



KEY WORDS: *Cave art – Intention – Meaning – Finger fluting – Rouffignac Cave – France*

## FINGER FLUTINGS IN CHAMBER A1 OF ROUFFIGNAC CAVE, FRANCE

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**Abstract.** An empirical methodology is used to examine finger flutings in Chamber A1, Rouffignac Cave, France, asking what they might reasonably tell about the people who made them. An initial result of this approach is that many of the flutings were probably made by young children aged 2–5 possibly held aloft to touch the ceiling. In this scenario, those holding the children were at times not only walking, but also moving rotationally from their hips, perhaps in whole body movement. The question of the intentions behind the fluting activity is addressed, previously published reasons, characterisations and meanings shown to be inaccurate or inadequate; the most promising intention, though not confirmed, is that the flutings were made possibly mainly for the tactile and aesthetic sensation and experience of fluting. Applying similar methodologies to other flutings found in Rouffignac Cave and elsewhere may further elucidate the behaviours behind their manufacture.

### Introduction

Pre-Historic finger flutings (the lines that human fingers leave when drawn over a soft surface) occur in caves through southern Australia, New Guinea, and south-western Europe, and were presumably made over a considerable time span including some or all of the Upper Palaeolithic. Most are not obvious figures or symbols. The reigning question about the flutings — usually taken as enigmatic — has to do with intention (or purpose, the two words used interchangeably) and meaning. Why did the fluter flute? (A ‘fluter’, according to the *Encarta Dictionary*, is a ‘fluting maker, somebody who makes fluting in something’.) What did they mean with their flutings?

A previous report (Sharpe and Van Gelder in prep. a) suggests that young children fluted on the ceiling of Chamber A1 of Rouffignac Cave (near the village of Les Eyzies-de-Tayac) in the Dordogne, France (Fig. 1). Besides those about intention and meaning, questions remain from this study; for one thing, the present height of the fluted ceiling above the floor is too great for young children to reach.

### Terminology

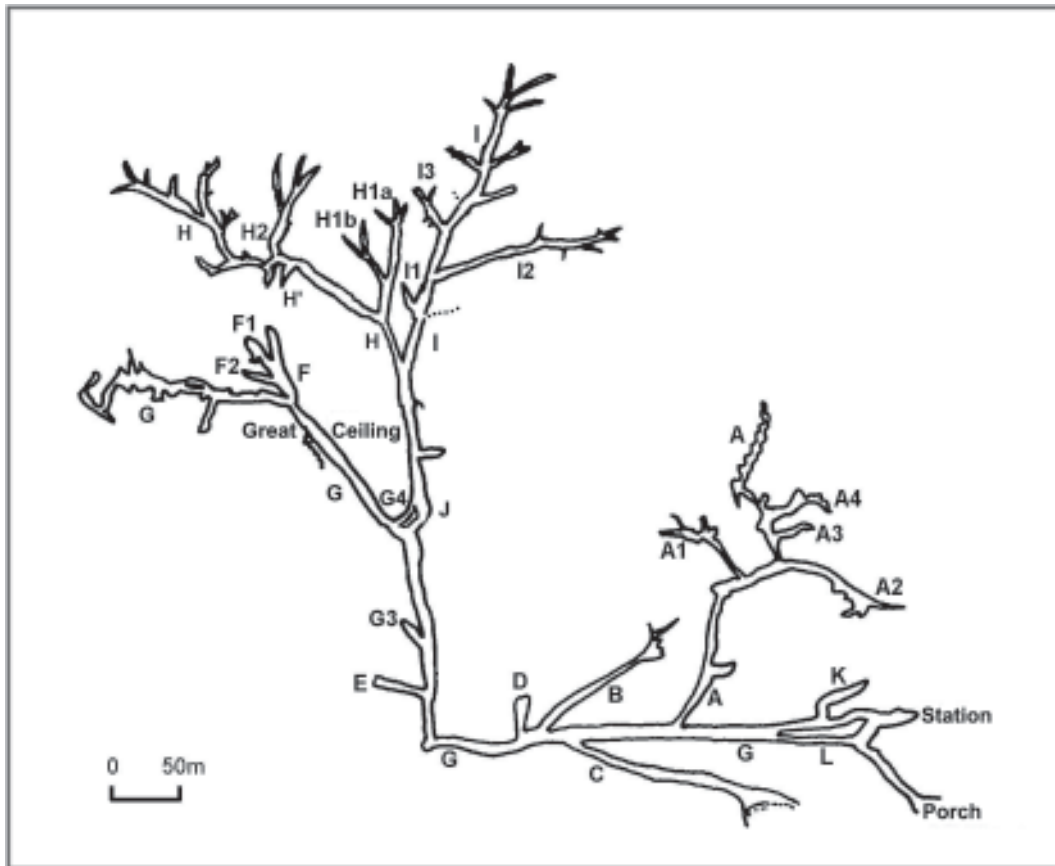
The following terminology helps the discussion of flutings:

- *Graphical unit* (or, abbreviated, the word *unit*) refers to flutings drawn with a sweep of a hand or single finger;
- *Cluster* descriptively labels an isolatable group of units that exhibit a unity, for instance because they overlay each other; and

- *Panel* refers to a collection of clusters that appears spatially or otherwise distant from other clusters and on a surface of reasonably uniform orientation.



**Figure 1.** Local geography of Rouffignac (after Barrière 1982: Fig. 1).



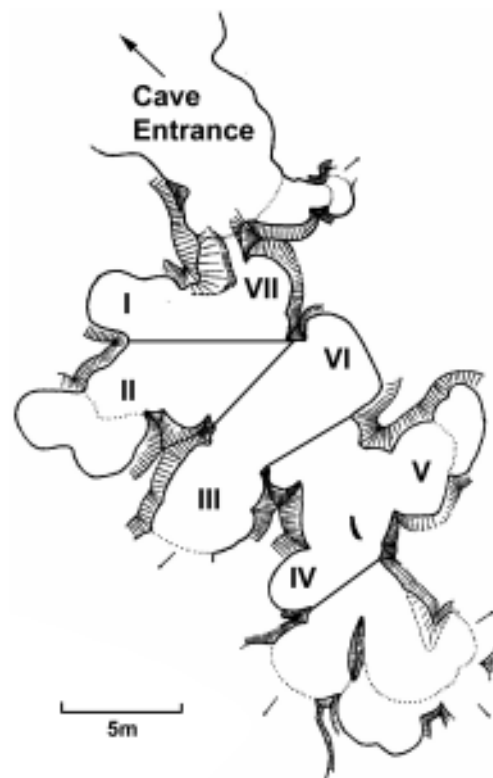
**Figure 2.** Plan of Rouffignac Cave showing the various chambers (developed from Barrière 1982: Fig. 2). This paper especially concerns the fluted sub-chamber of Chamber A1, near its terminus.

### The fluted sub-chamber of Chamber A1, Rouffignac Cave

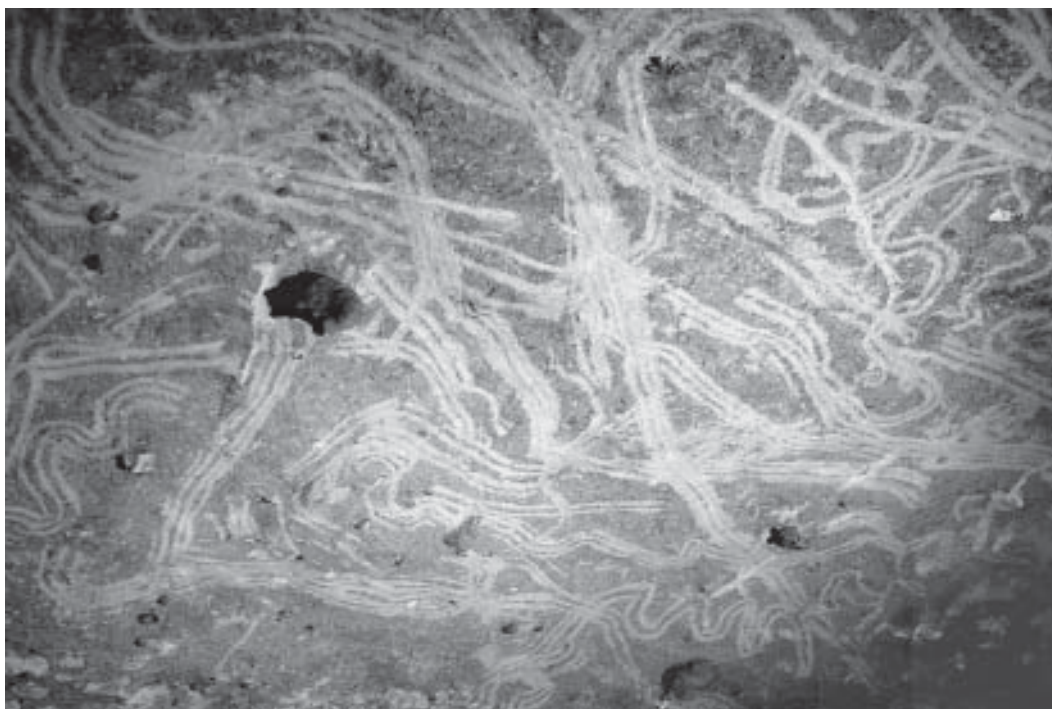
Despite previous controversy as to the authenticity of the art in Rouffignac Cave (Plassard 1999), it is now generally accepted as Palaeolithic and the date usually given for it, based on stylistic comparisons of the animal drawings in the cave, is 13–14 000 years BP, in the Middle Magdalenian. Some scholars, however, suggest a much older date of around 27 000 years BP and others a much younger date (Plassard 1999; dating via style is now questioned, especially given Chauvet Cave; see Clottes 2003).

The flutings that form the basis of this study are those near the terminus of Chamber A1, about 300 metres from the cave entrance (Fig. 2). (The names already given to this sub-chamber — e.g. the ‘Macaroni Ceiling’ and the ‘Serpents’ Dome’ [Nougier and Robert 1958; Plassard 1999] — will not be used because they suggest meanings or inaccurate characterisations for the flutings, see below.) The sub-chamber containing the flutings can itself be divided into natural alcoves or side chambers numbering consecutively Alcoves I–IV from the top to lower left (facing the cave entrance), then V–VII from the lower to top right (Fig. 3). The focus in this paper concerns Alcove I.

The flutings in the sub-chamber cover much of the 150 square metres of the ceiling and are made into a thin red coating over the white limestone, cutting through the red to expose the white underneath (Plassard 1999) (Fig. 4). (It is assumed that the coating is clay and that the fluting process removed the clay to reveal the limestone, but these



**Figure 3.** Alcoves I–VII in the fluted sub-chamber of Chamber A1 (plan developed from Barrière 1982: Fig. 275).



*Figure 4. A small portion of the ceiling of the fluted sub-chamber of Chamber A1.*

suppositions require further investigation; it could be, for instance, that in some places the flutings cut through the coating and into now hardened moonmilk.) There are large ceiling spaces with few flint nodules protruding, and the ceiling averages about 1.6 metres above the floor (Plassard 1999). The sub-chamber's floor comprises red clay (smooth and compacted where frequented), which also goes up the walls to varying heights. No long open wall spaces exist in the sub-chamber and few flint nodules appear on the floor.

### **The flutings in the Chamber A1**

#### *Previous researchers*

Five researchers have previously examined the flutings in Chamber A1 and published on their observations. Nougier and Robert (e.g. 1958) introduced the world to the pre-Historic artefacts of Rouffignac Cave, including these particular flutings. They title flutings in photographs of the ceiling of the sub-chamber (what they call the 'Serpents' Dome') with such words as 'serpents' and 'anthropomorphs' (Nougier and Robert 1958: Figs 16–18). Nougier's Preface to Barrière (1982) also talks about the cave depicting the battle of the mammoths, including the battle between the mammoths and the snakes. In yet another place, he writes:

In this inextricable network made with fingers, appear multiple and systematically made 'serpentine' ... What is [their] meaning ...? Some end in a large round head with a clearly marked eye, a long bent tongue ... they are snakes, extremely rare figures in parietal Quaternary art. One of them is directed toward the entrance of the same large red ceiling (1958: 20–1; KS transl.).

Barrière (1982: 205; KS transl.) writes similarly of the ceiling, 'unique in all of pre-Historic art, offering ... interlaced macaroni, serpentine and easily distinguishable individual snakes'. (Unfortunately, Barrière's [1982: Fig. 276] drawing of the fluted ceiling, large and ambitious though it

be, was published inside out. This error emphasises that an organising focus for the ceiling is very difficult to find, if one indeed exists.)

Plassard writes of

a multitude of single, double, or triple lines that zigzag and become entangled in a swirling mass. In any case, such is the first impression for, after a few moments, the body of lines takes on more structure. One could not really talk about organisation, but rhythms appear. One discovers the beginning of a line, then the end, echoes of lines, some grids or cross-hatchings. By their geometry, they stand out from the mass ... Then, from a corner, gradually appear meanders made with two hands at once and forming symmetrical pairs, or true chevrons with sharp angles. At last, some meanders, very carefully executed in two successive gestures, more clearly evoke snakes. One of them even appears to have a head ... The presence of several of these more elaborate graphic units does not, nevertheless, make everything seem clear and, even with such a revelation, the ceiling retains all its mystery. Two facts emerge: the choice of the end of this gallery with its particular shape and form, and the exclusive presence of this form of expression. These primarily raise the question: does the meaning of the lines lie in the gesture or in the result (1999: 76–8; KS transl.)?

Marshack (1977: 311) singles out Rouffignac as having 'the most numerous and complex [collection of flutings] in any cave in Europe'. The fluted sub-chamber of A1, in particular,

has thousands of [them] criss-crossing ... It looks like 'macaroni' in the truest sense, a random mélange of interlacing lines running in every direction. There is neither structure, pattern, image, nor composition in the accumulation ... Different persons, with fingers and print spacing of different sizes, made meander 'unit' marks using one, two, three, or four fingers (1977: 311).

The fluted sub-chamber of Chamber A1 presents a complex collection of flutings, with both long and short units,

some appearing geometric while others not, and some overlapping each other. The beginnings or endings of some lie over or under other lines. No overall pattern or structure is obvious.

Sharpe and Van Gelder (2006, in prep. b) characterise these flutings by lower-body movement and the use of more than one finger at once. Though some of the flutings are short, many show a lack of constraint (not in the composition, which may employ a restricted range of shapes, but in the use of the space fluted). This involves some upper-body movement but, experiments show, also twisting at the hips, locomotion (some lines extending beyond the arm range of a stationary fluter), or shifting weight (Sharpe et al. 2002; Sharpe and Van Gelder 2006, in prep. b). Circles and some of the zigzags on the ceiling, for example, required the twisting of the body rather than only of the wrist and arm. There is an overall sense of motion or freedom.

Plassard (1999: 77; KS transl.) suggests that these lines may have been made 'with a bundle of sticks reminiscent of fingers'. However, this is refuted by:

- The different starting points of the lines in many of the units;
- The differing line widths between some of the units;
- The lines of some units separating to avoid small obstacles;
- The finger-like cross-sectional shape of the lines;
- No more than five lines existing per unit;
- The fourth or fifth line of a unit, when it shows, looking like the line made by a little finger or a thumb;
- The often uneven spacing between the lines in the units.

Though they have not been dated directly, the flutings in Chamber A1 are considered Palaeolithic, for several reasons:

- Art elsewhere in the cave is considered to be so;
- There are line flutings, including zigzags, next to, inside, underneath, and on top of drawn mammoths in other passages of the cave;
- Mammoths are drawn in Chamber A near to A1;
- Flutings in other caves date to the Palaeolithic.

#### *Age of the fluters*

Two papers by Sharpe and Van Gelder (2004; in prep a) suggest and then more firmly establish that many of the flutings in Chamber A1 were probably made by young children, aged two to five. The methodology for this — which builds on the method and results of Bednarik when he argues that juveniles were responsible for the flutings in many of the dozens of fluted caves he has examined (e.g. Bednarik 1986) — involved measuring the widths of the three central fingers of flutings by modern people and of the units of flutings found in the chamber, and then comparing the results. This study justifiably assumed that the people who made the flutings were anatomically of a similar size to modern people.

Given, from this investigation, that this age group for many of the fluters can be ascertained with a high degree of probability based on the physical evidence of the flutings, further matters present themselves for research and

other things may be learned about the fluters. For instance, an aspect of the fluted sub-chamber of Chamber A1 to notice is the current height of the ceiling above the floor. The ceiling flutings are now in places just reachable by a 1.8 metre-high man stretching up. It is unreasonable to think that young children marked unaided at such heights, yet the fluting size in some such places is small. Was the height of the ceiling above the floor at the time of fluting much the same as now? If so, or if the height were greater than now, the children would have had to have been held up to flute. In this case, in what direction did the children face when held aloft? Were the people holding up the children moving in some prescribed manner?

#### **Research questions and methodology**

As mentioned above, the particular issue at the centre of this paper and which intrigues many visitors to the fluted sub-chamber of A1 concerns the meaning or intention behind the fluter's activities. Why did the fluters, including the young children, mark the ceiling? The intention question does not equal the meaning one, but is related to it; a meaning can imply an intention but one intention can involve several meanings. Meanings can change or multiply after an event, but the intention was set in history. It is therefore preferable at this stage to seek intentions rather than meanings. To explore this, the following will be pursued:

- The fluters' ages and consequences of this;
- Some implications as to what was happening in the fluted sub-chamber;
- The nature of the fluted sub-chamber in relation to the rest of the cave;
- A critique of published and other proposals as to the intention (and meaning) of the flutings.

This investigation is part of a research program that bases its methodology on the flutings themselves (Sharpe 2004; Sharpe and Lacombe 1999; Sharpe et al. 1998, 2002; Sharpe and Van Gelder 2004, 2006, in prep. a, in prep. b). It does not first introduce ideas as to the meaning of the flutings (for instance, as depicting animals, humans, or symbols) and their significance, and then looks at the lines through those ideas. Rather, the program seeks to establish an objective and experimental approach to flutings seeing what can be said about the marks themselves as they were made and, thereby, what the marks might say about their makers. It also involves experimentation to ascertain how the markings may have been made and limitations on them given their means of manufacture. Such investigations logically come before subjective-interpretative and intention or meaning-seeking approaches to flutings and may help sort out the various suggestions as to meaning or lay a solid foundation for seeking them. Marshack (e.g. 1972), though he defers to his predecessors, pioneers strategies for this type of research, which he calls 'internal analysis'. Bednarik (e.g. 1986), d'Errico (e.g. 1992) and Lorblanchet (1992) are some who follow him. They have extended this approach through experimentation, Lorblanchet for caves, d'Errico for mobiliary artefacts, and Bednarik for both.

Bednarik has also studied the fluting media (e.g. 1999) and other highly relevant matters, such as the differentiation of tool and finger markings, the metrical recording of flutings, their distribution within cave systems and their deterioration.

### Further discussion on the flutings in Chamber A1

#### *Fluters being carried*

An important aspect of the fluted sub-chamber of Chamber A1 with regard to the flutings made by the young children is the height of the ceiling above the floor, as mentioned above. The heights above the floor of several randomly chosen units of three-fingered flutings in Alcove I were measured (Table 1) (the reason for only measuring the widths of three-fingered flutings is given in Sharpe and Van Gelder in prep. a); given their widths, all of these flutings were probably made by the young children (Sharpe and Van Gelder in prep. a).

Set No.	Width	Height
1	23	174
2	26	195
3	27	182
4	33	190
5	34	238
6	36	212

**Table 1.** Widths of three-fingered flutings (measured in mm) and their respective heights (in cm) above the floor in Alcove I of the fluted sub-chamber of Chamber A1.

Assuming the floor is much the same height as when the flutings were created, even the lowest of these heights (174 cm) would exceed the reach of a child of 110 cm in height on tiptoes (assuming the stretch of the arm being at most 50 % over the child's height). It would seem, therefore, that (at least some of) the children fluting the ceiling did not reach there unaided; they were held up to touch the ceiling (or were walking on an extensive platform — an unlikely hypothesis).

However, is the floor at much the same level as when the flutings were created?

The current floor surface is smooth and undulating. It was probably rougher and comprised small piles of partly desiccated clay when the fluters first entered the chamber. This is now the appearance of the floor in the alcoves in A1 near the fluted sub-chamber where few or no people have apparently walked or crawled, and in many other parts of the cave, for instance the now water-logged Passage L (see Fig. 2) (Sharpe et al. 2002). Probably the walking over the rough clay piles has caused them to become smooth and a little compressed. What causes the roughness of the original surface? It could not have been digging because this condition is present in many other places in the cave and it seems inconceivable that they were all dug. It is probably the natural state of the clay floors.

#### *Cave bears*

One way to tell whether the floor is now approximately at its original level would be the presence here of relatively undisturbed cave bear pits. There are no bear pits in this part of the cave, nor are there bear scratches here, which means this indicator of the Palaeolithic floor is of no help in this chamber. There are some animal scratches in the clay on the walls at varying heights above the floor, but not many and probably not of the cave bear because they are a smaller size than what would be expected from that animal. They therefore lack any value as indicators of prior floor levels.

#### *Clay deposition*

Another approach to the question is to ask when the clay of the floor was deposited relative to when the ceiling was fluted.

If the coating on the ceiling is clay, this could suggest that the chamber was completely filled with clay or clay-bearing water at some point prior to the fluting activity. It has since then cleared of some of the clay (and all water) to produce the current accessible passage.

Have there been more recent, post-fluting infills of clay? A high-level mark of clay rings much of the chamber and this could be interpreted to mean a more recent clay inflow filled the chamber to this level. If so, some flutings might continue right down to the high-level mark as if to go under it. The presence of such a body or bodies of wet clay or water since the ceiling was fluted may have severely affected the flutings (it probably also would have destroyed flutings in clay where it touched them). No such flutings have been observed. In fact, one fluted unit was observed going right to the high-level mark and over it (in Alcove VI). This suggests that the clay represented by the high-level mark was deposited before the lines were drawn. The ceiling was fluted after this clay infill, perhaps the most recent of the infills.

#### *Mining*

Undulations in the floor of the sub-chamber (mostly higher at the edges and troughs in the centre) as opposed to a flat floor could suggest that considerable amounts of clay were mined from the sub-chamber since the lines were fluted, perhaps by Iron Age or Medieval peoples. This would make the current floor markedly different from when the flutings were made.

Such mining of the clay from the floor — notably closer to the ceiling before mining than the current floor level — would have required considerable effort both in the excavation and in the transportation of the results to the surface. Thus, it is appropriate to ask whether the quality of the clay in the fluted sub-chamber of Chamber A1 is that much better for pottery than clay closer to the cave entrance or on the surface nearby. Even if the quality and effort questions were decisively answered favouring the quality of the clay in the fluted sub-chamber, six evidences of mining might be expected (perhaps three chambers were mined — the fluted sub-chamber of Chamber A1, Chamber D, and Chamber E [Fig. 2] — and parallel questions

can be asked of them):

- Considerable soot on the ceiling from the fires needed to light the sub-chamber during these extensive operations might be, but are not visible.
- Similarly, large amounts of charcoal might occur on the floor from the fires lighting the mining activities. Only small amounts are visible.
- Marks on the ceilings from the swinging of picks in what would have been a lower ceiling than at present might be, but also are not visible (apart from a couple of recent lines — see Fig. 4 — which are probably the result of relatively modern scraping with sticks).
- The miners would probably have marked the ceilings with their graffiti, but nothing like that is apparent. (Medieval markings in Chamber C [as yet unpublished data] look nothing like the flutings in the fluted sub-chamber of Chamber A1.)
- Evidence of mining tools (broken or otherwise) left by the miners might also be evident, though conceivably elements of some types of tools may have disintegrated or rusted away by now. By all accounts, none have been found here, though apparently some were excavated in the entrance chamber of the cave (Barrière 1959; 1973–75).
- It would make sense for the miners to excavate the clay right to the edges of the fluted sub-chamber rather than only in the centre — because the ceilings become lower and lower the further into the sub-chamber — and so they would not have had to crawl further down the chamber to extend their excavations. However, the depressions are only in the centre of the sub-chamber.

There is, therefore, insufficient evidence to establish that clay was probably mined in the fluted sub-chamber of Chamber A1.

#### *Floor undulations*

Other, reasonable explanations need to be offered for the observations that could be taken to suggest mining.

As said above, the mining hypothesis could be raised because of the undulations in the cave floor, higher at the edges than in the centre. It may be thought that the clay (perhaps deposited under a lake) was flat originally and that mining removed clay in the areas that now form the troughs in the floor.

The clay high-level mark on the walls of the sub-chamber and its neighbours is at an angle sloping down the chamber. This suggests that the clay was not most recently deposited from water in a lake, because the lake would have had a level surface. (It would also have completely drowned the fluted sub-chamber judging by the higher level in the sub-chamber immediately closer to the entrance.)

Could the clay have been deposited under water flowing through the chambers? It would have moved deep and fast, judging by the high-level mark of the clay and its angle down Chamber A1, and it is hard to imagine the clay being deposited so deeply under such a rapid flow.

Probably, therefore, the clay gradually mass wasted down the chamber, probably moving more slowly at the

edges or where the floor rose significantly, with friction, viscous tension, and rock-clay attraction holding it closer to the rocks. The surface of the slowly moving clay perhaps, therefore, sunk at the centre between the walls or appreciable rises in the rock floor, and remained higher against the walls and these rises.

Other natural processes may also help explain the undulation of the current clay floor. Since the time the clay mass was deposited, it has slowly dried out (though not completely), shrinking with its dehydration. When it dried on the walls or the ceilings (at places where it did adhere to the ceiling), it would in time peel and fall off. The edges of the current chamber should therefore be higher because the clay from the walls has fallen onto it. Clay continues to come off the walls not only with peeling, but also with occasional re-hydration and running down. Both of these processes have been observed in the fluted sub-chamber of Chamber A1. A further potential explanation of the floor undulations is that clay clung to the edges when the middle sections subsided or moved down the chamber under mass wasting.

#### *Flint nodules*

The mining hypothesis may also be raised because of the relative absence of flint nodules currently on the floor of the fluted sub-chamber, whereas they occur more profusely on the floors of other sub-chambers, for instance the prior one. Did humans remove the nodules to clear the floor, perhaps to mine it or in the process of mining?

The relative absence of flint nodules on the floor need not require human activity:

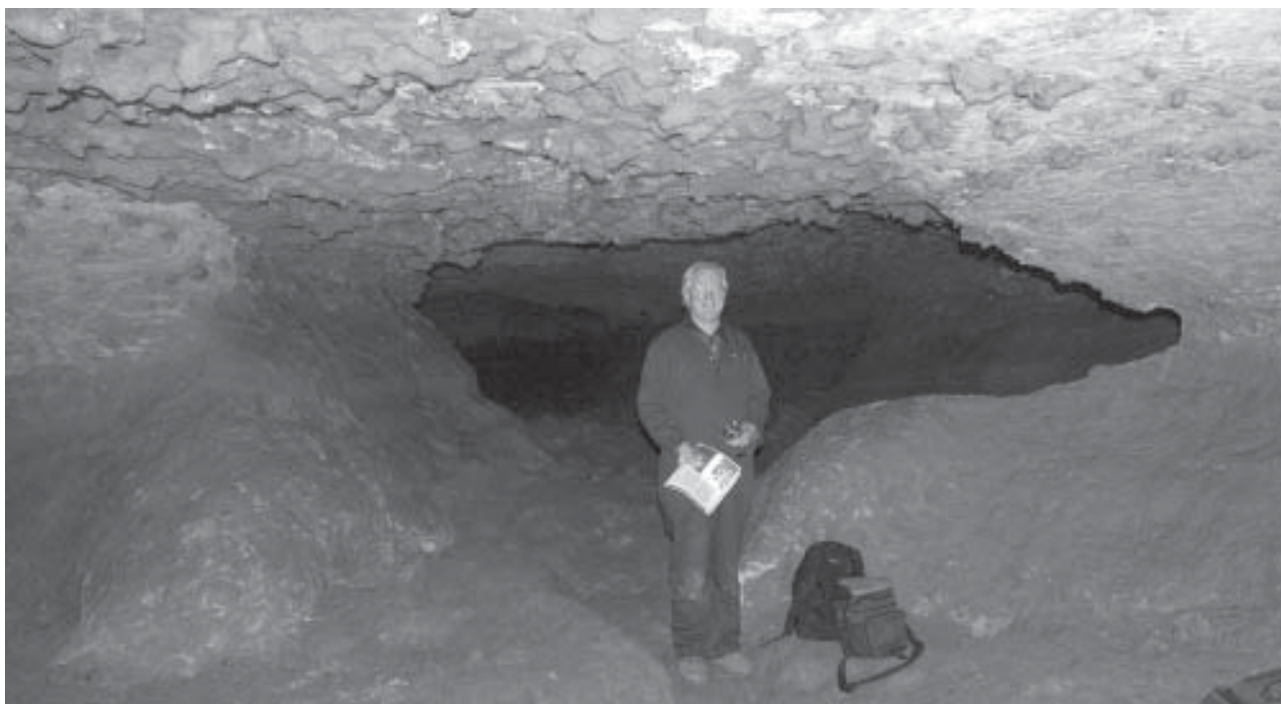
- The ceiling of this sub-chamber has many fewer nodules protruding than the ceiling of its neighbour. Fewer nodules in the ceiling mean fewer nodules to fall.
- Few nodules fallen into the neighbouring chamber probably would roll into the fluted sub-chamber of Chamber A1 because of its natural floor barrier (about 60 cm high) at its entrance (see Fig. 5).

In other words, the floor was naturally probably relatively free of fallen flint when the flutings were made. Humans — whether miners or fluters — probably did not clear it.

Similar conclusions can be drawn about the ceiling of the fluted sub-chamber of Chamber A1. Most of it is covered with presumed Palaeolithic flutings, and relatively more recent activity — human or natural — on the ceiling is obviously so because of differences in patination. Given that patination, it seems that little flint has fallen since the lines were made and that the fluted sections of the ceiling were relatively free of flint when the flutings were made.

#### *Conclusions*

This picture overall suggests there have probably been no more clay infills into the fluted sub-chamber of Chamber A1 since the time of the fluters and that probably clay was not mined there. Thus the floor of the sub-chamber that the presumably Palaeolithic fluters encountered was probably rougher than at present and comprised what looks



**Figure 5.** The barrier marking the entrance into the fluted sub-chamber of Chamber A1. Looking toward the cave entrance.

like small piles of partly desiccated clay higher on the edges. Its changes to the present probably comprise smoothing and a little compression with walking over the central trafficked area, shrinkage with further dehydration, and perhaps a little higher at the edges from clay further peeling and falling off the walls.

One may conclude, therefore, that the young child fluters were in places probably held aloft by others, perhaps by adults or at least people old enough to carry them with sufficient agility that the children could touch the ceilings. This same practice is apparent in other parts of the cave as well, for example in Chambers E and G (between the junction with Chamber J to that with Chamber F), where young children have fluted above adult flutings (as yet unpublished results).

#### *Movement during fluting*

In what direction did the children face when held aloft, assuming that they were? At the forward end of the fluted sub-chamber of Chamber A1, the small natural wall jutting out from both sides blocks direct access of the ceiling from the floor (Fig. 5). On the left-hand side, when facing toward the entrance of the cave, the ceiling has been fluted by children, the flutings extending further down into the sub-chamber (as opposed to toward the cave entrance). A child held aloft facing into the sub-chamber, arms outstretched behind the head, probably could not have fluted the length that exists over the floor rock and toward the entrance; probably the child therefore would have had to have been facing the cave entrance with arms stretched out in front and finger pads upwards (finger nails upward would create different marks than those that appear). In other words, the child probably would have been facing the opposite direction to the carrier, who probably would have faced

down the cave in order to see to walk and not stumble on the undulating surface and occasional fallen flint nodule. The child probably would have stretched over the carrier's shoulder to gain the maximum length of fluting. Facing the opposite direction to the direction of movement may have allowed better control of the fingers on the ceiling.

A number of shells and shell fragments are exposed in the limestone ceiling. In places, 5–50 millimetre shells are missing, some perhaps dislodged when fingers knocked into them. Fingers passing over one shell probably broke it as the two sides remain and the flutings on each side have the same width and number of fingers. Some shells look like they might cut fingers running over them. Of particular help in reconstructing the activities in the chamber may be differences in the marks on either side of an obstacle such as a shell because they might help show the direction of the fluting.

The flutings can help in understanding the movement of the bodies of the fluters or of those holding them up. Looking at the flutings helps visualise the activities that took place:

- Several tight undulations or zigzags appear. The (re)creation of these, standing underneath them, seems to require the movement of the hips as opposed to only the movement of the upper body. The curves of zigzag made by wrist movement differ from zigzag curves made by hip movement. Thus, while long child-made units depend on the walking of the holder of the fluter for where they go, zigzags of the same ceiling height and finger width may have been made while the carrier was standing in one place but twisting at the hips.
- Circles also appear. These require the fluter (or perhaps the person holding up the fluter) to be underneath and to rotate the lower body and the feet.

- Sometimes, only two lines appear in a unit. Perhaps the fluter folded down all but those two fingers, or one would expect in the bumpiness of being carried aloft (or even of walking and fluting overhead) that at least a third would sometimes appear.
- Sometimes, four fingers appear in two sub-parallel (2+2) units; in this case, the fluter's two hands were held aloft usually touching each other (which maintains the sub-parallel nature of the lines) (the distinguishing features of 2+2 units as opposed to those made with four fingers are discussed in Sharpe and Van Gelder in prep. a).
- Series of straight parallel units of flutings appear. Some of these may most easily be created when standing underneath them on one spot and rocking forward and backward.
- In other places, a 'jog' appears in a unit, probably where the carrier or fluter changed angular direction while walking.

They suggest whole body movement, perhaps dance-like activity, but a fuller description of this requires further research.

In principle, some of the movements made during the activity can be reconstructed from the flutings left behind. The carrier determined the overall shape fluted, so perhaps the composition — if there be a composition — should be considered a work of the carrier as opposed to the child's. Perhaps the children could be considered the paint brushes or the instruments of the carriers.

Why did those holding the children (if older people) not flute without using them? The youngsters could have fluted where they could reach and the holders could have marked, not only these sections, but also sections where the youngsters could not reach. Here, however, they sometimes raised the children up to flute. Further, the low sections of the ceilings that young children could comfortably flute by themselves usually show few or no flutings. Considerations such as these lead to asking about the intentions of the fluters.

#### *Choice of the fluted sub-chamber of Chamber A1*

Why did the fluters mark the fluted sub-chamber of Chamber A1, as opposed to creating the same markings in some other portion of the cave? This fluted sub-chamber is a relatively small percentage of Chamber A1, let alone of the complex of chambers labelled with an A or the cave itself. It is about a 600 metres into the cave over rough rock fall and not even near the entrance of Chamber A1. Why do the flutings appear here and not somewhere else? Seven attributes of this space may have significance:

- The relative lack of flint nodules on the floor (whose presence would impede walking) in comparison with many other parts of the cave (as mentioned above, the fluters probably did not clear or even need to clear the floor of flint).
- The relative lack of flint nodules in the ceiling (whose presence would interrupt the marking surface) in comparison with many other parts of the cave (as also men-

tioned above, nodules were probably not broken off the ceiling).

- The lack of bear pits in the floor (whose presence would not only impede walking but the ability to reach the ceiling when down a pit) in comparison with many other parts of the cave.
- The softness of the ceiling.
- The red-white contrast of the fluted red coating against the white of limestone or moonmilk.
- The height of the ceiling (not too high or too low for children to flute while held up; compare this with the portion of Chamber G from the junction with Chamber J to that with Chamber F, for instance, where the height of the ceiling would have been too short in most places).
- The warm acoustics of the space.

These seven attributes of the space, plus the large amount of marking suggest that the fluted sub-chamber of Chamber A1 was deliberately chosen for fluting. 'Deliberate', not in the sense that each line was necessarily produced in a particular place according to a thought-out visual design (which offers a question to explore), but in that the space was probably deliberately chosen and deliberately used — which refers back to one of the 'facts' Plassard mentions: 'the choice of the end of this gallery with its particular shape and form' (1999: 78; KS transl.). The markers possibly scouted through the cave to find a suitable or the best site for carrying out these particular fluting activities. As well, though this offers another subject for investigation, the flutings in the fluted sub-chamber of Chamber A1 were probably executed at one time.

#### **Intentions behind the flutings**

##### *Intentionality*

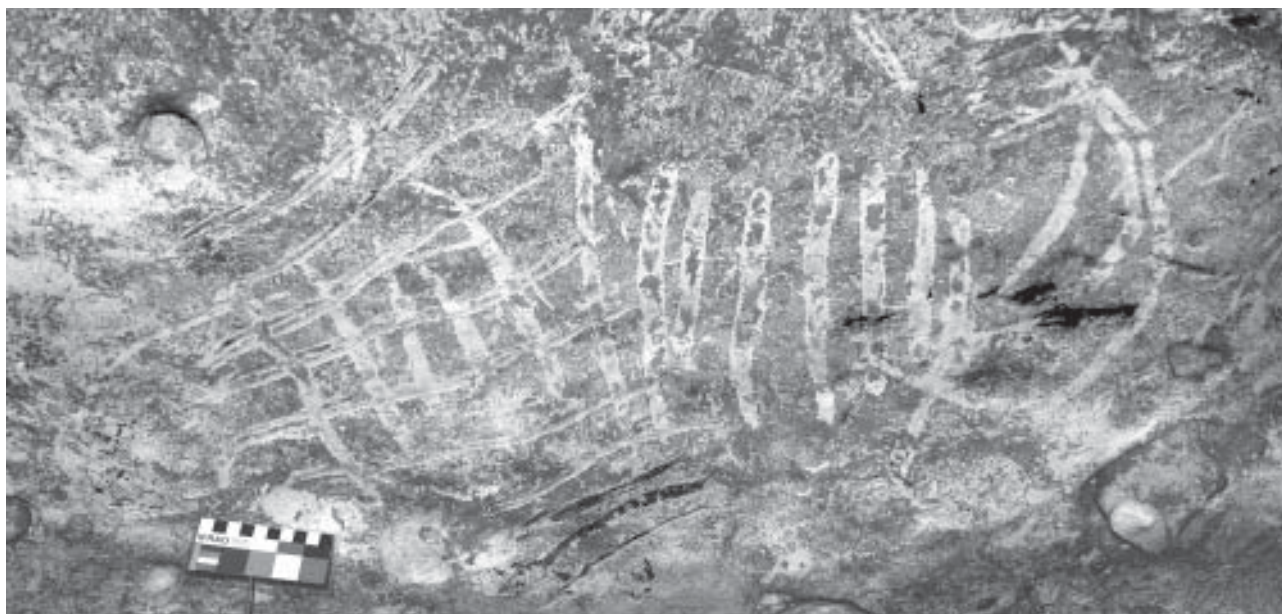
The selection of the fluted sub-chamber of Chamber A1 for fluting appears deliberate. The flutings were probably also intentionally made, because of:

- The chamber's physical nature. As mentioned above, this suggests it may have been intentionally selected for fluting the ceiling by holding children up.
- The lack of the animal and tectiform drawings frequently found in the cave, and the absence of such things as hand prints, finger prods and triangles. The shapes fluted were deliberately chosen and certain other possible shapes were deliberately excluded.
- The large, striking and very deliberate-looking lines at the junction of Chamber A1 with Chamber A. No other lines appear for many metres either way.
- The use of the geography (shape and texture) of the ceiling. The fluters fluted around shells (as there is no evidence of prizing, they probably did not take out the shells), and frequently filled open spaces without overly crossing other lines.

These imply some intentionality was involved.

Yet there does not appear, from investigations carried out so far, to be any consistent overall or repeating local structure or order to the lines (the grids appear to be hap-penstance and the circles unique). For instance, comparing





**Figure 6.** Flutings from Chamber E, Rouffignac Cave, which, like Chamber A1, has a red coating over white (see back cover of this issue for a colour version of this image).

the flutings in Chamber A1 with those in Chamber E (compare Fig. 4 with Fig. 6) or in the section of Chamber G from the junction with Chamber J to that with Chamber F (Fig. 2), emphasises the deliberate, structured-looking nature of the latter in comparison with those in the fluted sub-chamber of Chamber A1. They were all apparently made by the same people (as yet unpublished data).

It is a judgment on the part of the informed and experienced observer, but there does appear to be a fundamental difference (besides those of technique; Sharpe and Van Gelder 2006, in prep. b) between the various panels of flutings in Rouffignac Cave (as well as in other caves). On the one hand, there are those where the visual form appears to be the paramount intention (as with flutings of animals and tectiforms, or with panels of vertically fluted, largely separable lines — as in Fig. 6). On the other, there are those where the primary intention appears not in the final form but in the act of fluting. These latter panels of flutings involve no consistent shapes and often are a mass of lines, sometimes quite entangled. This judgment between the two types of appearances needs further investigation and corroboration, but could prove instrumental in distinguishing between fluters' intentions.

The flutings in Chamber A1 do not appear to involve consistent shapes and are a mass, though not as entangled a mass as in other sites, such as the Zone of Crevices in Gargas Cave, Hautes Pyrenées, France. The Chamber A1 flutings, therefore, perhaps were made for the act of fluting.

#### *Suggested intentions*

A number of intentions, characterisations and meanings have been published or suggested for the flutings in Chamber A1 and for flutings in general. (Ideas as to meaning will be taken as intention suggestions in what follows.)

Maynard and Edwards (1971) suggest that the flutings in Koonalda Cave, South Australia, stand for a transitional

phase in artistic development from 'non-art' to art; they do not think the flutings represent an art form because they appear randomly distributed and void of any preconceived visual impression. (A few of the finger lines form simple patterns, though perhaps unintentionally by the artists; for example, open fingers inscribed two curved sets of parallel lines in two movements of the hand and created a design that looks like a concentric circle.) This is reminiscent of Breuil's (1952; Breuil et al. 1915) idea that flutings and other line markings in part form the first scribbles by humans, though intuitive and random. The fluters recognised images in their lines and, from them, developed the tradition of simple and crude outline figures. This idea is highly speculative. For Rouffignac, the proponent cannot even point to representational drawings in the fluted sub-chamber of Chamber A1 in attempts to find corroboration and, as will be shown below, 'emerging shapes' (anthropomorphs and snakes) do not hold up under close examination. It even appears that the same group of fluters as marked in Chamber A1 also drew obvious animal pictures in other parts of the cave (as yet unpublished data).

Beyond the sense that these are 'primitive' and that from them developed representational and symbolic expression, flutings in Chamber A1 have been thought to be intended as anthropomorphs (Nougier and Robert 1958), macaroni (Barrière 1982), meanders (Marshack 1977), serpentine (Barrière 1982), serpents or snakes (Nougier and Robert 1958), or related to water (Marshack 1977). More generally, flutings are also considered related to initiation ceremonies (Flood 1996) or to shamanistic ritual (Lewis-Williams 2002), or are considered male symbols (Leroi-Gourhan 1958). Mulvaney and Kamminga (1999: 365), commenting from Bednarik's work, consider flutings are 'most likely to be play, children's "finger painting", ... [or] done for decoration or identification'. Which of these, if any, are correct?

Like Breuil's idea, all these suggestions as to the inten-

tions behind flutings are speculative. Some can be dismissed without further ado (for instance, that they represent huts, comets [Leroi-Gourhan 1958: 314] or hunting marks [Barrière 1982: 184]. Contenders, especially serious ones, may and perhaps ought to lead to empirical research on the flutings, but none has yet been informed by such studies done in depth. Does the current research in the fluted sub-chamber of Chamber A1 shed any light on the fluters' intentions?

#### *Anthropomorphs*

Nougier and Robert (1958: Figs 16–18; see also pp. 60–61) introduce some of the flutings in photographs of the ceiling of the fluted sub-chamber of Chamber A1 with the word 'anthropomorphs'. They write:

On Oct. 11 and 13, 1956, we found four anthropomorphs at Rouffignac, two of them ... in the great red dome of the white streamers [flutings]. All four obeyed the rules of the species, that is, of the anthropomorphous series, that is — no rule at all. They were true 'grotesques'; with big noses and big mouths, like Perrault's deceased grandmother ... The anthropomorph on the red ceiling of the streamers has a blunt chin, a receding forehead, a jutting nose, and a lively eye. From the point of the chin to the top of the head he measures 45 centimetres (nearly 18 inches). A companion on another part of the roof nearby is more mysterious. Drawn also with a finger, the head is excellent: forehead, nose, mouth, chin — then, going downwards, everything melts away in a shapeless mass. One of us tried to pick out the beginning of a leg and a pretty breast (1958: 60–1)!

Figures 7 and 8 depict Nougier and Robert's anthropomorphs in their Figures 18 and 19 (1958: op. p. 102).



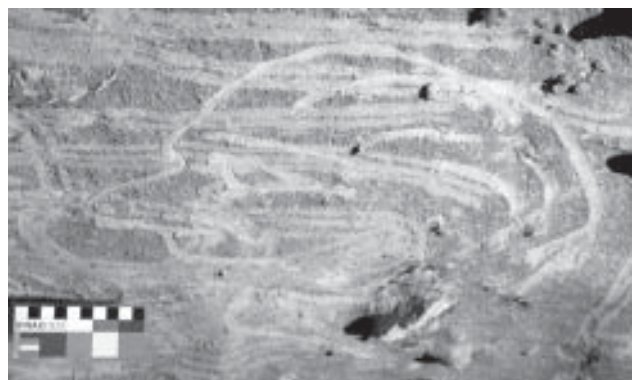
**Figure 7.** Nougier and Robert's (1958: op. p. 102) anthropomorph, Figure 17.

Did the fluters intend these clusters of flutings to be faces? Admittedly, the clusters (when each is taken to be the single unit defining the 'facial' profile) do look like distorted human faces, and once people see a face in something, they tend always to see it there. But why should the two 'faces' not respectively be seen rather as a snake poised to strike (Fig. 7 seen from the top-left), or a bulb sprouting



**Figure 8.** Nougier and Robert's (1958: op. p. 102) second anthropomorph, Figure 18.

or a piece of fruit (Fig. 8 from the right)? There is no preferred angle for viewing these clusters since they are on the ceiling. It therefore seems inappropriate at this stage to say that the Palaeolithic fluter(s) intentionally drew faces on the ceiling. Nougier and Robert observed the fluted ceiling through the eyes of a paradigm that tries to see animals, humans and familiar shapes, that forces the lines into shapes within such categories, but that now must be left behind. It is instructive to compare the two anthropomorphs with two modern obvious drawings of heads on the same ceiling (modern because of the fresh state of their patina as opposed to that of the presumed Palaeolithic flutings), drawings that have in places used the original flutings in their compositions (see Figs 9 and 10).



**Figure 9.** Modern drawing of head on the same ceiling as Figures 7 and 8.

#### *Macaroni and meanders*

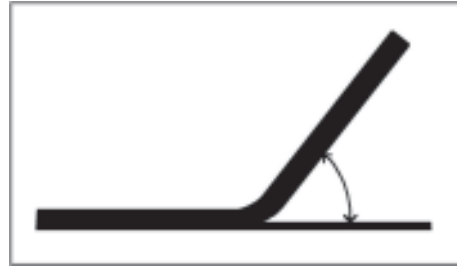
The flutings in Chamber A1 are sometimes referred to as 'macaroni' or 'meanders'. Are either of these an adequate characterisation and therefore label for the flutings in the sub-chamber? Bednarik (1986) offers a general basis for rejecting these terms, but are there particular reasons they do not apply to this sub-chamber? *The New Oxford Dictionary of English* defines these terms as, respectively 'a variety of pasta formed in narrow tubes', and 'a winding



**Figure 10.** Modern drawing of head on the same ceiling as Figures 7 and 8.

curve or bend of a river or road'. The impression of the first term is, for uncooked macaroni, 'short, straight, and hollow' (for cooked macaroni, a little bendiness may occur), and 'long and curvy' for the second term. The following is suggested as what quantifiably would count as a line being macaroni or meanders (see Fig. 11):

- A *macaroni* (singular) fluting is of length at most 60 cm and all its curves, if any exist, are less than 45°.
- A *meander* fluting is of length at least 60 cm and con-



**Figure 11.** A curved fluting showing the angle of the curve.

tains at least one curve greater than 45°.

They cannot both characterise a collection of flutings as they are mutually exclusive.

Does either of them apply to all or even the majority of the flutings in the Chamber A1?

To answer this, consider all the flutings in a randomly selected 60 cm square of the ceiling (see Fig. 12), including the flutings that are only partly in that square. The total of eight flutings in the square can be tabulated as:

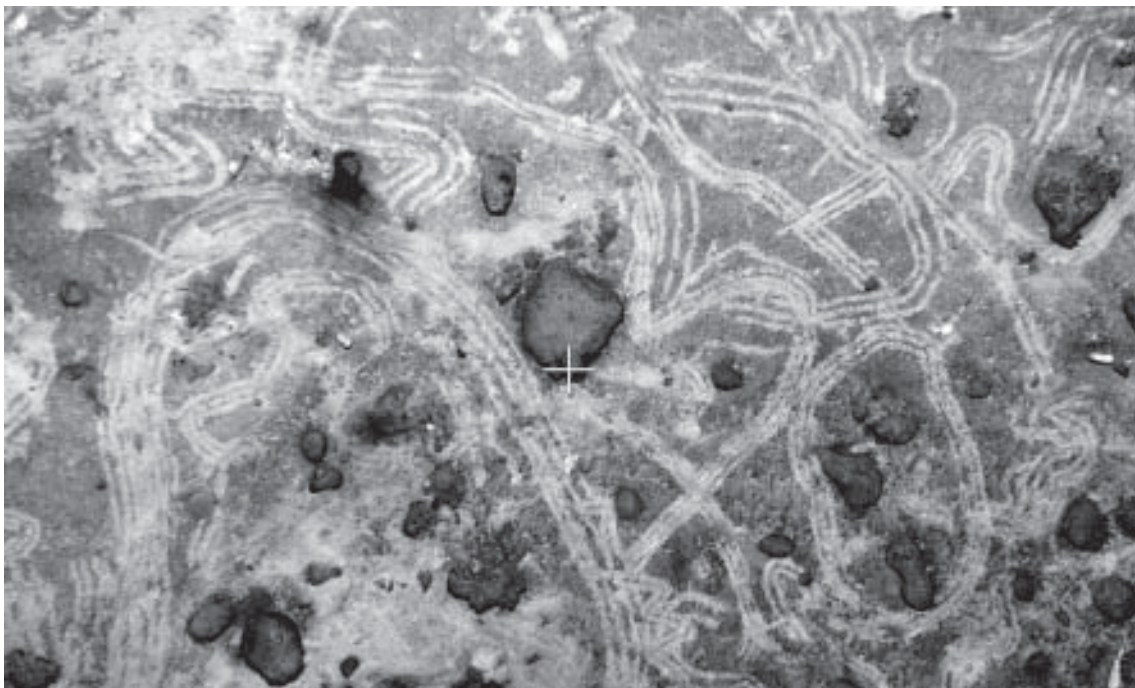
Number <60 cm with all curves, if any exist <45°: 1 (12.5%) (macaroni);

Number >60 cm with all curves, if any exist <45°: 3 (37.5%);

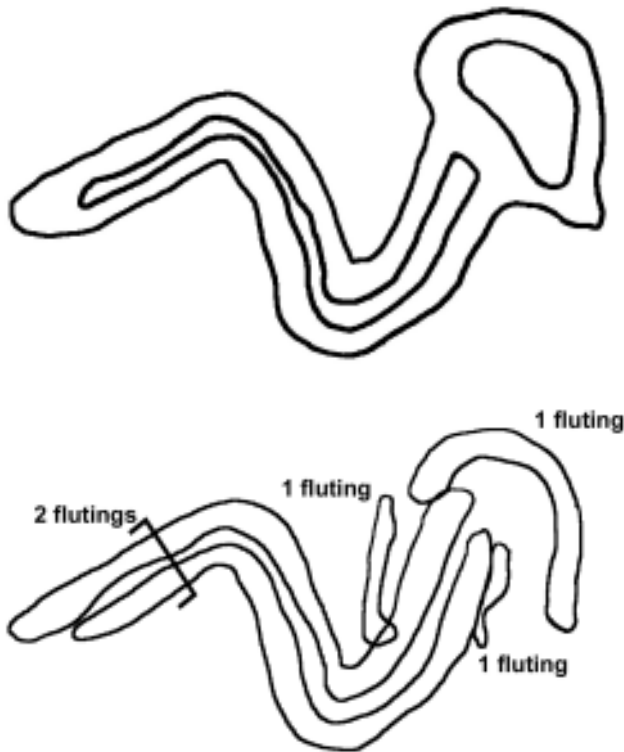
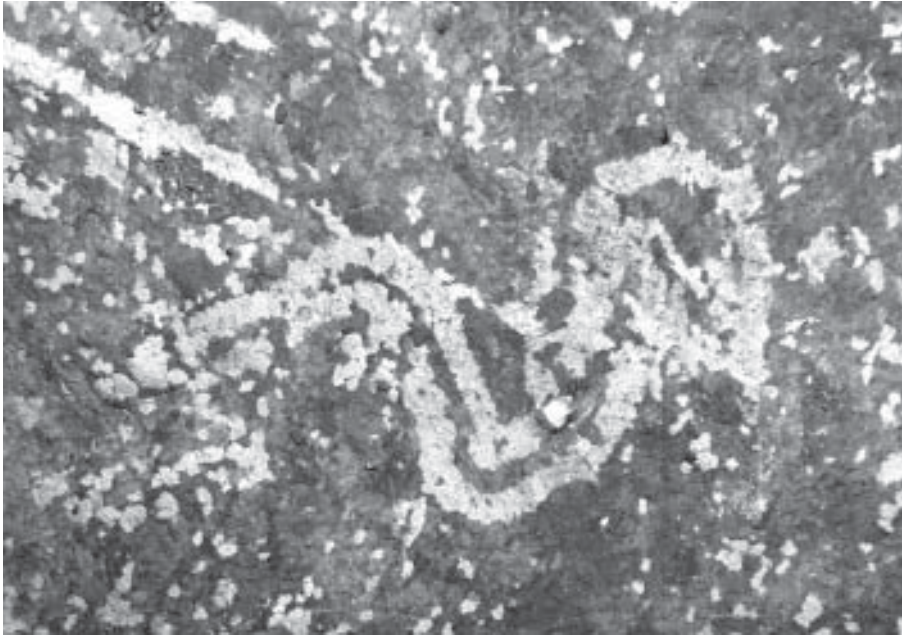
Number <60 cm with a curve >45°: 1 (12.5%); and

Number >60 cm with a curve >45°: 3 (37.5%) (meanders).

Therefore, the flutings in the square FC — and, by extension, in the fluted sub-chamber of Chamber A1 — come in a variety of lengths, some are curved while others are straight, and neither macaroni nor meanders constitute an overwhelming majority. The fluters probably did not intend, therefore, to draw lines that a person nowadays would



**Figure 12.** The ceiling square in Alcove I of the fluted sub-chamber of Chamber A1 used in the macaroni-meander analysis is based on the +.



**Figures 13–15.** Barrière's (1982: 89, Fig. 278) *Serpent 161* (26 cm long, just before the physical barrier at the entrance to the fluted sub-chamber of Chamber A1): photograph, a drawing from the photograph of the most likely interpreted snake figure, and the analysis of the units involved in the figure showing their full extent.

classify as macaroni or meanders.

#### *Serpentines and snakes*

Another pair of terms used of the flutings in Rouffignac is 'serpent' (or 'snake') and 'serpentine' (Barrière 1982: 205), a term meaning snake-like. It can be asked, as with

the terms 'macaroni' and 'meander', whether this nomenclature adequately depicts the flutings in the fluted sub-chamber of Chamber A1.

Barrière writes:

Rouffignac has more figures of snakes than all the other caves put together. Though there are only 6 perfectly defined, they still are of great value.

They are all made with finger flutings, but use different shapes, especially for the head. The body markedly undulates. The head is round with a large, left-facing mouth (1982: 155; KS transl.).

He elaborates on one 'small snake' (his number 161), the one he finds the 'most interesting':

On the left, where the ceiling descends, there is only one drawing.

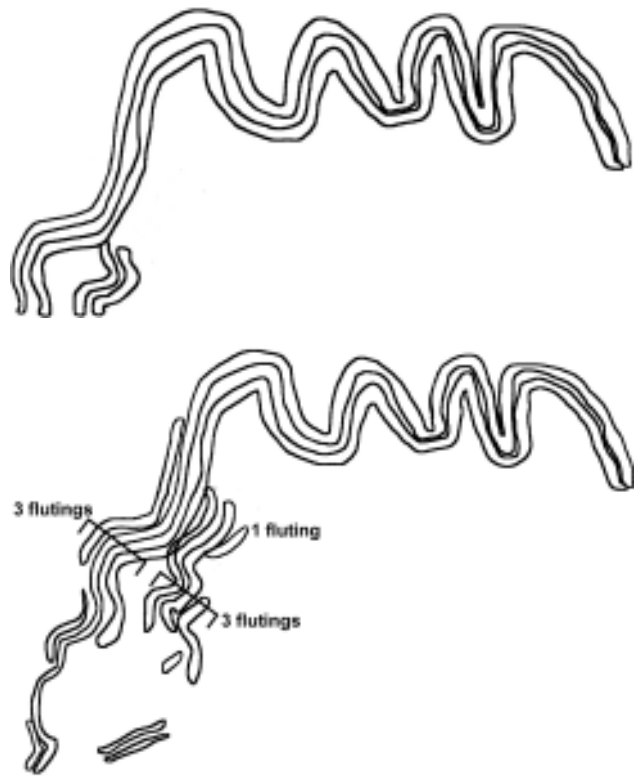
It is of a snake traced with two fingers, the body in an S-shape reaching up, with an oval head, a pointed nose, and an eye. Right profile. Length 20 centimetres.

It is undoubtedly a snake of the grass snake type because of its vertical winding. It is one of the most characteristic depictions in all of prehistoric art (1982: 88; KS transl.).

Barrière pictures four of the 'snakes' he noticed on the ceiling of the fluted sub-chamber of Chamber A1 (see Figs 13–25).

Take, for example, the 'snake' that Barrière calls 'Serpent 164' (Figs 23–25) and call this Cluster S164. Its 'head' (on the left) appears to have an open 'mouth' with its 'tongue' extended. Closer examination shows that Cluster S164 comprises several flutings that melt into the other flutings in the vicinity. The top of the 'head' comprises two flutings, one of which undulates to cross the body near the end of the 'tail'. The lack of obvious single-minded action of concept 'snake' to fluting depicting a snake casts doubt on its being a snake representation. Further, seen from the right, the 'snake' looks like a person sitting down, head turned around, and tongue extended; as with the 'anthropomorphs', there is no preferred angle for viewing this cluster. Similar analyses can be made of the other 'snakes'; for example, the flutings comprising the head of 'Serpent 162' extend above and well below the 'head'. With regard to Barrière's romanticising over his 'Serpent 161', were there grass snakes (or even snakes) in this region of France when the flutings were made, perhaps during the coldest part of the last major Ice Age (Palmer 2004)?

A case might be built for these flutings being serpentine if many other flutings in Chamber A1 really look like snakes. Apart from many of the units being undulating, none of the thousands of flutings in the sub-chamber (Fig. 276 in Barrière 1982 covers only a portion of the ceiling in the sub-chamber and does not include all the flutings in the portion it does cover) really do look like snakes, not even the apparently most snake-like clusters. The case for the collection being serpentines falls. The word 'serpentine' is also interpretative and so cannot be used innocently as a



**Figures 16–19.** Barrière's (1982: 90, Fig. 287) Serpent 162 (43 cm long, in Alcove VII): photograph of the 'serpent', of the 'serpent's head', a drawing from the photographs of the most likely interpreted snake figure, and the analysis of the units involved in the figure showing their full extent.

plain descriptor; it thus ought to be avoided when describing the flutings. The term 'undulating' is more appropriate.

If the archaeologist is intent on seeing in the markings in the cave as many animals and repeating motifs as possible, then it is understandable that the terms 'serpent', 'snake' and 'serpentine' be adopted for the flutings; snakes can, after all, look like undulating lines when drawn. If this intention is removed from the object of archaeologists looking at the cave, then the uncertainty as to the appropriateness of the term requires it be examined in more detail

and, if inappropriate, not be used.

#### Water symbolism

Marshack writes:

It was the essentially serpentine form and its associated angles that led me to assume the meander was related to a water mythology and ritual.

If images of plants are to be considered as part of Ice Age symbolism, then the powerful image of water should not surprise us. It is a symbol related to the freeze, thaw, and flood, to the migration of salmon, the seasonal coming of



in Chamber A1 or even in Rouffignac Cave counts against the association of flutings with water (Bednarik 1985; 1986). Water-intention speculations have no empirical support.

#### Shamanic

The Lewis-Williams hypothesis of the shamanic origin of pre-Historic art — extrapolating from the San art in southern Africa to worldwide — has become increasingly popular as a universal explanation. Is it empirically valid and

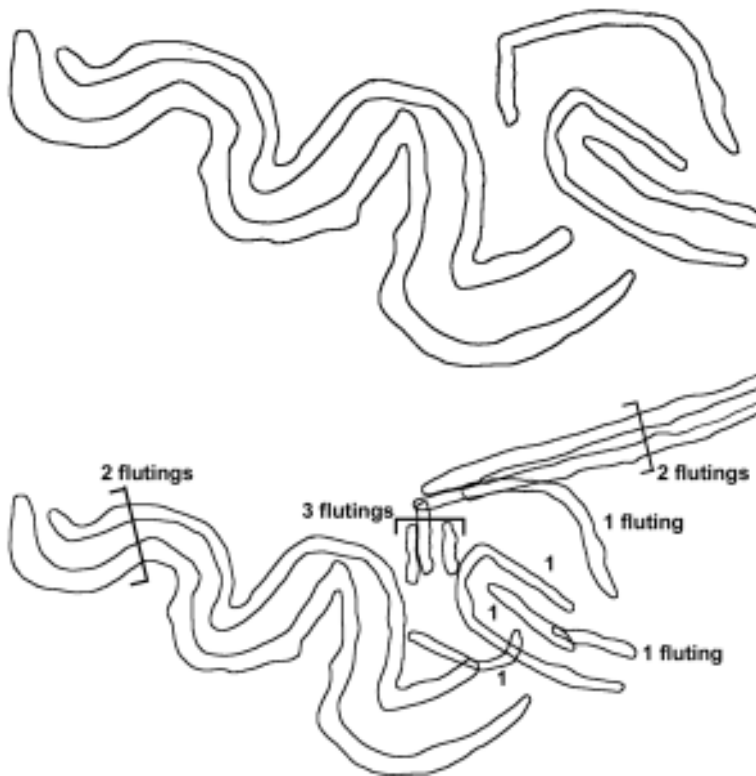
fruitful in the study of flutings? Lewis-Williams writes:

Upper Palaeolithic evidence suggests that parts of the caves, especially the deep passages and small, hidden *diverticules*, were places where visionary quests took place ... In their various stages of altered states, questers sought, by sight and touch, in the folds and cracks of the rock face visions of powerful animals. It is as if the rock were a membrane between them and one of the lowest levels of the tiered cosmos; behind the rock lay a realm inhabited by spirit-animals, and the passages and chambers of the cave penetrated deep into that realm.

Such beliefs and rituals also account for ... the various ways in which the walls of numerous Upper Palaeolithic caverns were touched and otherwise treated. In some sites, ... finger flutings cover most of the walls and parts of the ceilings to a considerable height ... If we allow that Upper Palaeolithic people believed that the spirit world lay behind the thin, membranous walls of the underground chambers and passages, the evidence for this and much otherwise incomprehensible behaviour can be understood ... In a variety of ways, people touched, respected, painted, and otherwise ritually treated the cave walls because of what existed behind their surfaces. The walls are not a meaningless support. They were part of the images, a highly charged context (2002: 208–9).

This hypothesis can be explored for observable consequences. For flutings, the above quotation might suggest that:

- Fingers would go into the walls trying to get as far as possible through the membrane toward the sacred, because the fluters wanted to touch or pass through the membrane. On the other hand, in the fluted sub-chamber of Chamber A1 of Rouffignac Cave, one of the most extensive and impressive sites of flutings so far found anywhere, there are no finger holes produced by trying to get as far as possible into the surface.
- The cave wall surface would be taken off because it was sacred and to be specially housed, or because it



**Figures 20–22.** Barrière's (1982: 91, Fig. 288) *Serpent 163* (43 cm long, in *Alcove II*): photograph, a drawing from the photograph of the most likely interpreted snake figure, and the analysis of the units involved in the figure showing their full extent.

water birds, the lakes, ponds, rivers, and even the water found deep in caves. It is the source of life at which animals and [people] congregate (1975: 89; see also Leroi-Gourhan 1958: 314).

Apart from the undulations of some of the flutings in Chamber A1, it is unlikely they represent water any more than they represent snakes or meanders in a river. What would vertical undulations close by horizontal ones represent? Waterfalls or rain? But, in these phenomena, the water falls in straight lines. The absence of active water courses

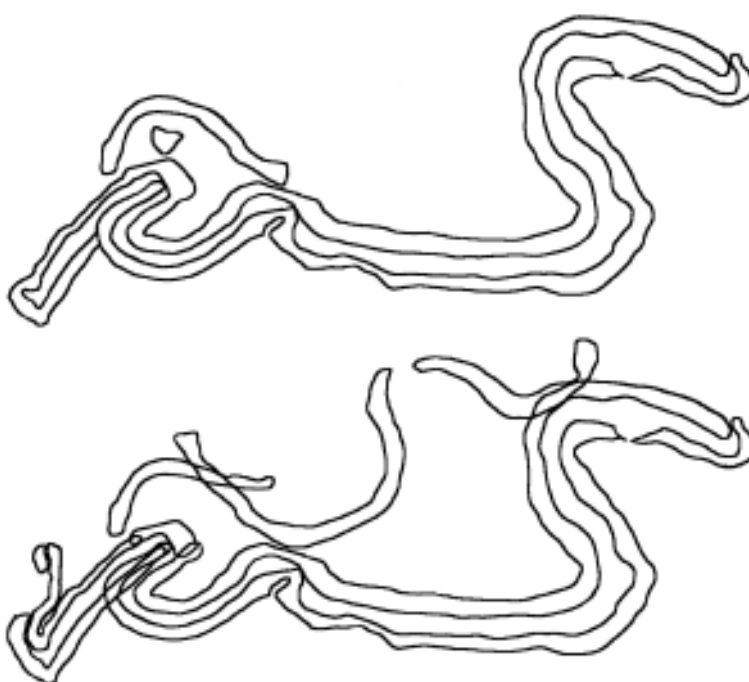
was to be used as body decoration to associate the wearer with the sacred. However, there is no evidence in the fluted sub-chamber of Chamber A1 that the surface was gouged out as in extraction. Fluting is an inefficient means of obtaining quantities of the medium.



- The fluter shamans would favour low places with closed-in ceilings (as Lewis-Williams writes in the first paragraph of the above quote). However, from this perspective the most inviting portions of the alcoves at the lower end of the fluted sub-chamber of Chamber A1 are not touched.
- Young children aged 2–5 were probably not shamans (assuming Lewis-Williams thinks that all cave ‘art’ was done by shamans and not necessarily by others from the same culture as the shamans to whom he refers).

With reference to flutings in other chambers of Rouffignac Cave:

- The fluters might feel little concern about the form of the fluting they used because the action of touching was what was essential to them. However, there is considerable concern by fluters of some panels with the form of fluting they used. Some panels in Rouffignac show ordering and structure (Sharpe and Van Gelder 2006, in prep. b).
- Careful re-layering with clay over the flutings does not make sense in the light of the shamanic hypothesis, as with some of the flutings in Chamber E of Rouffignac Cave (as yet unpublished data; see Fig. 6).
- Further, if the trances of the shamans in the cave were held in the dark, it is very difficult to imagine they could then create fire to see so they could flute the ceiling (or draw animals), or exit the cave.



**Figures 23–25.** Barrière's (1982: 91, Fig. 289) *Serpent 164* (66 cm long, between the foci of Alcoves I and II): photograph, drawing from the photograph of the most likely interpreted snake figure, and the analysis of the units involved in the figure showing their full extent. All units are single flutings. The 'eye' is natural.

Thus, the shamanic hypothesis is probably incorrect in what it says about flutings and does not apply to them — at least not to those in the fluted sub-chamber of Chamber A1. Layton (2000: 184) writes: 'The shamanistic hypothesis is a voracious beast which can all too easily devour the world's hunter-gatherer rock art'. Fortunately, the idea does not generalise to all pre-Historic 'art'. If it is to apply to some sites and not to others, its proponents have to provide and support a means of discriminating.

#### *Phosphenes*

The shamanic hypothesis derives in part from people's experiences of phosphenes (or entoptic shapes) (Bednarik

1984; 1986; 1990a; Hodgson 2000; Lewis-Williams and Dowson 1988, 1990; it also relates to the idea of psycho-neurological archetypes [Gallus 1972–74]), and the applicability of this idea to the fluted sub-chamber of Chamber A1 faces several difficulties parallel to those for the shamanic theory. Another line of reasoning also bites into the phosphene hypothesis. Several phosphene forms (as depicted in Lewis-Williams and Dowson's [1988] chart of phosphenes) can be found fluted in Chamber A1 (circles; grids; parallel straight, curved and undulating lines). However, many shapes here are not in the Lewis-Williams and Dowson chart (e.g. 2+2 flutings; heart-shaped parallel lines; metres-long parallel lines with a bend; shapes like the sec-

ond supposed 'anthropomorph'). Furthermore, many of the shapes in the chart and its examples are not on the ceiling of the fluted sub-chamber of Chamber A1 (arcs; arrows; branchings; claviforms; dashes; dots; lines radiating from one point; spirals; triangles). Consideration of a modern mundane setting highlights the force of this argument. Many characters on an English computer keyboard are phosphene forms (e.g. #, //, O, U, >>), many are not (e.g. Y, B, %, &, @), and many shapes in the phosphene chart and its examples are not on the keyboard. If the Chamber A1 fluters' intention was to depict phosphenes, then the same logic implies incorrectly that the intention behind writing the words on this page is also to depict phosphenes.

The phosphene explanation for the flutings in Chamber A1 should come, not only from the shapes pictured, but even more so from the flutings' social and psychological contexts. Probably very little or no evidence exists in the sub-chamber, however, for a context that can reasonably be considered phosphene related. This explanation should thus be put on hold for lack of convincing evidence. As with the shamanic theory, it is too broad and too inclusive to offer an adequate explanation. Better criteria are still needed for deciding when its application is or is not appropriate.

#### *Initiation ceremonies and male symbols*

Mulvaney and Kamminga continue the thoughts of Flood concerning flutings in caves:

ceremonial activities for youths are ... possible. Fluting may have been done for decoration or identification, perhaps associated with rituals, but it remains enigmatic (1999: 365).

The 2 to 5 year-old age of the children fluting the ceiling in the fluted sub-chamber of Chamber A1 may, however, preclude the interpretation of the site as being associated with initiation ceremonies for children at the age of puberty, or with other youth-related activities. Further, as said above, no clay appears to have been removed (no gouging is apparent) for bodily decoration or identification.

The idea that flutings are male symbols is highly speculative, without empirical warrant, and unsupported for the fluted sub-chamber of Chamber A1 by the now questionable hypothesis relating to initiation of males at puberty.

#### *Tactile and aesthetic*

Maynard and Edwards (1971) think the flutings in Koonalda Cave may relate to ritual flint mining in the cave, though they concede the lines may only represent a response to the softness of the walls. Children respond similarly to finger paint, they say. Mulvaney and Kamminga (1999: 365) write, again with regard to the flutings in south-west Australia: 'it is most likely to be play, children's "finger painting"'. Webb (in Gallus 1977) thinks similarly by emphasising the physical contact with the wall of the cave, the act of marking and touching it.

The finger-painting notion needs further exploration. Finger painting could include many intentions: the child (assuming a child made them, though the same would apply to older people) may be intending the resulting lines to

constitute a form of notation or symbol, or the depiction of something seen or imagined. Another component of the intention behind finger painting could have to do with tactile sensation, play and aesthetics. With this, the act of making the marks is important for the finger painters: they want to feel the sensation of running their fingers through the soft medium and, in the case of fluters of ceilings or walls, perhaps also to feel and accentuate the shapes of the surface. It may be, that is, that the intention of the people in the fluted sub-chamber of Chamber A1 was for the fluters to experience the tactile and aesthetic sensations of, in modern parlance, finger painting.

Does this proposed tactile and aesthetic, the play intention hold up with investigations in the cave? Naturally, such experiences were involved in the fluting, but nothing discovered yet from the flutings suggests this was the fluters' primary intention; pleasure has not left an imprint, let alone a dominant imprint, on the ceiling of the fluted sub-chamber of Chamber A1. However, the markings do, as mentioned above, appear to have been made for the act of fluting; no obvious forms or motifs repeatedly occur, for instance. The question asked before as to why those holding the fluters (if this was the scenario) did not themselves flute suggests that they wanted the young children to have the experience of fluting.

The possibility of play calls for further comment. The tactile and aesthetic marking of walls and ceilings could be acts of play, but some could equally be the result of exploration. Flood (1996: 21) comments that the southern Australian flutings 'may simply mean that juveniles were more adventurous in exploring remote, hazardous places'. Play could cover a number of intentions. Bednarik (1985) points out, though, that caves with particularly difficult access would rule out play as the explanation. However, what if the play were organised ('a family outing to allow the children to play — a Palaeolithic visit to the local park'), or if the fluters were quite accustomed to walking and clambering over rough terrain outside the cave and doing this at night, and the cave presented them with an exciting challenge?

The flutings in Chamber A1 do seem to have been made with intention. The above proposals as to what the intention is, however, lack evidence or raise counter-evidence, which makes them inadequate. At this stage, the tactile-aesthetic suggestion appears the most probable, but this conclusion is still only provisional. Future discussions may occur in terms of an 'untranslated' or 'untranslatable' notation, symboling or iconography (d'Errico); time-factored or time-factoring notation (Marshack); or iconography (an extension of Munn 1973). These may be instructive, but they have not yet been explored for the Chamber A1 flutings, awaiting the more in depth investigations into possible structure. A proponent of any intention must provide evidence for her or his interpretation derived from the flutings themselves and their environment, and must answer potential counter-evidence.

Even if a supported intention be discerned, this does not rule out other ones; the cave could have been used by the same people for multiple reasons.



## Conclusions

Many of the flutings in Chamber A1 were probably made by young children, possibly held aloft to touch the ceiling and draw their fingers along it. Those holding the children (if the children were held up) were at times not only walking, but moving rotationally from their hips. The fluted sub-chamber of Chamber A1 was probably deliberately chosen as the site for the fluting activity by a mixed-age group after reconnoitring the cave.

All suggestions so far proffered as to the meaning of the flutings are highly speculative. What the fluters meant by their handiwork remains unknown; it will probably never be known and should probably not be expected to be known.

What was the intention of the fluters is perhaps a more answerable research question and may help inform suggestions as to meaning. Suggestions made so far are untenable given analyses of the marks themselves. Indication of initiation ceremonies at puberty is ruled out by the age of the fluters. Similarly with the shamanic interpretation: it is probably unreasonable to consider 2–5 year-olds shamans. Other intentions, characterisations and meanings that analyses of the flutings rule out for the Chamber A1 flutings include: that they are 'primitive' in that from them developed representational and symbolic expression; anthropomorphs; macaroni; meanders; phosphenes; serpents or snakes; serpentines; or related to water. Also ruled out for the Chamber A1 flutings are the more general suggestions that flutings were done for decoration or identification, or are male symbols. It is suggested that the act of fluting as opposed to the resultant flutings may be more important in the fluted sub-chamber of Chamber A1 and that this points to a range of intentions. Perhaps a likely one, therefore, is that the flutings were intended as play, finger painting — perhaps therefore the tactile or aesthetic reasons may be more important for these fluters. (Intentions should not be claimed unless they can be publicly established as probable from the archaeological evidence, though thoughts about possible intentions may prompt future studies.)

The flutings' probably illusive meaning should not deter the archaeologist from examining line markings such as those in the fluted sub-chamber of Chamber A1 because they can offer a rich source of information about the behaviours of Palaeolithic people. The examiner ought not to approach the flutings with strident ideas as to what they mean or the types of things they represent (animals, for example), but be prepared to look in depth at the markings as markings so questions can be posed that the lines themselves can answer or that experimentation can elucidate. Flutings tell about the fingers and hands that made them and these tell about the people. With respect to the fluted sub-chamber of Chamber A1, further answerable research matters await, including (for methodologies underlying research into these questions, see Sharpe and Van Gelder 2006, in prep. b): How many individuals did the fluting? What were their ages? What were their genders? How many fluted in each alcove? Did the same or different people flute each alcove? Is there any structure or are there repeated designs in the flutings in the sub-chamber?

This approach and similar methodologies have been

successfully applied to other flutings, both in Rouffignac and elsewhere. Related work so far suggests that at least three other forms of flutings besides that evident in the fluted sub-chamber of Chamber A1 exist in Rouffignac (Sharpe and Van Gelder 2006, in prep. b) and work continues on them both here and in Gargas Cave to see if it is possible to provide any more information about the fluters and to elucidate further the behaviours behind the fluting.

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## COMMENT

### *More about finger flutings*

By ROBERT G. BEDNARIK

This paper contains some very valuable details and observations about one of the more neglected topics in rock art research, finger flutings. When I commenced researching this subject in the 1970s I soon realised that we needed a term to define it objectively, rather than one signifying what it reminded us of (macaroni, snakes etc.). I preferred a 'technological' but descriptive term, matching the French *sillons digitaux parallèles* (Drouot 1953). When I used the term 'finger flutings' in a paper, an archaeologist referee remarked sarcastically: 'Tell me more about these flutings? What key are they played in?' More than a quarter of a century later, the term has become respectable, and so has its investigation. Sharpe and Van Gelder demonstrate effectively that this form of rock art can be studied without inventing meanings, imposing nothing on the hard evidence,

which is the hallmark of good rock art science.

The literally tens of thousands of cave bear scratches along the walls of the long galleries of Rouffignac (Bednarik 1993) illustrate vividly that the present cave floor does not resemble the Pleistocene floor levels. The dense vertical markings forming a continuous horizon along the walls indicate reliably the contour of the floor at the time of the cave bear occupation. These observations of changing floor levels in this cave are confirmed by Sharpe and Van Gelder, who note evidence of previous higher sediment levels in Chamber A1. They are also confirmed by their photographs, which indicate the presence of sediment lodged on ceiling surfaces. Moreover, their reported lack of cave bear wall marks as well as hibernation pits (which are very numerous in those parts of the cave system where the floor has essentially remained intact) in the sub-chamber suggests much the same: that the floor was higher in the past, and that access to A1 may not have been possible to cave bears. It is of importance to note that sediment floors in cave spaces can be stable over tens of millennia in some sites, but fluctuate greatly in others. Indeed, in 1982 I observed a fall in cave sediment floor level of about 80 cm in a single day (Bednarik and Bednarik 2002), which illustrates how volatile floor levels in caves can be.

The contention of Sharpe and Van Gelder, that the children whose fingers marked the ceiling in one Rouffignac sub-chamber were carried aloft because their markings are too high above the current floor, therefore needs to be viewed sceptically. The simpler alternative explanation, that the floor was higher at the time the flutings were made, is far more likely to be correct.

Similarly, the arguments against 'clay mining' do not stand up to scrutiny. The authors refer to the potential of clay in making pottery. Cave sediments were in the historically known contexts not mined for ceramics, but as phosphates, for agriculture, in huge quantities and in all continents. The scientific use of the term 'clay' refers either to a granulometric fraction, or to a sediment mostly of hydrous silicates of aluminium and magnesium, and the authors need to qualify their use of the term accordingly. To establish veracity, we would need some analytical data of the sediment. The six reasons listed why there appears to have been no mining of sediment are inadequate to establish this. To illustrate: the sediments of the Drachenhöhle at Mixnitz in Styria, another large cave bear site, were mined on a huge scale, involving also the removal of 250 000 kg of skeletal remains of cave bears. Yet I have not seen any soot or charcoal in that cave, any pick marks, graffiti, or remains of mining tools. This is despite the labour investment of tens of thousands of man-hours in the quarrying of that cave. Either carefully secured archaeological evidence or relevant historical research is required to make any credible pronouncement on the subject of possible sediment mining.

The points about chert mining also need some qualification. For instance, there is the contention that 'fewer nodules in the ceiling of the sub-chamber mean fewer nodules to fall': fewer nodules in the ceiling (and on the floor) can also mean that more were removed by Palaeolithic miners.

Chert deposits have been mined in many caves (e.g. Bednarik 1990b) and I have described evidence of extensive Pleistocene chert mining from a nearby French cave, Bara Bahau. Since we do not know where the floor level was at the time the finger flutings were made, or when they were made, speculations about the absence or presence of chert nodules on the present floor are of limited relevance.

The statement 'The curves of zigzag made by wrist movement differ from zigzag curves made by hip movement' also seems an oversimplification in the pursuit of explanation. From my work I would suggest that the wrist, elbow, shoulder, hip and legs may all be involved — far too many variables before we even consider the involvement of people carrying those whose fingers were used.

The authors speculate whether flutings could have survived immersion in water. I note that finger flutings in Cosquer Cave, which can be demonstrated to be of the Pleistocene (in contrast to those in Rouffignac) have survived for many millennia even below seawater. Contrary to popular belief, cave water as such does not dissolve limestone, the process is a little more complex than this (Bednarik 1999).

'Intentionality' is not just a very rubbery concept (Dennet 1987) that needs to be carefully defined when used in a scientific context, the four reasons the authors provide for their contention that the flutings in the sub-chamber were made intentionally are not convincing. In what way does the chamber's morphology imply intentionality? We cannot even know the size or shape of the room at the time, because we have no indication of where its floor was then. The second qualification, referring to a lack of drawings and other features, is also not an indicator of any intention, nor is the inclusion or exclusion of any shapes so. Conversely, I have not stated that 'caves with particularly difficult access would rule out play as the explanation' in Bednarik (1985).

The authors very briefly canvass the possible antiquity of rock art in Rouffignac. The anthropic wall markings in Rouffignac are of greatly varying ages; they include many Historical and recent markings, including recent finger markings. Have the authors given any consideration to the question of age, what can they tell us about the relative context, the state of weathering, and particularly the compositional properties of the red 'patina'? How do the flutings relate to other features, especially other types of speleothems clearly present (and quite possibly datable)? I would be particularly interested in a detailed analysis of the markings in Figure 6, from Chamber E (see colour plate on the back cover of this issue of *RAR*). What I see in this image is a series of sub-parallel finger flutings, some of which bear compressed, smeared remains of the red surface deposit (I regard the feature described as 'careful re-layering with clay over the flutings' as entirely fortuitous; the fingers of the fluter were simply coated with red sediment). The image also shows a series of markings made with wooden sticks, crossing the finger lines. This panel is a prime contender for 'internal analysis', which would provide superb empirical scientific evidence, because the sequence of markings and the direction in which they were made are

both clearly visible. For instance, the wood marks were superimposed over five of the finger markings, but the first fluting on the left was added later. Similarly, other parts of this composition can easily be analysed, and the results could be the basis of semiotic considerations. It appears that the composition was made in one sitting, therefore the *chaîne opératoire*, largely recoverable, would provide a superb study base to tackle the difficult question of symbolism.

But there are still more important details to be gleaned from just this one photograph. Clearly the wooden stick (or sticks, or some of them) had been burnt, and bore a considerable quantity of charcoal. Extensive charcoal deposits were transferred to the panel, especially on the bottom and right-hand parts, as it was being marked. It is self-evident that there is sufficient carbon present for several AMS <sup>14</sup>C analyses, and that any carbon-isotope results from these charcoal traces would be close to the true age of both the flutings and the markings made with a stick. In short, the research potential of these markings has remained untapped so far.

I wish to emphasise that the authors' repudiation of previous interpretations of the Rouffignac finger flutings is laudable and of course fully justified; it is simply part of that huge corpus of nonsense that has been written about cave art over the past century. But it was written many decades ago, and we have moved on since then. The authors' question, were there snakes in France during the Final Pleistocene, is most relevant. Snakes in Pleistocene Europe seem conspicuously limited to interglacials or inter-stadials, and the point is well made. Similarly, the arguments presented against a shamanic interpretation are valid and they agree with my own observations. Also, I have on various occasions argued against finger flutings being evidence for the removal of the medium (usually *Montmilch* or moonmilk). I also like the point that 'shamans' with their 'visual deprivation'-induced visions would have found it hard to light fires to find their way back to the entrances, hundreds of metres away. This point reminds us that these hypothetical 'shamans' did not have light sources they could switch on and off. But the perhaps most pertinent point the authors make is their last sentence in the shamanism section: the 'proponents have to provide and support a means of discriminating'. That, indeed, is a crucial problem with the shamanic model, and until we have such criteria for discriminating between supposedly shamanic and non-shamanic rock art, the entire paradigm seems to be an exercise in futility.

Robert G. Bednarik  
Editor, *RAR*  
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**The RAR Reply of K. Sharpe and L. Van Gelder was unfortunately not available at the time this issue went to press. It will be featured in the next issue of *RAR*.**

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