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Article

Art in caves

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with 7 figures

Abstract. Although the largest known concentrations of cave art are those of southwestern Europe, southern Australia and northern Papua New Guinea, smaller corpora do exist elsewhere. In the first two regions mentioned, such cave art has been demonstrated to be of the Pleistocene and up to about 50,000 years old. Cave art has been studied most intensively in the famous caves of France and Spain. Due to the specific speleoclimates of caves, lithological conditions and often the delicate nature of the cave art itself, the preservation of this immensely valuable and irreplaceable cultural resource, its conservation and its management are more demanding than those of any other rock art. In France and Spain, such practices are particularly well developed, and in Australia, efforts to design uniform management and protection measures are currently being undertaken by the Australian Rock Art Research Association. Cultural use of caves is a global phenomenon, including their role as sacred sites, and some examples of such practices are recounted in this paper.

Key words: Cave, Parietal art, Pre-History, Pleistocene, Preservation, Site management, Europe, Australia

1. *Introduction*

The term "parietal" has several meanings in science, pertaining to the wall of a cavity or its contents, but in the sense it is used in rock art research it refers to the pre-Historic, consciously modulated, human markings on the walls and ceilings of caves, particularly deep limestone caves. Until well into the second half of the 20th century, *l'art parietal* of western Europe has remained the only Pleistocene "art" tradition that provided evidence of a pre-Historic interest in deep caves, but the former existence of a second such early tradition has been established in Australia in the last few decades (Bednarik 1990). Currently there are between 300 and 400 Paleolithic art sites known in Europe (Bouvier 1993 lists 291; there is considerable controversy about many of those listed by Bahn & Vertut 1997), and there are about 50 in southern Australia. Most recently approximately 300 cave art sites have been discovered in northern Papua-New Guinea (pers. comm. Nancy Sullivan). However, smaller corpora are known to exist in many other parts of the world, such as Yucatán, in the Caribbean, the eastern United States, southern China, Indonesia, and the Philippines.

Archaeologists and others sometimes misuse the term "cave art" to describe paintings in rock shelters and overhangs, and some writers have applied the expression "parietal art" to virtually all painted rock art. The use of such colloquialisms is not acceptable in a scientific context (Bednarik et al. 2010). Up to one half of the world's painted rock art occurs on vertical or only slightly concave cliff faces at open sites, while most of the remainder is found on the underside of

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large boulders or in rock shelters, such as frequently form in granites and sandstones by weathering processes. True caves are found almost exclusively in carbonate rock, predominantly in limestone karsts, although caves can also be found in other rock types, including volcanic rock. Karst caves are usually formed by a combination of tectonic and solution processes. The distinctive feature of caves is that they possess a speleoclimate and a speleofauna – in short, a parietal environment. Most non-troglobite animal species (those that do not live wholly and permanently in the dark zone of caves), including humans, tend to be reluctant to enter this environment, and ethnographic evidence throughout the world indicates that many indigenous peoples shun caves, perceiving them as the abodes of spirits, malevolent creatures, or dangerous forces.

Nevertheless, there are numerous exceptions throughout the world, where humans have deliberately entered caves, including very deep caves, in Pleistocene times as well as in the Holocene. Not only do the habitation remains in their floor sediments prove this, but sometimes also rock paintings and petroglyphs on the walls and ceilings of these dark subterranean spaces bear witness to such sojourns. This is not the only cultural use caves have been subjected to through history; they have assumed sacred roles in many civilizations and religions. As a result many caves contain remains of evidence of such roles, including structures, statues, altars, tombs, and so forth. Not surprisingly, therefore, many caves are sites of great cultural heritage significance, many are appropriately protected, and this aspect of parietal spaces is among the main reasons for endeavors to protect and preserve caves. While the motivation of safeguarding them for their cultural contents or meanings differs considerably from the rationales of the speleologist, the karst specialist or the ecologist, the effects are largely convergent: caves need to be preserved in some kind of a "pristine state."

2 *The Pleistocene cave art of Europe*

By far the most famous body of rock art, this corpus of Paleolithic cave art has perhaps been misinterpreted, misidentified, mis-dated, and mis-pronounced more often than any other archaeological evidence, ever since it was categorically rejected for decades by the prehistorians of Europe. Because of this, its discoverer, Don Marcelino Santiago Tomás Sanz de Sautuola (1831–1888), was destroyed by the gatekeepers of hominin history (Cartailhac 1902) (Fig. 1), who to this day often inadequately explain, explore, or credibly interpret what they define as Upper Paleolithic art in Europe. There is great controversy over what is and is not of that period (Bednarik 2009a) and of the almost 400 sites some include, perhaps only a quarter is solidly attributable to the Final Pleistocene; another is quite likely to be of that period but in need of more evidence supporting that contention; a third quarter needs to be much better researched before such attribution is credible; and propositions about the final quarter range from the controversial to the absurd (e.g. Bednarik 2009b).

Secondly, to treat this corpus as *art* is not necessarily warranted, because that term derives from an ethnocentric concept: "the status of an artifact as work of art results from the ideas a culture applies to it, rather than its inherent physical or perceptible qualities. Cultural interpretation (an art theory of some kind) is therefore constitutive of an object's arthood" (Danto 1988). It would be preposterous to contend that modern (westernized) humans could

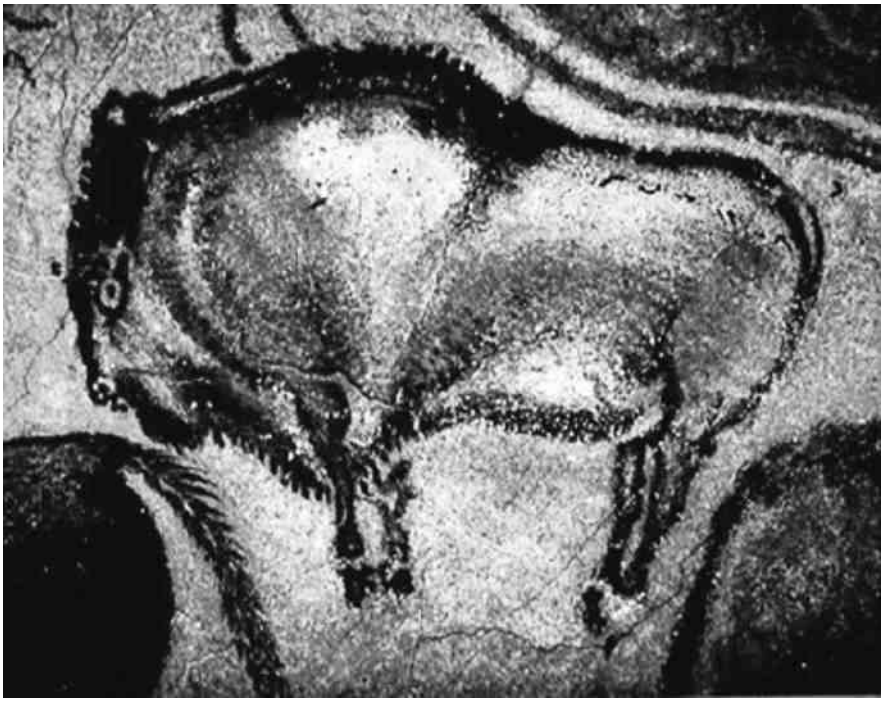

Fig. 1. One of the many paintings in Altamira, Spain, which the prehistorians regarded as fakes for decades.

fathom the ideas culture applied to paleoart tens of millennia ago. They cannot even establish the status of recent ethnographic works (Dutton 1993) with any objective understanding: interpretation is inseparable from the art work (Danto 1986: 45). Moreover, archaeology has developed an all-pervasive perception that paleoart (which comprises rock art and portable art-like productions of pre-literate societies) was *symbolic*, i.e. involving referent and referrer. Perhaps it was, or some of it was, but before proclaiming this as a given it would need to be demonstrated by scientific testing – which it has not been. Therefore, even the most fundamental assumptions archaeology makes about paleoart are either erroneous or dubious. This is before a litany of mis-pronouncements, mis-datings, mis-attributions, misidentifications and the overwhelming lack of a credible narrative are considered that characterize much discourse about this corpus. As a more viable alternative, paleoart could be treated as surviving traces of exograms: externalized memory traces akin to engrams (Bednarik 1987, 2014, Donald 1991), which places a very different epistemological framework on the evidence. One of the more immediate effects of this perspective is that the question, is anything art, becomes as irrelevant as it should always have been, having no scientific merits.

The EUP (Early Upper Paleolithic, roughly between 45 ka [thousand years] and 30 ka ago) comprises a series of technocomplexes (not "cultures") such as the Aurignacian, Châtelperronian, Uluzzian, Proto-Aurignacian, Olschewian, Dufour Aurignacian, Bachokirian, Bohunician,

Streletsian, Gorodtsovian, Bryynzenian, Spitzinian, Telmanian, Szeletian, Eastern Szeletian, Kostenkian, Jankovichian, Altmühlian, Lincombian, and Jerzmanovician. The discovery in 1979 that the Châtelperronian (previously called the Périgordian) is a Neanderthal tradition has since then presented a conundrum to those who see the EUP as peopled by Graciles (or "Moderns," or "anatomically modern humans," AMHs). Since the late 1980s, the replacement advocates, those who believe in the "African Eve," sought to alleviate their discomfort by suggesting that the Châtelperronian Neanderthals must have "scavenged" the numerous paleoart objects found in their occupation deposits from more advanced hominins. This only shows to what lengths the adherents of a dogma will go when its doctrine is challenged: what would primitive brutes do with purely "symbolic" artifacts? In 1995, we pointed out that there is no evidence that the Early Aurignacian is the work of AMHs (Bednarik 1995a, 627); by 2007 we proposed that the Aurignacian cave art of Chauvet Cave (Fig. 2) was created by Neanderthaloids (Bednarik 2007); and a few years later we suggested that all EUP traditions, not only the Aurignacian, are probably attributable to them (Bednarik 2011). It would be judicious, therefore, to assign the paleoarts of all these many purported technocomplexes to more or less robust hominins, who were subjected to gradual gracilization leading to the forms many define as AMHs. Consequently, it is useful

Fig. 2. The author examining the three cave bear paintings in Chauvet Cave (photo by Jean Clottes).

to separate the cultures of the Upper Paleolithic into two horizons: the EUP, dominated by Robusts including Neanderthals, and the LUP (after 30 ka ago), characterized by increasingly gracile humans. The obsessive search for Paleolithicity in European rock art is not shared in other continents, despite the clear indication that Pleistocene rock art is much more common there, at least in Australia (Bednarik 2010). It coincides with the almost complete absence in all other continents (with some notable exceptions in North America) of fakes of Pleistocene paleoart, whereas in Europe there are thousands of examples of fake paleoart (Bahn & Vertut 1997: Ch. 6). A detailed discussion and analysis of this constellation of fakes, mistaken attributions to the Pleistocene and over-promotion of Europe as the "cradle of art" is much needed.

Although rock art of the Pleistocene occurs in at least five continents, most people tend to think of Europe first when the topic is mentioned. The European component has received literally thousands of times more attention, in terms of number of publications, than that of any other continent. This illustrates again the incredible bias characterizing this field of study. It has led to distorted perceptions about the origins of symbolism, cognitive evolution, and a variety of other related subjects. But it is also reflected in a number of derivative biases; for instance, there are numerous European Pleistocene rock art sites on the UNESCO World Heritage List (several of which are not even of the Pleistocene; e.g. Bednarik 2009b), outnumbering in fact all other types of cultural properties on that list. Despite the much greater number of Pleistocene rock art sites in the rest of the world, not a single one of them has ever been nominated for listing. The myth is also reinforced through countless school and university curriculums and is so deeply embedded in the world's archaeo-lore that it dominates humanity's current thinking about cultural origins.

3 *The Pleistocene cave art of Australia*

Rather than commenting on the already grossly over-exposed cave art of Europe, it may therefore be more useful to consider here the corpus of Australian cave art. The currently known fifty sites are distributed over four regions across the southernmost parts of the mainland and Tasmania (Bednarik 1990). The four mainland areas of confirmed cave art are the limestone karst bodies of the far south-west (north and south of Perth), the Nullarbor, the Portland to Millicent region centering on Mount Gambier, and a single site just north of Buchan. In most cases, Australian cave art consists of petroglyphs (rock art made by a reductive process), pictograms (made by an additive process) occur in only eight caves. The latter are nearly absent in the main body of Australian cave art, which is the concentration at Mount Gambier, although in 2007 some otherwise invisible motifs were discovered through ultra-violet illumination in one cave.

Among the Australian cave petroglyphs, several genres or styles have been recognized, all of which are entirely aniconic (non-figurative). Finger flutings, similar to those found in many French and Spanish Paleolithic cave art sites, occur where soft deposits of moonmilk speleothem (*Montmilch, Mondmilch*) have formed and were preserved (Bednarik 1999), and were found in thirty-seven Australian caves so far, which exceeds their number in Europe (Fig. 3). The "Karake style" has been reported from fourteen caves, all in the Mount Gambier area, but it also occurs on many archaic rock art sites above ground (Fig. 4). This genre comprises petroglyphs of deeply

Fig. 3. Finger flutings in Karlie-ngoinpool Cave, near Mount Gambier, South Australia

Fig. 4. Karake-style petroglyph in Paroong Cave, near Mount Gambier.

engraved circles, barred circles and circular mazes, convergent lines motifs (often called bird tracks) and a few other types. There is a tradition of deeply chiseled pits or cupules and heavily pounded rock panels, and finally a recent (Holocene) tradition of shallow incisions.

Although some of the Australian cave art has been demonstrated to postdate the Ice Age, being of the Holocene period (especially in Prung-kart Cave; Bednarik 1998), it has been established that a great part of it is of the Pleistocene. In Europe, cave art is safely dated to up to 32 ka before present, although there are recent age claims of up to 40 ka (Bednarik 2007, Sadier et al. 2012). Some of the Australian cave art is of similar antiquity, for instance one analysis suggests that the intermediate of the three rock art phases of Malangine Cave is considerably older than 28 ka (Bednarik 1995b). This result remains controversial, but it is confirmed by the evidence from other sites where megafaunal claw marks were superimposed over rock art, and the megafauna is thought to have faded out between 50,000 and 20,000 years ago (Miller et al. 1999, Gillespie 2004, Rule et al. 2012). For instance some human markings in Yaranda Cave, part of a very complex design, predate claw marks of *Thylacoleo* (Bednarik 1991), a carnivore thought to have become extinct around 46 ka ago (Roberts et al. 2001). This is currently the oldest known cave art in the world (Fig. 5), exceeded in age only by cave petroglyphs in India (Bednarik et al. 2005) and similar open-air rock art in South Africa (Bednarik 2013). Great antiquity of some Australian cave art is also suggested by a variety of superimposed speleothems (laminar travertine skins, moonmilk, stalactites, and straws); by significant tectonic (structural) changes in the cave morphologies since the art was produced; by indirect dating in three sites (Koonalda, Koongine and New Guinea 2 Caves, Gallus 1971, Wright 1971, Frankel 1986, Bednarik 1989, Ossa et al. 1995); and by direct dating in Malangine Cave (Bednarik 1999). Six of the Australian caves containing rock art have also yielded evidence of underground chert mining, most of which seems to date from the Pleistocene.

Fig. 5. Part of a large design of finger flutings on the ceiling of Yaranda Cave, western Victoria, Australia.

4 *Protection of cave art*

In Europe, some of the cave art sites are subjected to controlled tourism, but most of the richest cave art repositories there are inaccessible to tourism, and human access is in fact severely restricted. For instance the French Ministry of Culture alone has spent dozens of millions of euros on protecting cave art sites. For three of the most famous of these sites (Lascaux, Altamira, Chauvet), full-scale facsimiles have been constructed to cater for tourism, also at great cost. In Australia, tourism is completely banned in all cave art sites, and even the locations of many of them are strictly confidential, being available to a very few individuals. Therefore none of the severe biological infestations experienced by the cave art of Lascaux (Montelle 2009) have been experienced in Australia, where most cave art sites remain "pristine." Control of the Australian cave art sites and their research is exercised largely by a single venture, the Parietal Markings Project (PMP), established formally in 1980 and integrated into the operations of the Australian Rock Art Research Association, Inc. in 1983. It includes scientists from various fields, such as rock art research, semiotics, forensic science, microbiology, karst studies, speleo-ethology, archaeology, and anthropology, and it has been responsible for locating nearly all cave art sites known in Australia. Most scientific literature dealing with Australian cave art has been produced by PMP researchers. In addition to the cave art, the PMP also studies other cave markings, such as animal scratch marks, other natural wall markings, inscriptions, and marks related to utilitarian human activities, especially subterranean chert mining.

Seven of the eight Australian cave art sites known to the public and to government authorities have been protected by steel grilles and can only be accessed under permit systems. The locations of all others are only known to PMP researchers. They are on land managed by various agencies, i.e. they are subject to non-uniform policies of management. Typically the land managers are not familiar with the *Burra Charter* or *Venice Charter*, respectively the Australian and international instruments governing the guardianship of cultural heritage sites. Moreover, there is no set of guidelines applicable specifically to cave art in Australia. Yet cave art is the most fragile of all forms of rock art, and considerations must address the unique preservation conditions of cave art. These relate to the susceptibility of moist limestone cave walls to fluctuations in atmospheric carbon dioxide levels, relative air humidity and temperature, all of which are greatly influenced by human visitation. Caves are notoriously susceptible to changes in the hydrological system, often even where these seem to be minor. Another key issue is the involvement of microorganisms, which is far more crucial in cave sites than in open sites. But perhaps more importantly, cave sites tend to have significantly more stable climatic conditions than rockshelters. The principal consideration in any preservation issues is that rock art that has managed to survive to the present has done so because it has acquired a level of equilibrium with its cave environment. Consequently any change to ambient conditions is likely to endanger the rock art, and this applies to cave art much more than it does to open-sites rock art.

Therefore the null hypothesis in cave art conservation is that the natural conditions of a site prior to major anthropic changes to the environment are the most favorable, and should be aspired to (cf. Ray & Ramanathan 2002, Orbaşli 2013). Typical changes affecting that environment

include the effects of deforestation and large-scale planting of domestic species (such as pine trees) above the cave, the common deposition of refuse in caves, and closures or alterations of caves by land owners or managers. Since in a karst all water drainage occurs below ground level, and caves or dolines are principal drainage points in the landscape, the contamination of many caves has no doubt contributed to the poor condition of the Mount Gambier region's aquifer water supply.

It follows from this that a code regulating any modifications to caves by land owners and managers needs to be formulated as a major part of a management plan, the purpose of which is to ensure the sustainability of the cave art and the cave's integrity as a system. Other guidelines need to be formulated concerning uncontrolled human access and the management of the caves' microclimates, hydrological regimes and physical stability, by controlling the principal factors responsible for these crucial factors.

To ensure the continuation of this level of protection into the future the PMP principals have resolved to pursue the establishment of a universal site management plan for all Australian cave art sites. Another need for a comprehensive management plan arises from the planned nomination of the Mount Gambier sites for National Heritage listing, and eventually World Heritage listing, for which such measures would be prerequisite. To achieve this, a committee of representatives of all relevant stakeholders was formed in 2012, including relevant Traditional Aboriginal Custodians, land managers, private land holders, specialist researchers and others. This stakeholder committee is known as the Cave Art Special Committee. The specific aims of the management plan are to:

1. Identify the various present and likely future threats to the cave art sites of Australia, with special attention to the Mount Gambier region where most of these sites are located.
2. Examine and consider, in the light of overseas experience (especially in France; Fig. 6), all potential remedial procedures and policies that might help ensure the perpetual survival of Australian cave art.
3. Formulate detailed recommendations to achieve this goal, and to secure consensus support among the stakeholders for such measures.
4. Design a management plan specifically related to the Mount Gambier Cave Art Precinct, but whose underlying principles are also applicable nationwide.
5. Prepare detailed recommendations for relevant federal legislation to be drafted in consultation with supporting agencies, universally applicable across state borders and all relevant jurisdictions.
6. Prepare the Mount Gambier Cave Art Precinct for National Heritage listing by the Commonwealth Government of Australia and as a Biodiversity Reserve by UNESCO.

5 *Other cultural use of caves*

As implied above, the production of cave art, in the form of rock paintings, drawings, stencils, and petroglyphs (the latter comprising engravings, percussion petroglyphs, and finger flutings), is not the only kind of evidence of cultural activity found in caves. The use of caves as shelter or habitation sites by hominins dates back literally millions of years, with most remains of australopithecines deriving from cave-fill breccia (Dart 1925, Eitzman 1958). The use of

Fig. 6. Treating black stains in the Nave, Lascaux (photo by CNP, Ministère de la Culture et de la Communication).

caves to deposit the dead seems to begin several hundred millennia ago, for instance in Sima de los Huesos, Spain, where the remains of 28 specimens of *Homo heidelbergensis* were excavated. Certainly by the time of *Homo sapiens neanderthalensis* it had become common practice to bury the dead in caves. This is not necessarily a reflection of ritualistic practices, but could well manifest the practical need to dispose of corpses due to their stench and attraction to dangerous scavengers, such as hyenas (Ziegert 2010). By Upper Paleolithic times, caves can reasonably be assumed to have attracted ritualistic practices related to their special characteristics. This may have included auditory factors (echoes; Waller 1993), awe-inspiring flowstone formations, overwhelming ambience, underground springs in karst regions lacking surface water, and the occasional exploitation of chert seams which in some sites have been subjected to extensive mining (Bednarik 1992).

Distinctive traditions of cultural uses of caves have developed in many parts of the world in Historical times. This may help to explain the attraction, fascination, and mystery that caves continue to hold for many people. For instance, along with peak sanctuaries, the Bronze Age Minoans of Crete are said to have used limestone caves for religious rites. Clay human figurines have been found in Idaeon and Psychro (Jones 1999). Crete has more than 3000 caves, of which many are associated with the gods of Greek mythology and with goddess worship practiced by the Minoans. For example the Dikteon Cave is said to be where Rhea gave birth to Zeus; the Idaian Cave, where Rhea hid Zeus from his father, Cronus. The large Corycian Cave, located on the Greek mainland at Mount Parnassus, was a place of worship of the god Pan and the nymphs. A rock near the entrance has been suggested to have been used as an altar. The Sof Omar Caves in Ethiopia com-

prise many natural pillars, buttresses, and vaults and are named after Sheikh Sof Omar, to whom Allah revealed the opening to this limestone cave system in the 12th century CE. The Elephanta Caves on Gharapuri Island, India, contain numerous Hindu deities carved in the fifth century CE. The five Buddhist cave shrines at Dambulla Caves, Sri Lanka, are even earlier at over 2000 years age, containing exquisite paintings and sculptures commissioned by King Valagambahu. The Longmen ("Dragon's Gate") Caves in the Xiang Shan and Longmen Shan hillsides above the Yi River, in China, are a vast complex of temple grottoes comprising extensive Buddhist carvings, 2800 inscriptions, and 43 pagodas, the earliest dating from the Northern Wei dynasty (493 CE). Among the thousands of caves in Thailand, at least 112 Buddhist sacred caves have been identified, with some sixty described in detail. According to Munier (1998: 34), the earliest known use of caves by Buddhists in Thailand dates back to the 6th and 7th centuries. Among the most important of the many caves of Tibet, the Piyang Caves are situated in the western part of the Tibetan Plateau in close vicinity to sacred Mount Kailash. There are over 1100 caves at this complex, some of which are probably meditation caves, others have ritual architecture within them.

The Maya considered the over 10,000 cenotes of Yucatán Península as entrances to their underworld, called U'kux Xibalbá, of which the Nine Lords of Xibalbá were in charge. Some of the major cultural caves in the region are Las Calaveras, located in Quintana Roo (120 skeletons of the 2nd and 3rd centuries CE); T'Zabnah Caves near Techo; Cuevas o Grutas de Loltún near Oxkutzcab; Dzibilchaltun north of Mérida; the Chichén-Itza Sacred Cenote; the Kantun Chi Four Cenotes (K'atun Chi, Zaskaleen, Uchil Ha and Zazil Ha); Chac Mool ("Jaguar's Claw"), located south of Playa Del Carmen; Calcehtok Caves; X'Tacunbilxunana at Bolonchenticul; Dos Ojos ("Two Eyes"); Balankanché near Chichén Itzá (Fig. 7); and many others. These caves were places of shelter and refuge (including in the Guerra de Castas of the 19th century); sacred places where rituals of pas-

Fig. 7. Maya offering of stone metates to crush corn and vases containing grain as part of a ritual promoting crops; Balankanché Cave near Chichén Itzá, Mexico (photo by J.-N. Salomon).

sage were performed; also for rituals of communication with the *abuelos* (elders); and they were places of pilgrimage and offerings, rituals and prayers. They were also places of burials, cremations, and gathering sites to invoke the dead. In addition these caves were used for the extraction of minerals, abrasive stones, and clay for pottery; and they were sources of drinking water.

Caves feature also among the sacred sites of Christianity. St. Paul's Grotto in Malta is claimed to have been used for shelter by St Paul in 60 CE, after having been shipwrecked while imprisoned by the Romans. Christian legend says that the St. Michael's Cave Shrine in Monte Sant'Angelo in Italy is where the archangel Michael appeared to the Bishop of Sipontum in 490 CE and promised, "Where the rocks open wide, the sins of men may be pardoned." It is said that Michael left an altar, a red cloth, and his footprint in stone to mark the spot. Then there is the Grotto of Massabielle at Lourdes, Hautes-Pyrénées department in the Midi-Pyrénées region in south-western France. Here, 14-year-old Bernadette Soubirous claimed in 1858 to have had several visions of a beautiful lady identifying herself as "the immaculate conception." Since this has been accepted by the Church, an estimated 200 million pilgrims have visited the Lourdes shrine.

6 *Summary*

The examples cited amount to only a short list of a widespread phenomenon. It has even been observed that the way Paleolithic cave art "sanctuaries" (note the terminology used by archaeologists) are validated resembles the way religious shrines, such as those of Lourdes or Fatima, are (Freeman 1994). This is only one of several similarities between religion and archaeology.

In the context of the protection of caves and karst environments, a weightier subject, it is highly relevant to consider the cultural uses especially caves have been subjected to; and their role as receptacles of important cultural heritage remains. Just as caves have served as key repositories of vast deposits of paleontological remains, especially but not exclusively of the Quaternary period, they have preserved most of the earliest cultural evidence, and for much the same reasons: the protection offered by the parietal environment. It is precisely this role that enhances the status of caves as places requiring protection and preservation. The cultural remains one can find in limestone caves can range from rock art to architectural modifications, such as those found at Iranian sites (Ghasrian et al. 2014). They include the use of caves for shelter, to conduct rituals, to inter the dead, to hide treasured objects, and for a great variety of religious purposes. Not surprisingly they have become foci of cultural heritage preservation, and this is one of the most effective means of securing the protection needed by caves and other karst phenomena.

This paper has presented an Australian initiative bearing out the utility of this nexus. A special project of the Australian Rock Art Research Association, the Parietal Markings Project, is currently in the process of designing a universal management plan for the country's cave art sites. While this is obviously intended to perpetually preserve the rock art in these sites, the safeguarding of all other values residing in these places would be secured as an incidental consequence. These would include the speleological, archaeological, and paleontological values of the caves concerned. Clearly, then, any endeavor to protect cave art sites will also involve the protection of the general sites and, very importantly, their settings. Therefore the cultural heritage values of caves are of significance to those who seek to better the protection of caves, for whatever other reason.

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