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WOMEN AND GIRLS AS UPPER PALAEOLITHIC CAVE 'ARTISTS': DECIPHERING THE SEXES OF FINGER FLUTERS IN ROUFFIGNAC CAVE

Summary. Popular and scholarly literature usually assumes that prehistoric artists were adult men. We show in other publications that young children from the Palaeolithic fluted in Rouffignac Cave, France, and hence the incorrectness at least here of the usual assumption. Our research also shows that females as well as males fluted in Rouffignac. Our methods for demonstrating this are forensic based on physiological research of relative finger lengths of males and females. We examine the profiles of the flutings of seven individuals and show that two are probably male whereas the remaining five are probably female. This type of study leading to where we identify individuals can produce responses to social questions about the fluters both as a group and as individuals.

INTRODUCTION

The light from the tallow lamp flickered uncertainly in a draught, breaking the man's concentration. He stood back for a moment to survey his handiwork. He picked up the carved stone bowl that served as a lamp and held it up to the rock wall, the better to see where he had been working. Around him on the wall, images of animals seemed to move, magically brought to life by the guttering tallow wick. A great jumble of bison, deer, and horses cascaded through a timeless space. Here, one seemed caught in a moment of surprise; there a bison rested on its haunches with its head turned as though to survey the unwarranted intrusion into its thoughts as it lay quietly chewing the cud. . . .

So engrossed was he in his work that several hours passed without his noticing. But eventually, the tiredness in his arms and the growing pangs of hunger persuaded him to put down his drawing materials and set off down the long winding passage back to the mouth of the cave. . . . He glanced at the sun hanging above the western horizon and saw that it was already late afternoon. He blew out the wick in the tallow lamp and placed it in a small niche in the rock wall just inside the entrance. And, feeling content with his day's work, set off down through the trees to where their camp nestled beside the river in the valley bottom a few miles downstream. (Dunbar 2004, 1–3)

Robin Dunbar's story of a man making prehistoric art constitutes a typical literary and theoretical trope designed to give the reader a picture of the life of an artist in the Upper Palaeolithic.

Variations on this approach include the artist as a male shaman in a trance – as in David Lewis-Williams' parallel story (2002, 13) – or the artist as a sex-crazed young man – as in Dale Guthrie's recent book (2006). The usual popular and scholarly narratives in a wide range of print and visual media or in museum dioramas (consider the Charles Knight paintings in the American Museum of Natural History) assume adult males were the artists, not children and not women. No proof exists for this generalization and, if untrue, it distorts and misguides both research and the popular mind, and, as Conkey and Gero (1997) and Conkey (2007) suggest, promotes further misrepresentations within the theoretical and interpretive frameworks of archaeology through the perpetuation of long-held unsubstantiated underlying biases. At least Guthrie's book about the artists being teenage males poses the possibility of a range in their ages. Several of our previous publications (Sharpe and Van Gelder 2004; 2006b; 2006c) challenge the age myth by showing the involvement of young children as Palaeolithic 'artists'. The time has now come to use empirical research to shed light on the issue of gender in the creation of Upper Palaeolithic 'art'.

Our research centres on the study of Palaeolithic finger flutings (lines made by fingers on a soft surface), especially those found in the French caves of Rouffignac, in the Dordogne, and Gargas, in the Hautes Pyrenees. Over the last decade, we have developed methodologies for this research and have published some of our results. The first group of publications – besides those disseminating our methodologies (e.g. Sharpe and Van Gelder 2006a) – focuses on the age group of the fluters, particularly establishing the participation of young children in this activity (e.g. Sharpe and Van Gelder 2006b). The variation of the forensic method that produced knowledge of individuals to determine their age group can also determine their sex. All these methods ultimately combine to establish individual identities, a result previously unavailable by other methods. The following examples derive from our research in Rouffignac Cave (see Figure 1 for a plan of this cave).

Rouffignac Cave contains over 500 sq m of flutings (Plassard 1999, 62). The 'art' in Rouffignac, including the flutings, is considered to be 13–14,000 years old, based on stylistic considerations, though it could be up to 27,000 years old (Sharpe and Van Gelder 2006c, 180). The flutings are made into moonmilk and in several chambers they appear to have been fluted through a thin clay film into the moonmilk underneath.

Recent parallel work on identifying the sex of hand stencilers (e.g. Chazine and Noury 2006; Snow 2006), which our work partly inspired (Chazine and Noury 2006, 21), draws on the same body of physiological research as ours (e.g. Manning 2002; Manning *et al.* 1998; Manning and Taylor 2001; Manning *et al.* 1999; Peters *et al.* 2002a; Peters *et al.* 2002b). The methodology that researchers of hand stencils adopt does not work, however, for flutings: the former examines the length of the fingers whereas these data do not exist for flutings. Flutings instead give the relative heights of the fingers enshrined in the finger profile. On the other hand, we are fortunate in that sex differences become more marked through ascertaining the relative extensions of the fingers rather than through the lengths of fingers (Peters *et al.* 2002b, 179).

METHODOLOGY

The foundation discriminator in determining the sex of the fluter comprises the relative finger heights in the finger-top profile of the fluter's hand. The fluting of the middle finger lies furthest out at the start of a unit of flutings made with more than one finger. Consider the relative heights of the three central fingers, labelled F2 to F4. Michael Peters *et al.*'s (2002b) research into the ratio of the extent of the index or second finger (F2) – relative to the middle finger (F3)

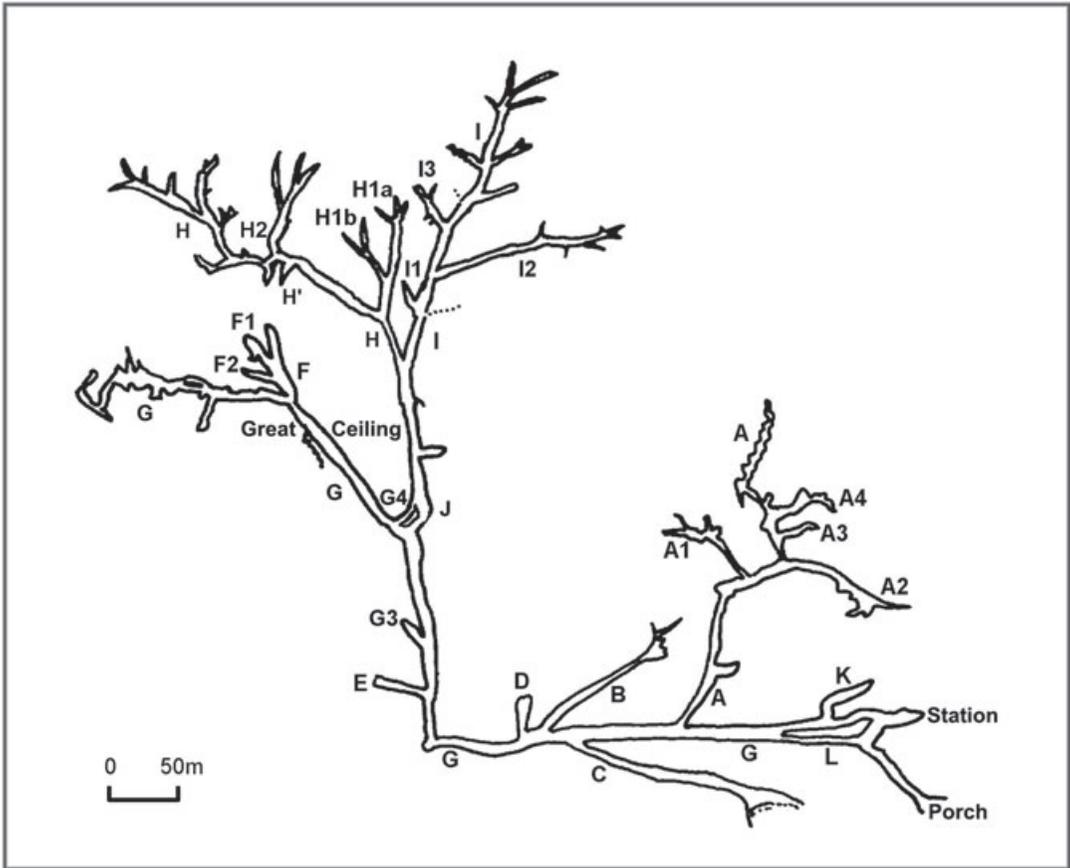


Figure 1
Plan of Rouffignac Cave showing the various chambers (developed from Barrière 1982, fig. 2).

(i.e. measuring from the tip of F3 to the tip of F2) – to the extent of the ring or fourth finger (F4) offers a tool that may help distinguish male from female fluters. (Relative finger lengths may also relate to sexual orientation [Motluk 2000; Robinson and Manning 2000; Williams *et al.* 2000].) In the ratio of F2 to F4, a smaller value indicates further finger height; thus, a figure of <1 means that F2 does not extend as far as F4 and a figure of >1 means the converse. From averaging results of five studies involving 1455 subjects in Brazil, Canada, India, Korea and Turkey, Peters and his colleagues write: ‘the ratio for the male left hand was .84 and, for the right hand, it was .84 as well. For the women, the ratio for the left hand was 1.08 and for the right hand 1.00’ (Peters *et al.* 2002b, 179b; see also Peters *et al.* 2002a). ‘The dimorphism is present from at least age 2 years’, write John Manning *et al.* (1998, 3000), and the ratio ‘is probably established *in utero*’. Thus, $F2/F4 < 1$ suggests a male and $F2/F4 \geq 1$ suggests a female. This means of discriminating sex provides, at least for the sample tested, ‘a significant sex difference ($F_{1,8} = 14.78, p < .001, ES = .65, Power = .92$)’ (Peters *et al.* 2002b, 180), and is assumed to be so for other populations of *Homo sapiens* as well.

The above provides the physiological theory and method behind our study. We have also developed a methodology for obtaining the data required to apply our approach (see Sharpe and Van Gelder 2006a for the methodology in detail). In brief, the corner-stones include multiple examinations of the flutings being studied, experimentation, and the putting aside from the outset of questions of meaning (as such assumptions can determine what is then seen in the flutings). The physical data in the flutings themselves comprise what we seek: how they were constructed and, if possible, how they functioned.

We invoke a terminology (Sharpe and Van Gelder 2006a, 282–3) to help with the study: a *fluting* (lines made by fingers on a soft surface) is made by a *fluter*; a *unit* (flutings drawn with one sweep of one hand or finger); a *cluster* (an isolable group of units that exhibit a unity, for instance because they overlay each other); and a *panel* (a collection of clusters that appears geographically or otherwise distant from other clusters or on a surface of reasonably uniform orientation). The *profile* of a unit or a fluter comprises the silhouette of the finger tops left in the medium from the fluting.

In terms of our field methodology, we carry out an internal analysis of the cluster, noting fluting overlays and (though this rarely becomes necessary with flutings) the cross sections of the individual lines. What do the order of and (especially for engravings) the tools of creation of the lines, Alexander Marshack asks, tell about the mind of the artefact creator? This technique was pioneered by Marshack (e.g. 1977, 287) and, though modified by others such as Robert Bednarik (e.g. 1986), Francesco d'Errico (e.g. 1994) and Michel Lorblanchet (e.g. 1995), forms the backbone of research into line markings such as flutings.

Our addition to this methodological base is what we call a forensic analysis (Sharpe and Van Gelder 2006a, 293) and marks a significant addition to the tool kit of the archaeologist examining such artefacts. In this, we note, if possible, whether the left or right hand made the unit under examination, as indicated by the presence of marks made by F1 or F5 (these appear distinctively different from one another and from the marks of the other fingers). We measure the width of the F2–F4 set of marks at their narrowest, calling this the three-fingered width of the unit (the reasons for measuring the width of the three fingers rather than of just two or one fingers have mainly to do with accuracy and consistency [Sharpe and Van Gelder 2006a, 289]). Our experiments show that the three-finger widths of an individual remain consistent across different flutings and media of inextreme hardness or softness (Sharpe and Van Gelder 2006a, 289; 2006b, 944). The error in this measurement comprises at maximum about 2 mm from the measuring process and the indeterminism of the cave wall data (Sharpe and Van Gelder 2006a, 292). The width data for three fingers suggest an age category for the fluter, whether it be a young child or older (Sharpe and Van Gelder 2006b, 943).

When looking for the sex of the fluter (Sharpe and Van Gelder 2006a, 290–1), we examine the top of a four- or five-fingered unit, for frequently units start with the tops of fingers and we need at least four fingers to tell whether the hand is left or right. We also need to take care with the angle of the fluting hand and of the wall so that the profile has not become distorted. Then we note and record the relative height of F2 to F4 against F3.

Consistency of widths, profiles (even of just F2–F4), and perhaps some other features among units suggest the same person fluted them (Sharpe and Van Gelder 2006a, 291). We refer to the individual fluters by the widths of their three-finger flutings. While we record other data as well, the above description of our method suffices for the results this paper conveys.

We recognize that our method is not 100 per cent precise in the data it collects and in the interpretations of the data it offers. We also recognize that others and ourselves can further test



Figure 2
Left hand of 28 mm from Chamber A1, Alcove II.

and develop the methodology, and hence it remains open. Nevertheless, because of the consistency of our results to date, we feel confident enough in them to offer the method as a way to obtain information on the fluters that hitherto has remained unavailable.

RESULTS

The above photographs of the profiles (Figs. 2–8) of each of the above seven fluters indicate the following sexes:

- 28 mm is probably female – F2 and F4 being at about the same height;
- 28 mm #2 is probably male – F2 being shorter than F4;
- 34 mm is probably female – F2 being longer than F4;
- 38 mm is probably male – F2 being shorter than F4;
- 41 mm is probably female – F2 being longer than or about the same height as F4;
- 44 mm is probably female – F2 being longer than F4;
- 48 mm is probably female – F2 and F4 being at the same height.



Figure 3
Right hand of 28 mm #2 from Chamber A2.

We can also say that at least the two 28 mm fluters are probably young children of about 5 years old (Sharpe and Van Gelder 2006b, 943), thereby proving that girls as well as women fluted in Rouffignac.

DISCUSSION AND CONCLUSIONS

This method provides a means for determining the sex of fluters in a significant percentage of the cases, given the accuracy of the cave data. The presence, maybe abundant presence, of female fluters (women and girls) in Rouffignac Cave challenges the assumption of Dunbar and most other writers on prehistoric 'art' that men were the (only) artists of the Upper Palaeolithic. Such writers should acknowledge that their stories told of the 'artists' are woefully biased.

Scholars might wish to raise several issues concerning the neuropsychological origin of cave 'art', including the 'geometrical forms', which might include nonrepresentational flutings (e.g. Hodgson 2006), plus the meaning or intention of the fluters, whether related to shamanic activities (e.g. Lewis-Williams 2002), aesthetics, or something more mundane (e.g. Sharpe and Van Gelder 2006c, 194). We do not wish in this context to explore such issues, but only to say that investigators must subject all such hypotheses to and base them on forensic studies – deriving the data from the 'art' itself – such as this paper promotes.



Figure 4

Right hand of 34 mm from Chamber A2; the lines on the right are not part of this unit.

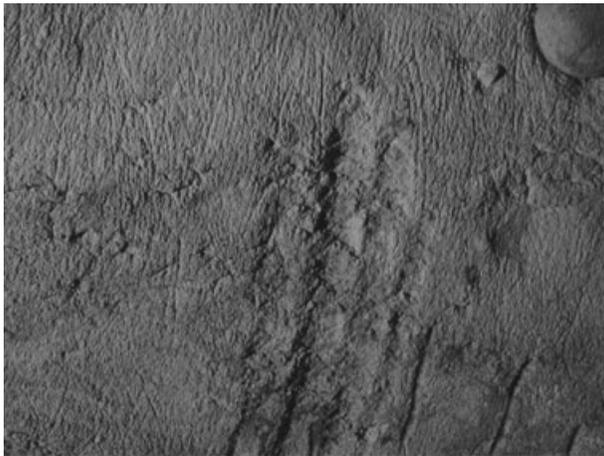


Figure 5

Right hand of 38 mm from the Mammoths of Discovery Panel, Chamber G.



Figure 6
Right hand of 41 mm from the Patriarch Panel, Chamber J.



Figure 7
Right hand of 44 mm from in front of the Patriarch Panel, Chamber J.

Perhaps a more important and answerable set of questions, given the potential data available in the fluted caves, concerns the social structure and relationships among the fluters. We can ask who this group of fluter-‘artists’ was. Given the variety of ages of those in Rouffignac Cave (Sharpe and Van Gelder 2004; 2006b; 2006c), were they family members? Which fluters



Figure 8
Right hand of 48 mm from the junctions of Chambers A1 and A2.

helped others and in what ways? Which fluters closely associated with which others and then not with the others? Does any evidence exist for a division of labour based on sex, a topic that recently reached the popular and scholarly press (Bower 2006; Kuhn and Stiner 2006)? Similarly, has the modern perception underplayed the role of women and girls in prehistory (Adovasio *et al.* 2007; Shipman 2007)? What is the relationship between the fluters and the creators of the figurative drawings, most especially when they, too, are fluted? These types of lines of questioning have the possibility of receiving at least partial answers with these new methodologies, including the one that addresses the sex of fluters.

Scholars promoting their theories on human development based on the ‘artists’ of the Upper Palaeolithic will in the future perhaps paint a more balanced picture in terms of age and sex, or at least one based on empirically researched results instead of on imagined male flights of fancy.

Acknowledgements

This paper is dedicated to Kevin Sharpe who died not long after co-authoring it. This work represented to him the culmination of over 30 years of inquiry into the subject of finger flutings. His boundless spirit for exploration and inquiry informs not only this paper, but is the foundation for the continuation of this research in the future. He would want nothing more than that scholars and researchers continue to ask good, answerable questions.

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