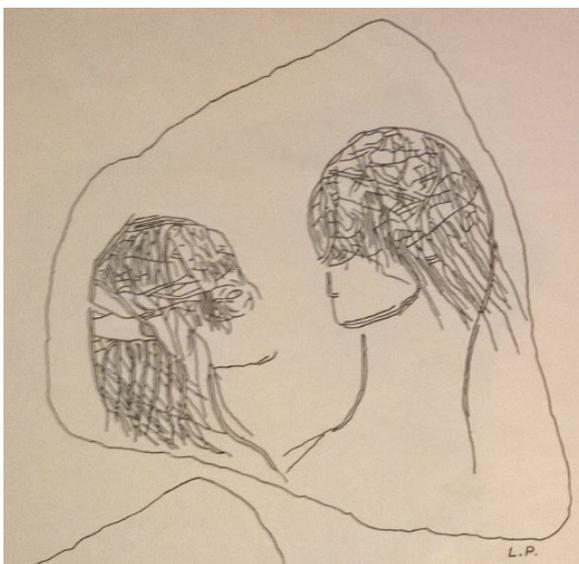


Figure 16. Group  $\alpha$ , examples of Hand  $\alpha 6$ : Obs. 22(I-II) (from Pales, 1976).

## 5.2 Group $\beta$

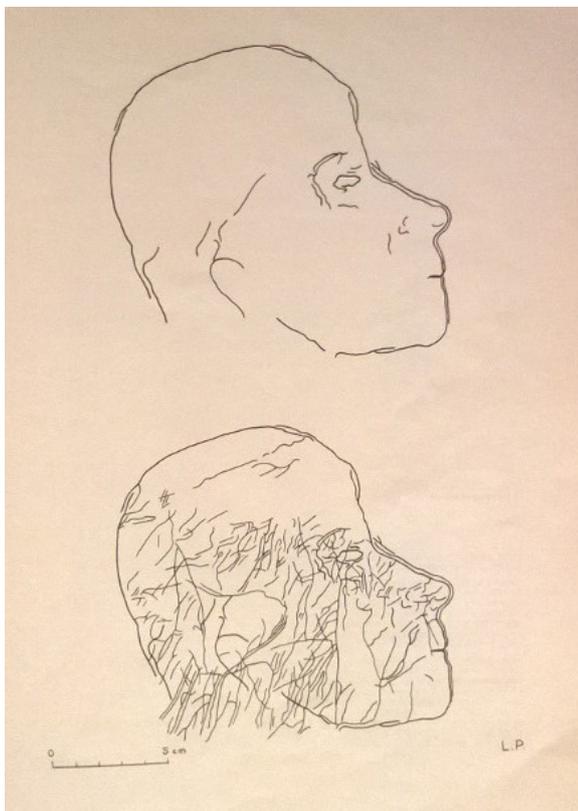
Group  $\beta$  is the smallest group at La Marche with 6 engravings, characterised by straight, “gothic” profiles, square jaws and pointy noses. Together with Group  $\alpha$  and  $\delta$ , it is one of the groups where the relationship between “teachers” and “pupils” (i.e. between high-skilled and low skilled engravers) is more evident in the reproduction of models.

At least three hands are identifiable in this group:

**Hand  $\beta_1$**  – Obs. 2, 25(I-III), 30(I-II), 63(II-III): very accurate definition of the facial details (nose, eye and, in one case, ear). It is the most “gothic” of all the hands (see fig. 17 and 18);

**Hand  $\beta_2$**  – Obs. 63(I, IV-V): its profiles tend to be slightly retracted compared to  $\beta_1$ , with whom it shares attention for hair and shaping of the eye. Describing this engraving, Lwoff (1943, p. 144) speaks of “juvenile” portraits (see fig. 18);

**Hand  $\beta_3$**  – Obs. 28(I-VII): the least skilled of this group, with head profiles barely sketched and the omission of several head details (see fig. 19).



**Figure 17.** Group  $\beta$ , examples of Hand  $\beta_1$ : Obs. 30(I) (from Pales, 1976).

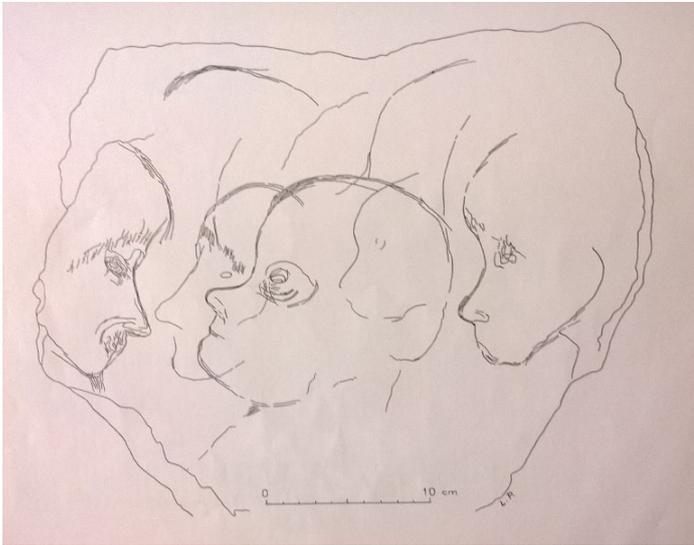


Figure 18. Group  $\beta$ , Obs. 63: examples of Hand  $\beta 1$  (II, III) and  $\beta 2$  (I, IV-V) (from Pales, 1976).

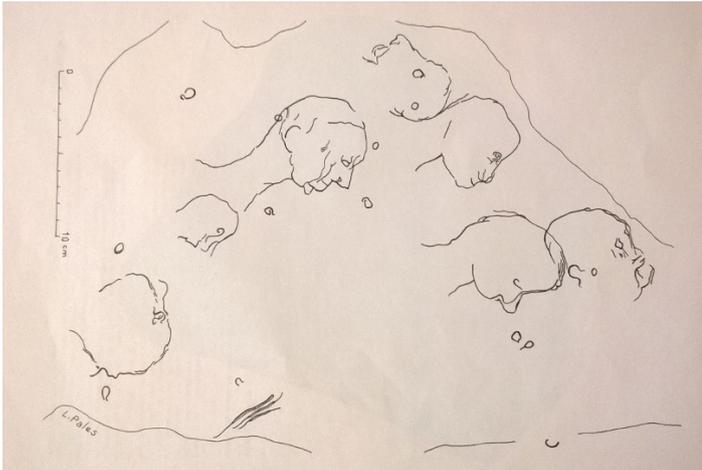


Figure 19. Group  $\beta$ , examples of Hand  $\beta 3$ : Obs. 28(I-VII) (from Pales, 1976).

### 5.3 Group $\gamma$

Group  $\gamma$  breaks with the previous groups, in the sense that it is characterised by sharply convex profiles and mandibular retrognathism. It shares with Group  $\delta$  the jaw-ear stroke (one continuous line to draw the jaw and the ear) in a constant fashion (this appears only occasionally in other groups); at the same time, it shares with Group  $\alpha$  its attention to hair.

At least two hands are identifiable in this group:

**Hand  $\gamma 1$**  – Obs. 29(I-II): keen attention to details (eyes and bags, nose, mouth and hair, with possibly headwear) and a certain attempt at expression (see fig. 20);

**Hand  $\gamma 2$**  – Obs. 1, 7(II), 18, 32(I-II), 33(I-II): less keen on details (apart from hair) but still focused on expression. It is worth noting that Obs. 33(I) shares a similar technique with another engraving, Obs. 54 (see *infra*, §4.6): in both cases, in fact, the profile of the engraving follows that of the plaquette (see fig. 21).

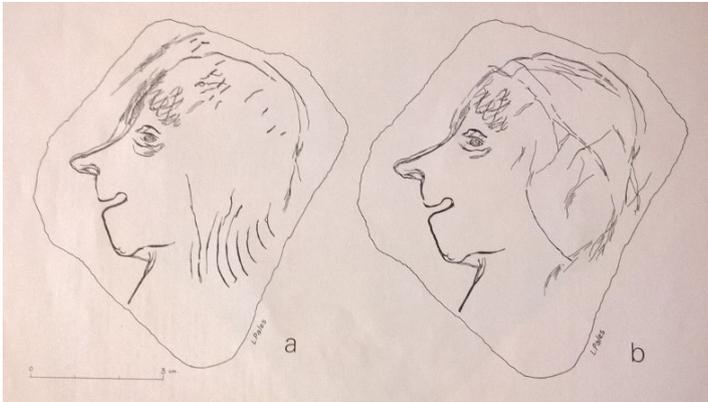


Figure 20. Group  $\gamma$ , example of Hand  $\gamma$ 1: Obs. 29(II) (from Pales, 1976).

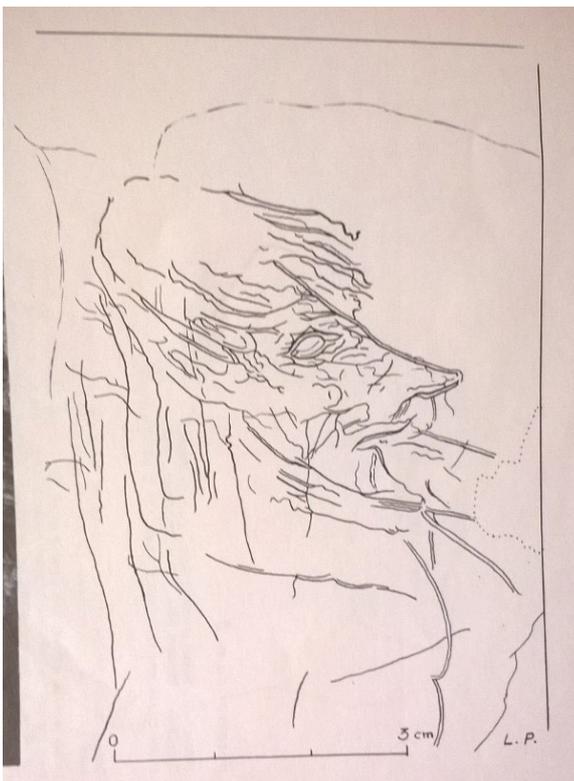


Figure 21. Group  $\gamma$ , example of Hand  $\gamma$ 2: Obs. 7(II) (from Pales, 1976).

## 5.4 Group $\delta$

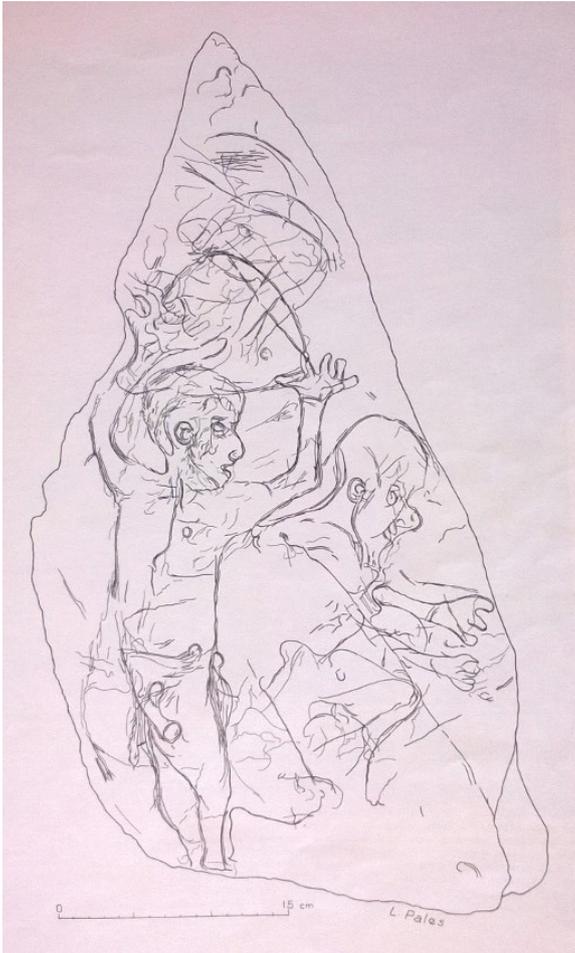
Group  $\delta$  is the only group at La Marche in which male sexual characters and hands are represented in detail, and one of two (with Group  $\alpha$ ) in which complete bodies appear. With the latter and with Group  $\gamma$  it shares the same attention for expression, with a certain gift for the “grotesque”.

At least three hands are identifiable in this group:

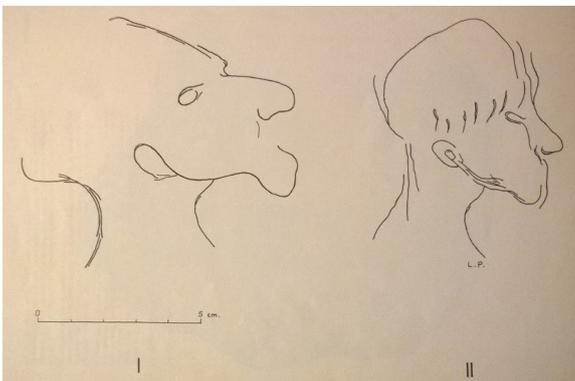
**Hand  $\delta$ 1** – Obs. 6, 34(I), 60(I-II): “grotesque” style; great care is devoted to depicting all features of the face and a great deal of the body; circular eyes; “paddle” ears. The effort towards composition seems evident in Obs. 60, where the two figures represented seem engaged in some sort of physical fight (see fig. 22);

**Hand  $\delta 2$**  – Obs. 5, 14, 16, 20(I-II), 34(II), 61(I-IV): retains the “grotesque” style of  $\delta 1$ , but with less attention on the body (just traced) and occasionally omitting anatomical traits from the face; sharp profiles; oval eyes; pointy, eagle noses and ears (see fig. 23);

**Hand  $\delta 3$**  – Obs. 4, 12: the “hooded” engraver, reproduces the same subject who, apparently, wears some sort of hooded item of clothing above his head. The face retains some “grotesque” characteristics, however in less quantity.



**Figure 22.** Group  $\delta$ , examples of Hand  $\delta 1$ : Obs. 60(I-II) (from Pales, 1976).



**Figure 23.** Group  $\delta$ , examples of Hand  $\delta 2$ : Obs. 20(I-II) (from Pales, 1976).

## 5.5 Group $\epsilon$

This group stands alone among the others at La Marche because of the sharp variation in the orientation of portraits: in contrast with the general formula of profile representation, the hands in this group adopt a full frontal, “passport” type technique. Also, it is the only group to include an engraving discovered later than the cave itself: Airvaux and Pradel (1984) report its discovery during the works for a new prehistoric wing at the Musée de l’Homme in Paris.

Two hands are identifiable in this group:

**Hand  $\epsilon 1$**  – responsible for the engraving discovered by Airvaux and Pradel. The face is strikingly realistic, with details of facial hair and wrinkles almost completely absent in other groups and hands (see fig. 24);

**Hand  $\epsilon 2$**  – Obs. 58, 59: responsible for the engravings published by Pales. While clearly frontal representations, the nature of these portraits has been doubted. Pales himself (1976, pll. 152–4) expresses the opinion these might actually be representations of owls; however, he says Obs. 58 bears a remarkable similarity with the face of the sorcerer from the Trois Frères cave (see fig. 25).



Figure 24. Group  $\epsilon$ , example of Hand  $\epsilon 1$ : frontal portrait of old man (from Airvaux and Pradel, 1984).

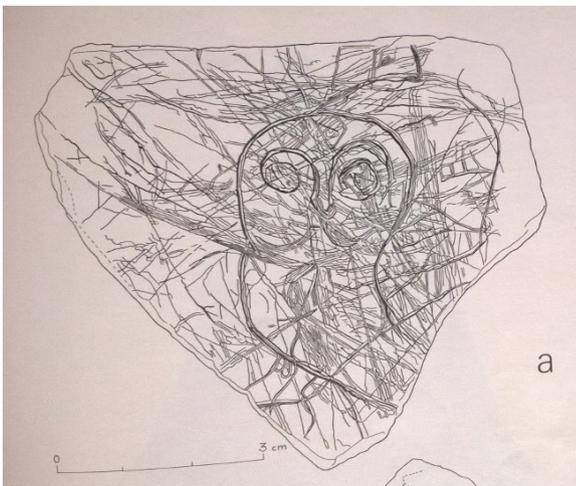


Figure 25. Group  $\epsilon$ , example of Hand  $\epsilon 2$ : Obs. 58 (from Pales, 1976).

## 5.6 Dubious Attributions

A series of engravings escape a precise attribution based on macroscopic observation. These are the following: Obs. 17, 29, 36(II), 38(III), 40(III), 41, 43(II), 44, 46, 48, 50, 51, 52(II), 53(I-II), 54, 55, 56, 57, 62(I-II, IV).

For some of these, only a partial, generic attribution to a group is possible. Obs. 17, 29, 36(II), 38(III), 43(II), 44, 46, 48, 50, 51, 52(II) and 62(I-II, IV) could be assigned to Group  $\alpha$  on the basis of the bodies' outline: in all cases, we are presented with feminine bodies showing the generous features of Palaeolithic venuses; the head is missing or very poorly distinguishable, which makes a more precise attribution to a hand impossible.

For the remaining engravings – Obs. 40(III), 41, 53(I-II), 54, 55, 56 and 57 – the plaquette surface is so covered in marks and its preservation state so poor that a precise figure is impossible to single out, if not for very few lines. Obs. 54 seem to fall within the style of Group  $\gamma$  in the sense that what can be read of the figure engraved follows the contour of the plaquette as in Obs. 33 and 29(II).

Particular attention needs to be devoted to Obs. 39. While acknowledging its problematic character, Lwoff (1957, p. 628) describes this engraving as representing two human bodies facing each other, while Breuil (quoted in Pales, 1976, pl. 110) believes it represents a feminine figure in prospect or a *coitus*. I had the chance to observe the engraving only through photographs and drawings, but I believe Breuil's first interpretation to be the correct one, considering the relative symmetry of the two figures' details, in particular the head, and the outline of the arms and the legs. The face is almost completely omitted, which makes attribution difficult: for the feminine body, it would fit in Group  $\alpha$ , but the frontal representation would suit Group  $\epsilon$ .

## 6 Human/Animal Engravings

In five cases (Obs. 13, 25, 30, 31, 37) the human representations are accompanied by animal representations as well.

Obs. 13 is particularly interesting from an artistic point of view, since it is an example of “mixed technique”: the animal profile is sculpted in low relief, while the human profile is engraved in the same fashion as the other engravings at La Marche. This discrepancy in technique might suggest two different hands at work on this plaquette; however, as Pales suggests (1976, pl. 26) it is more plausible that the animal and human representations are not contemporary: the uniformity of the patina on the edges and surfaces of the plaquette indicates that the sculpture was executed before the engraving, thus identifying Obs. 13 as a clear case of raw materials' re-use.

While for Obs. 13 it is hard to identify the animal represented due to the fragmentation of the plaquette, for the other four cases the outline is either complete or sufficient to carry out an identification: Obs. 25 shows a bovine profile looking left, presumably an auroch; Obs. 30 shows a cave bear profile looking right, missing the limbs but clearly defined in the face and back; Obs. 31 shows a cave bear profile looking right as well, its design limited to the head but with a certain attempt at detail; finally, Obs. 37 shows a small deer head looking left, barely sketched.

## 7 Discussion and Conclusion

From macroscopic observation and attribution of the engravings, it is possible to say that approximately 16 (sixteen) people are at work in this cave, of which 5 (five) possess medium-high skills, 9 (nine) possess medium-low skill and 2 (two) possess very low skill. Given the premises we have outlined supra (see Section 3), we think it is possible to say that the assumptions made by Apellaniz about the possibility of assigning Palaeolithic artworks to their authors are sound and valid: the opinion expressed by Pales and Saint-Pereuse (1976, pl. 99) – and rightly criticized by Groenen (2004, p. 129) – of a single authorship cannot be sustained anymore; even a macroscopic analysis, with all its limitations, highlights a wide range of skill levels, approaches to the support and attempts at composition and expression. With regards to the

possibility of speaking of La Marche as an art workshop, where skilled engravers trained other people in their craft, we believe it is possible to say that the three principles behind apprenticeship in the Palaeolithic outlined by Fritz et al. (see *supra*, §3) are at work in this cave. Engravings made by skilled artists were used by less skilled or unskilled (possibly younger) members of the community as models, possibly under the guidance of the authors themselves, thus forming the groups I have tried to identify in §5.

We are conscious, however, that macroscopic observation alone – especially conducted on tracings – is an insufficient tool for such a complex task as the attribution of the engravings; following what Apellaniz himself suggests (2004a, pp. 75–9), we believe the next steps, immediately following the macroscopic analysis on the engravings themselves, could be: 1) the execution of a microscopic study of the engravings, followed by the study of the grooves' morphology across the groups and the hands; and 2) a double blind experimental protocol in which people with different levels of artistic skill will be required to produce human-themed engravings using materials as similar as possible to the ones in La Marche, followed by a similar analysis as per point 1. These could, we believe, either confirm my attributions or amend them, with the potential of drawing a completely different map of groups and hands at La Marche. Once these three stages are complete, the method could be extended to the other caves in the Lussac-Les-Châteaux area that have yielded human-themed engravings, first and foremost the neighbouring cave of Les Fadets (see the example published in Fuentes, 2013, p. 989) in order to establish whether or not artists “trained” at La Marche moved across the area and left art in other caves. Such a study aspires to contribute to the exploration of the rich vein of individuality in prehistoric art; we believe it is necessary to pursue the investigation on the artists and, in particular, the training they received.

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