

LASCAUX IN CRISIS

The clock is ticking

Mould, decay, mismanagement: having survived for millennia, the exquisite art at Lascaux is critically degrading. International rock-art expert **Paul G Bahn** reports.

Lascaux, in south-west France, is unquestionably the most beautiful decorated cave in the world, one of the greatest discoveries in the history of archaeology, and a landmark in human evolution. And yet, although it was found relatively recently (1940), this treasure from the last Ice Age has suffered tremendously at human hands from the start, despite having survived largely intact for many thousands of years.

The first crisis

As is well known, the cave was discovered by four youngsters from the nearby town of Montignac, and they quickly revealed their

ABOVE The Hall of the Bulls in Lascaux, one of the greatest sites in the archaeological world.

secret to their old schoolteacher, Léon Laval. His son François recently published a remarkable book, *Mon Père, l'Homme de Lascaux* (2006), which – in a chapter entitled *Le trésor maltraité* (the mistreated treasure) – details the whole succession of damaging procedures to which the cave has been subjected.

By the 1940s, Ice Age decorated caves had already been open to the public for decades, but as yet very few people had really grasped the fact that what had preserved the art for millennia was the extreme stability of the temperature and humidity in the caves; and that widening entrances, or punching in new ones, and subjecting caves to large groups of visitors for long periods was inevitably having a radical and deleterious effect. It was Lascaux that finally taught this lesson to the world.

The destruction began shortly after the discovery, when its entrance was progressively widened, thus forever altering the interior temperature and air circulation, and permitting rainwater to enter. After the war ended,

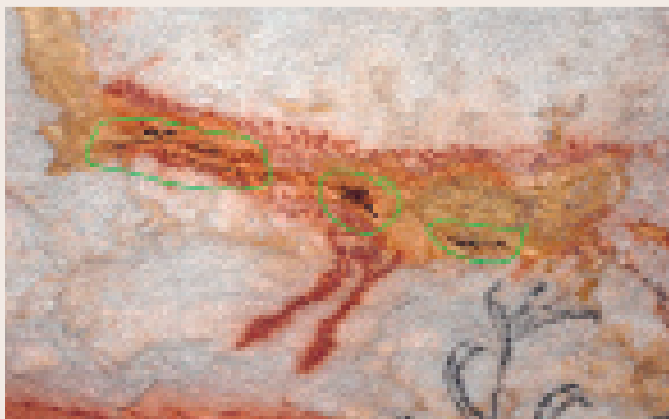
the cave's sediments were simply dug out by labourers – with no allowance made for any archaeological investigation at all – in order to prepare it as rapidly as possible for tourist visits. Subsequently, the number of visitors was such that the cave's air often became unbreathable, and so, in the late 1950s, an air-conditioning system was installed with no archaeological supervision (again causing a massacre of the cave's remaining sediments). But even so, by the end of the 1950s, the guides were noticing the insidious growth of pollution by the 'green and white sicknesses'.

The 'green sickness' consisted of a proliferation of algae, bacteria and fungi, often growing around the electrical lights, while the 'white sickness' was crystal growth on the walls and paintings, caused by the evaporation of water filled with carbonic gas, which dissolves calcium carbonate and leads to the formation of calcite. After closure of the cave to visits in 1963, and extensive scientific analyses, the causes

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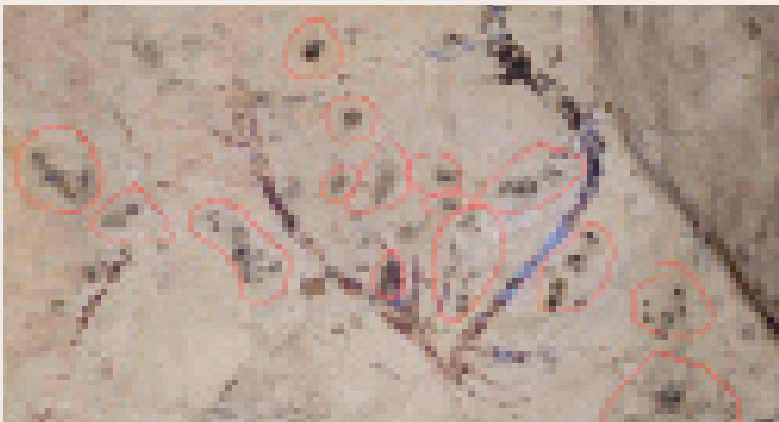
of these conditions were identified; it proved possible to stop and eradicate the green sickness, while the white sickness was stopped from further expansion, but its growths could not be removed. It was determined by the scientific commission appointed by France's Minister of Culture, André Malraux, that the problems had arisen primarily from the size of tourist groups, the time spent by humans in the cave (thus raising its temperature and altering its humidity), and by the introduction of pollen and spores, usually on footwear. Henceforth it was decided that the cave would only be open to one group of five people per day, five times

MONITORING THE DAMAGE



Examples of the damage to the cave's walls and art: the upper shots are from before 2000, of those below are from 2007, of **(LEFT)** a small deer and **(RIGHT)** the wall of the 'Nave'.





ABOVE The relentless progress of the black patches can be seen in this series of pictures from before 2000 to 2007.

per week, for only about 30 or 40 minutes at a time, and everyone had to walk through disinfectant on the way in. Instruments inside Lascaux constantly measured the temperature and humidity, as is also done now in most decorated caves open to visitors.

The general public believed that Lascaux was now totally closed; the fact that it essentially remained open – since everyone had the right to apply to see it for free, although preference was given to specialists – was never advertised, for obvious reasons. The problem of catering for the many thousands who wanted to see Lascaux was essentially solved by the opening,

in 1983 of the nearby facsimile, Lascaux II. But the crucial fact to note at this point is that for almost 40 years the new system of small groups for a limited time worked perfectly well, and there was no recurrence of the previous problems. The cave was stable and ‘cured’.

The new crisis

Fast forward to 1999. By this time, the existing air-conditioning equipment in the cave was becoming somewhat long in the tooth, and a decision was made to replace it. In view of the strict precautions in place for four decades, one would imagine that the greatest care would have been taken over this work. Quite the opposite occurred, however – it appears that a local firm was selected for the task which had no previous experience of working in caves, and whose workmen were left largely unsupervised, did not wear the sterilised footgear, and, it is said, often left the doors open, turning the cave entrance into a building site. Moreover, the new machine they installed was oversized and wrong for the cave. All of this exposed the cave to outside climatic and biological impacts, and its fragile equilibrium was destabilized. So it is hardly surprising that by 2000, as soon as this work was completed, a new biological pollution of the cave appeared: the proliferation of a fungus, *Fusarium solani*, characterised by white filaments, which colonized the cave’s floor and ledges, creeping into some of the paintings.

Radical emergency measures were taken with no time or consideration for anticipating side effects. A high volume of antibiotics and fungicide solutions was sprayed inside the cave with no positive results. Instead, they increased the humidity and the fungi bounced back as soon as application of the products ceased. Tons of powdered quicklime were scattered on the floor in an attempt to sterilise the cave, but this raised the temperature. In spite of the authorities’ denial, the fungus kept creeping into some of the paintings. Microbiologists soon learned that the fungus was associated with a second bacterium, *Pseudomonas fluorescens*, which was feeding off the fungicide. So for nine months, compresses soaked in fungicides and antibiotics were applied to the clay banks and clay taluses where these growths were occurring. But, in the meantime, a third invader was discovered



– dark spots were appearing on the walls and ceiling; once again these proved to be fungi and bacteria, so chemicals were applied to them. From 2003 to 2008, teams of art restorers and surveyors spent hours in the cave, days at a time, to extract the persisting fungus by the roots and make a photographic assessment of the cave's conditions. The teams used strong lights to conduct their work, and these are now suspected to be the cause of a new, rampant invasion of black spots; these have a component of melanin, which is triggered by light, and they are now on and around several of the paintings.

In 2002, France's Ministry of Culture set up a scientific committee to tackle these problems, but it only met two or three times a year to review the actions decided on by the administrators. The scientists in the commission thus acted as consultants, not decision makers. Being hired hands, or part of the Lascaux administration, they were prevented from talking about the problems with other scientists outside the commission. This situation, with its lack of transparency, was lethal for Lascaux.

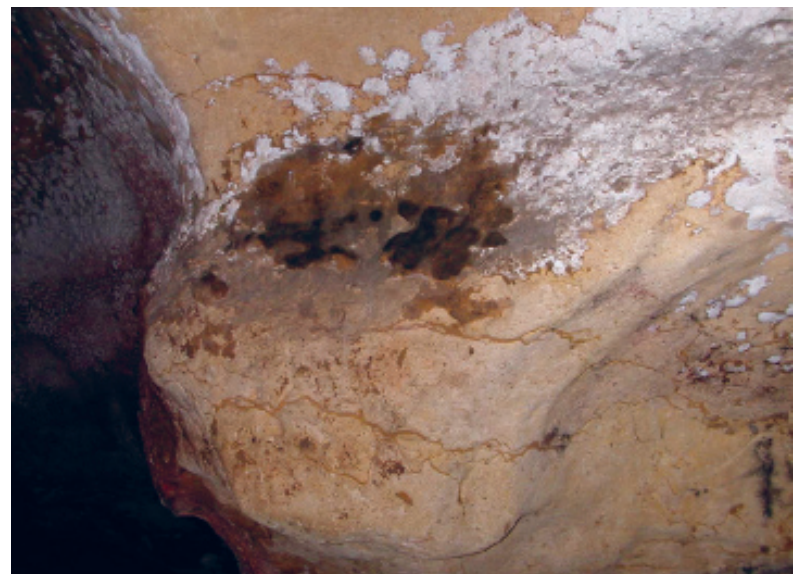
Hence, very little news ever reached the archaeological community, let alone the general public, of its deliberations or decisions. It is known that in 2003, the limitations of the chemical treatments were realised, and removal of more sediments from the cave was undertaken since the micro-organisms could feed off them.

Seeking answers


What caused this sudden change in the cave? It is pretty obvious to most neutral observers that, after 40 years of stability, the shoddy

ABOVE The famous 'Chinese horse' in Lascaux's Axial Gallery; serious condensation has been seen and photographed on this image in the last few years.

BELOW The insidious black patches are thought to have been triggered by the strong lights used for long periods during the first attempts to remove fungi.



work done in 1999 is to blame. Some have claimed that global warming is responsible – it is certainly true that climate change is the cause, but it is the climate inside the cave, not that of the outside world; and the destabilisation of the cave's interior was brought about solely by the irresponsible actions of the bureaucrats in charge of the site. The air-control machine installed in the 1960s was designed to compensate for any slight changes in temperature and humidity inside the cave, and it successfully maintained stability until it was removed. Others maintain that the organisms were always lurking, dormant, in the cave and that the installation work merely aggravated the situation, but either way the blame lands solidly at the door of the administrators of the cave. Unlike at Spain's Altamira cave, where one person administers everything and things run very smoothly, at Lascaux six different institutions have a hand in running the cave, and there seems to be little coordination.

Be that as it may, the few official pronouncements from the Ministry of Culture were consistently optimistic about the cave's condition, despite the terrible rumours in archaeological circles about the true state of affairs. But for the most part, there was a deafening silence from the French authorities about the problem. For anyone concerned about Lascaux's preservation, it was a shock to discover the extent to which the authorities in charge orchestrated a policy of misinformation and denial after 

the beginning of the crisis in 2000. Until the French national press in 2007 finally revealed photographic evidence of the rampant proliferation of black spots, the official message had been that the fungal invasion had been kept at bay and that the cave's equilibrium was on the way to recovery. Nothing could have been further from the truth.

The cavalry to the rescue

In the meantime Lascaux had acquired a formidable champion. Laurence Léauté-Beasley, the French wife of well-known Californian sculptor Bruce Beasley, had been leading seminars on art and anthropology – which included visits to Lascaux – for many years, and by 2003 she was growing extremely alarmed by the rumours about the damage to the site; and unlike the archaeological world, which for the most part muttered and tut-tutted in private, she determined to do something to save the cave before it was too late. She created the International

BELOW The Black Cow as seen in 2000 (**TOP**) and in 2007 (**BOTTOM**). Note the shadowing on the bottom picture in the area around and above the horns, indicating the growth of black mould.



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Committee for the Preservation of Lascaux (ICPL) which has waged a highly effective and ongoing campaign with its own website (www.savelascaux.org), and has already achieved considerable results, not least by finally compelling the French media to take notice of the problem – in May 2006, she induced *Time* magazine to cover the story (in fact it was the cover story in the European edition), but this was completely ignored by the French press at that time, although it was widely reported in the rest of Europe.

As a result of her efforts, articles and interviews then began to appear in France's regional and national press, and French archaeologists started to speak more openly about the scandal. Above all, Beasley was instrumental in bringing UNESCO into the picture – it should be noted that Lascaux was one of the first World Heritage Sites on UNESCO's list.

Lascaux is such an extraordinary site that the paintings, even damaged, still take your breath away. But there are visible alterations. Greyish spots have left 'aureolas' on the paintings where the fungus has been removed by hand; the white calcite which gave Lascaux's paintings their brilliant canvas has turned grey; excess moisture has trickled down the walls, carrying prehistoric pigments on the way; and the black spots mar the walls and obscure some of the most delicate engravings and paintings. Most of these changes are irreversible.

The latest developments

The campaign to save Lascaux still faces an uphill struggle, despite a few small victories. One has the distinct impression that those responsible for the cave are far more interested in saving face – and their own positions – than in saving this peerless archaeological site. Rather like the bankers and others who triggered the current

world crisis, nobody responsible for Lascaux has been fired over what happened to the cave, nobody has resigned, and one would not be surprised if they were awarded bonuses!

In July 2008, at a UNESCO meeting in Quebec, Laurence Beasley urged that the cave should be placed on the list of endangered sites. This was opposed, inevitably, by the French delegate. However, UNESCO was so troubled by the condition of Lascaux that the French authorities were given an ultimatum: they must submit a report to UNESCO by February 2009, detailing the causes of the damage, or UNESCO would, indeed, place the cave on its list.

Shortly after this meeting, the French Minister of Culture, Christine Albanel, paid a visit to the cave, and emerged proclaiming that everything was under control and that she had full confidence in the scientific committee. Yet this committee did not feature a single rock art or cave art specialist and, as the French magazine *Paris Match* pointed out in a ferocious article (7 May 2008), its director was a specialist in Palaeochristian ceramics – spot the mistake!

Over the next few months, it rapidly became clear that the black patches appearing on and around the images were out of control. The cave had been shut down for a few months in early 2008 in the hope that, when re-opened, it would have cured itself. But this hope proved ill-founded. It is also obvious that the inappropriate machinery needs to be replaced, which will cause further disruption and potential risks.


In late 2008, Pierre Vidal, one of the team which cured Lascaux's ills in the 1960s, published a full account of his association with the cave (*Spéléo-Dordogne, Hors série* No. 4). He revealed that in December 2001 he was invited to an informal meeting with some of the team from the Historical Monuments Laboratory who were trying to solve the cave's fungal infestation. As a result, he was officially invited – after five years' retirement – to visit Lascaux in February 2002. He then drew up a substantial and detailed report containing his views on the steps needed to solve the situation. In it he pointed out that the new air

conditioning machinery installed in 2000 was far too powerful and that it was urgent to let the cave 'rest' so it could recover its own equilibrium. He also stressed that he was available to help. The report was sent to the cave's two curators but, incredibly, was completely ignored, and shortly afterwards the scientific committee was set up. As Vidal says, it seemed that the committee was determined to start from scratch, and to treat the problems as if this was a new cave to be studied, playing things by ear as different factors arose. The knowledge and experience gained in the cave in the 1960s were deemed irrelevant.

Official report

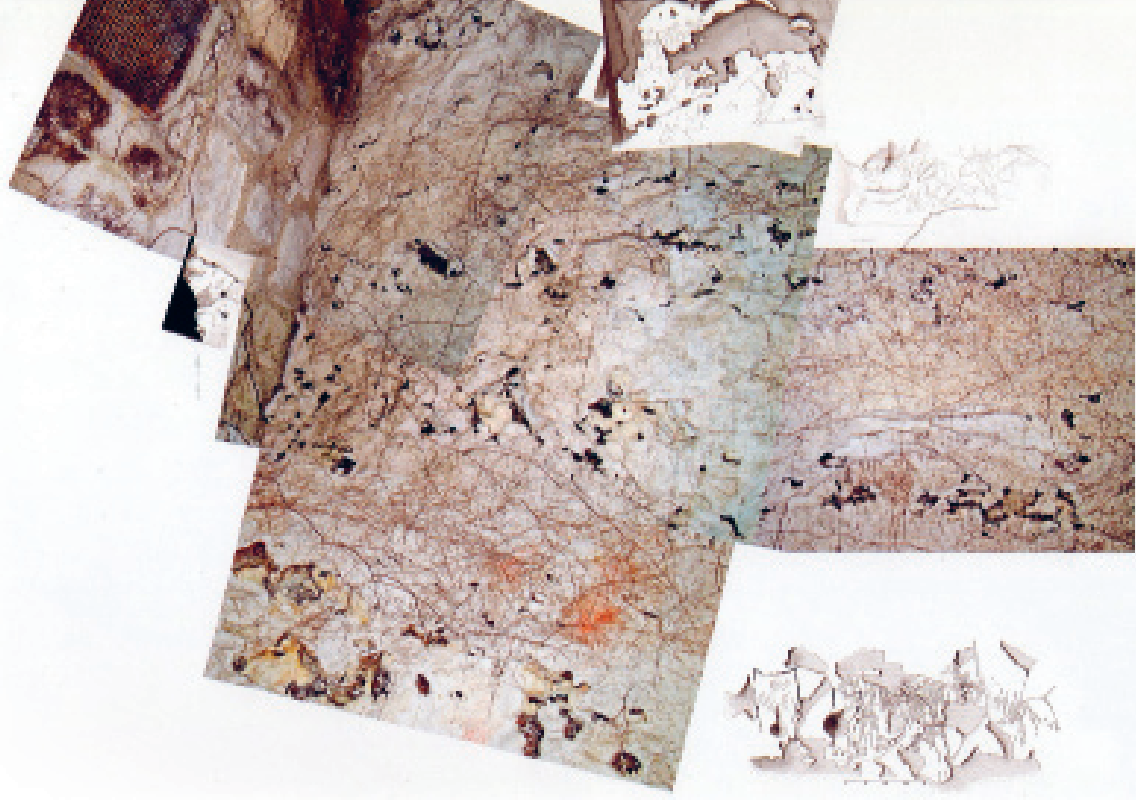
The French Ministry of Culture did indeed produce a report for UNESCO by February 2009 (www.culture.gouv.fr/culture/dp/archeo/lascaux.html) but it did not even come close to meeting UNESCO's requirements, in particular by totally ignoring the causes of the damage and, instead, remaining superficial, self-congratulatory, and leaving no openings for questions.

In addition, the authorities organised a major conference which was held in Paris on 26-27 February 2009, entitled *Lascaux and conservation of the underground environment*, and clearly aimed at showing UNESCO that France was taking the crisis seriously. Under the chairmanship of retired prehistorian Jean Clottes, it was advertised as a gathering

of international scholars that would debate the problems of Lascaux. However, there was widespread shock and bewilderment when the conference programme was made public: none of the team who cured Lascaux in the 1960s was on it; nobody from the ICPL was on it; and, incredibly, not a single cave art specialist was on it. The French scholars who know the art of Lascaux better than anyone – Brigitte and Gilles Delluc, and Norbert Aujoulat – were not on the programme. A few of the much-trumpeted international invitees, from America, South Africa, Australia, and elsewhere were involved in rock art research, but could contribute absolutely nothing to solving the very complex and 

BELOW A second site is also in grave danger: that of Gouy, the northernmost decorated cave in France (as discussed later in this feature, the images from which now follow). Here, its finder, Yves Martin, stands at the door of Gouy in 1991, before its problems began.





ABOVE Within the cave at Gouy: a photomontage of the state of the engraved wall in Gouy's chamber – the grille above the door can be seen at the upper left, while below is Yves Martin's tracing of some of the now-obiterated engravings.

unique problems of Lascaux.

Under these circumstances, it is no surprise that the conference was largely an irrelevance. There were some positive developments. In an opening address, Mme Albanel promised transparency in the measures taken for the cave's conservation – something for which the ICPL had long pleaded – and scientific autonomy in the cave's treatment. Consequently, the old scientific committee was dissolved and a new one is supposed to be put together which is to operate independently of the non-scientific bureaucratic management of the cave. This again met a key aspiration of the ICPL, since measures taken in the cave until then had been dominated by bureaucratic rather than scientific control and many of the mistakes made are seen as a direct result of managers rather than scientists making decisions about treatments of the cave.

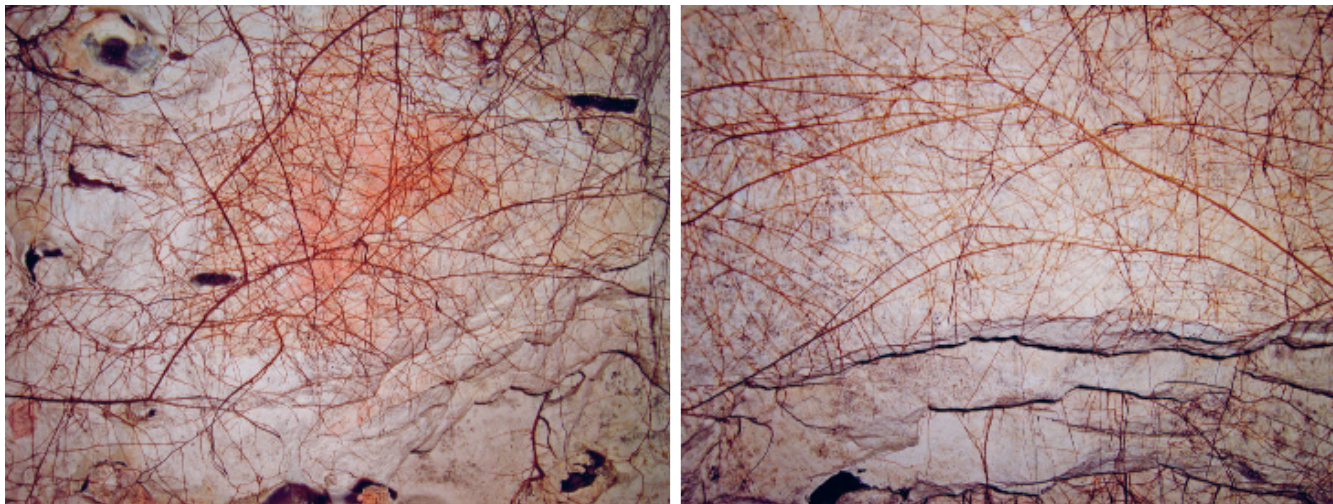
The administration admitted that the crisis began in 2000 with the work to replace the cave's air control machine, which was catastrophically botched and led to a rampant infestation of *fusarium*, and a destabilisation of the cave's climate and disruption of its natural air currents. Since then, there has been an unending series of invasions by moulds, fungi and bacteria. There were some interesting exchanges of views between scientists who attended the conference, which confirmed that hope lies in new ideas and initiatives from the international scientific community. It was, therefore, all the more baffling, and a crushing disappointment, when, in the concluding

session, a panel of social scientists and Clottes himself declared that the cave was no longer in grave danger, and that only a few figures in the cave were under attack – a message which was subsequently propagated to the media. On the contrary, it is obvious to anyone familiar with the situation that the cave is still in terrible danger. Indeed, a recent paper in the journal *Naturwissenschaften* emphasises that the arrival of fungus in 2001 and subsequent antifungal spraying have accelerated the destruction of the environment through the proliferation of new bacteria which are now thriving.

Much was made at the conference of the 'Lascaux simulator'. This machine, which looks and sounds impressive at first sight, and was proudly described in France's UNESCO report, was actually subjected to enormous criticism at the conference because in a simulator it is impossible to factor in all the extreme complexity of a cave's ecosystem (climate, air currents, temperature variations, microbiology, etc), and, inevitably, the data entered are incomplete. Hence, to create scenarios for conservation measures to be taken in Lascaux based on incomplete data and inaccurate premises is extremely dangerous.

Lascaux's 'grand silence'

In June 2009 UNESCO held its annual assembly in Seville, but failed to place Lascaux on the list of endangered sites. Apparently, it was swayed by the official line from the French authorities that 'only 14 paintings' have been contaminated. Even if this is true, it is 14 too many,



ABOVE The shocking state of the walls in the cave of Gouy, with its delicate engravings engulfed by thousands of tiny roots.

and it ignores the fact that many engravings are also affected, while the walls and ceiling are gravely contaminated – the black patches continue to proliferate. In any case, it begs the question: Lascaux has long been dubbed the ‘Sistine Chapel of prehistory’ – but would the world tolerate a report that there was no need to worry about Michelangelo’s ceiling because only one or two of its panels had been attacked by mould?

Since the February conference, its chairman and some of the international invitees have published a series of triumphant and reassuring articles, declaring that the event was a huge success, that things are not so bad at the cave as some had feared, and that everything is under control. The tone and content of these articles could almost have been dictated by the Ministry of Culture itself. Unfortunately, the true situation is somewhat different, as was revealed in a 14 December 2009 piece in the newspaper *Sud-Ouest* by journalist Jérôme Glaize entitled *Lascaux: le grand silence*. The transparency and regular updates on the Ministry’s website promised at the conference have yet to materialise and silence has descended once more. Far worse, since May 2009 the cave has had no real scientific supervision – and it has taken until now, a year after the conference, for the new scientific committee to be announced. A truly independent international group of scientists, the Lascaux International Scientific Thinktank (LIST), which includes Pierre Vidal – and also Paul-Marie Guyon, designer of the machine which kept Lascaux in good condition for over 30 years – has been formed, but only one of its members forms part of the new committee.

France has had a new Minister of Culture, Frédéric Mitterand, for over six months, but it

was not until 21 January 2010 that he visited Lascaux for himself, and the new committee was named on 16 February. It is headed not by a hard scientist or cave specialist, but by Yves Coppens, the retired palaeoanthropologist, a media-friendly figure, highly skilled at popularisation. As promised, a few of the 13 members are foreign (two Spaniards, one Italian and an American), and a number of hard scientists have been included – notably biologists and bacteriologists – but there is no climatologist, apparently no specialist in fungi, and no-one with experience of the Lascaux biotope, while a few names remain from the previous discredited committee.

The members of the new committee certainly need to be sure that they will be truly autonomous and not under the control of bureaucrats – several members of the previous committee worked in labs directly dependent on funding from the Ministry of Culture! So the crucial point is this: will the French administration implement the wishes of the previous Minister with regard to the independence of the new committee, and who will have the authority to make decisions? Will this committee become a mere consultative body, like its predecessor? That would lead to further disaster. September this year will see the 70th anniversary of Lascaux’s discovery – what a disgraceful state of affairs 🚫

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will mark this birthday! As Pierre Vidal wrote in 2008, ‘the cave of Lascaux is in grave danger and it deserves better attention than the carrying out of hypothetical studies on its preventative conservation. It is urgent that it should recover its climatic equilibrium.’ But he also fears that it may already be too late...

A second disaster

The cave of Gouy, the northernmost decorated cave in France, is located near Rouen and was discovered in 1956 by 14-year old Yves Martin and his brother. Since then, Martin has devoted his life to the study of this small but important cavity which contains numerous fine engravings of animals, triangles and ‘signs’ dating to the end of the Ice Age. In the course of this work he published two excellent books on the site, in 1972 and 1973. The cave is publicly owned, and is classed as a historic monument, and he had been entrusted with a key from the start. Without explanation, however, the regional archaeological service took away his key in 1996, and since then every request by Martin to continue his research in the cave had been refused, and he was only able to enter the site three times in the next decade.

In May 2008, a prehistorian asked to visit the cave in the company of Martin, the only person who really knows its engravings. When he entered the site, Martin was shattered to find the fragile decorated walls of the entrance chamber covered in thousands of tiny roots which extend both beneath and above the limestone. He had already warned about this emerging problem after visits in 1997 and 2000, stressing that any roots needed to be eliminated as soon as they appeared, before they could cause the walls to deteriorate by adhering to them; but he was ignored, and the roots were allowed to proliferate. He fears that they are now too well entrenched behind the limestone to be removed without further damage.


It seems that some attempts were made by the archaeological authorities during the past few years to counter the roots – some were torn away from the wall causing pieces of limestone to fall; and an ash tree above the cave was cut down in 2000 and a product injected into the remaining stump to finish it off. However, even if this was the tree which produced the roots, who knows what effect the product could have



ABOVE The bas-relief vulva on the wall of Gouy, as it was before the root growth and as it is now – some roots have clearly been ripped away from this easily recognisable figure.

on the decorated walls in its turn? And in any case, roots really spread over the walls in 2006 and continue to proliferate.

But few people seem to care. Martin is an ‘amateur’, a status still treated with disdain by many ‘professionals’. And Gouy is not spectacular or photogenic, unlike Lascaux. This may explain why Martin’s pleas for concern and help have mostly fallen on deaf ears. Since *Paris Match* had joined the outcry about Lascaux, Martin sent them a dossier on Gouy’s crisis, complete with photographs; he received no reply. Even more incredibly, he sent his dossier to the Ministry of Culture in early 2009, but at the time of writing has still received no reply at all. And at the February conference on Lascaux, ostensibly supposed to be focused on the conservation of underground sites, he was not given a chance to present his terrible story.

It therefore seems that in France the safest decorated caves are those in private hands and, ironically, those in public ownership which are open to the public – the constant monitoring of the latter helps to preserve their condition. It is those publicly owned caves that are not open to the public which are in great danger, particularly when specialists are blocked from studying them, for no reason at all. 

SOURCE

Paul G Bahn is a specialist in Ice Age art, author (with Paul Pettitt) of *Britain’s Oldest Art: The Ice Age Cave Art of Creswell Crags* (English Heritage 2009); and author of *Prehistoric Rock Art: Polemics and Progress* (CUP 2010).