

Stone-Age sanctuary, oldest known shrine, discovered in Spain

A sculpted stone face—half animal, half human—presided over a sanctuary at El Juyo Cave in northern Spain 14,000 years ago. Scientists who discovered the 118-foot-square complex just within the entrance to the cave say that it is the first intact religious sanctuary found from the Paleolithic times and the oldest known religious shrine.

Other signs for religious belief, such as gravesite offerings placed with Neanderthal burials, go back to about 50,000 years but are almost exclusively associated with death and the dead. "That's only one part of a religious belief system," says Leslie G. Freeman, an anthropologist at the University of Chicago. The fact that hunting implements and sewing needles were kept separately in the sanctuary suggests that "sex role differentiation was important in the way rituals were carried out," Freeman says. He discovered the sanctuary in 1978 and 1979 at the El Juyo Cave archaeological site with colleagues Richard G. Klein, also of the University of Chicago, J. Gonzalez Echegaray, director of the Altamira Museum and Research Center in Santillana, Spain, and I. Barandiaran of the University of Santander, Spain. Their report is published in the journal *HISTORY OF RELIGION*, Aug., 1981.

While scholars have long scrutinized cave paintings, decorated objects or burial offerings for evidence of religious ritual, the correlation has been difficult to justify. Figures painted on cave walls could be the play of one person's imagination, Freeman says. "We know nothing, frankly, of the gods of Paleolithic man." The El Juyo find, however, has three features needed to define a sanctuary: It is a large complex, the construction of which required the active cooperation of many people; it has an enigmatic quality, with features not needed for daily living; and the structure is associated with a supernatural being.

An early Stone Age culture called Magdalenian III flourished in the area for a brief time about 14,000 years ago. When the sanctuary was discovered, Freeman reports, the scientists were looking for other structural features, such as living or cooking areas. Signs of tools and food debris suggest that the sanctuary was a place where people came to spend time. The worn surface of the floor indicates active use.

In the center of the complex was a shallow trench 43 inches long and 31 inches wide filled with spearpoints, animal bones and shells, and coloring material. On top of the trench a mound about 30 inches high was encased in a clay shell reinforced by stone slabs and fragments of animal bones, especially those of deer. An alter-like horizontal limestone slab weighing nearly a ton was supported on vertical slabs above the mound.

Above the mound complex was the



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This sculpted face, half man, half animal, presided over the El Juyo sanctuary.

free-standing stone sculpture, 14 inches tall, 13 inches wide and 8 inches thick. A natural vertical fissure in the rock divides the face. On the right side of the rock is the half face of a man with a moustache and beard. On the left side is the half face of a carnivore, perhaps a lion or leopard.

The lateral division of the face is notable, Freeman says, because it shows that graphic metaphor was used earlier than

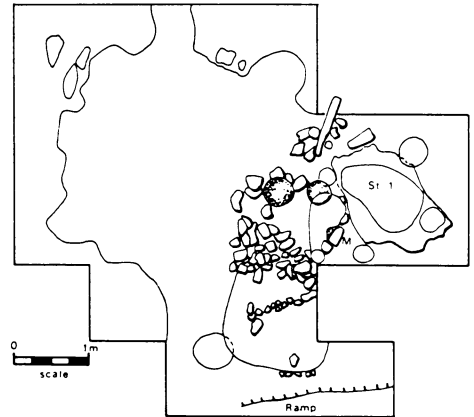


Diagram of sanctuary shows location of shallow trench (St 1) and head (M).

thought. The sculpture may reflect the fusion of the domesticated and cultural aspects of man with his bestial nature. The face also associates the right side with good and the left with evil. This bias pervades modern cultures but previously was not known at such an early time.

The excavation was funded by the Spanish Ministry of Culture and the U.S. National Science Foundation. —C. Simon

Piloting precariously through the pingos

In a few years, when Dome Petroleum begins producing oil and natural gas from the petroleum-rich deposits in the Arctic's Beaufort Sea, extracting the resources may be only part of the challenge. The deep-draught supertankers transporting the fuel must navigate waters made treacherous by ice and capricious weather, and by underwater ice-cored mounds called pingos.

On the fifth leg of its nine-month voyage around North America, the Canadian oceanographic research vessel the *CSS Hudson* succeeded in charting a safe passage through the pingo-infested area of the western Arctic's Beaufort Sea. During the three-month summer cruise scientists from the Canadian Hydrographic Service surveyed more than half of the total corridor, which is 10 miles wide and 170 nautical miles long. The corridor crosses the Beaufort Sea, running about 60 miles offshore roughly parallel to the Tuktoyaktuk Peninsula.

The pingos pose navigational hazards to tankers, which risk running aground on the isolated underwater features. During the survey, the *Hudson* collected seismic profiles at intervals of 100 meters all across the corridor. Jim Vosburgh, a hydrographer with the Canadian Hydrographic Service in Sidney, British Columbia, said that 25 pingos were located this summer, 20 of which were previously unknown. None of the charted pingos would jeopardize the 20-meter draught tankers

proposed for use in the Beaufort Sea, Vosburgh says. Still, he cautions, there could be several pingos yet uncharted.

Marine geologists who were on board the *Hudson* are studying the origin and nature of the pingos and related seabed features. It is thought that the pingos formed when pockets of fresh water surrounded by frozen seabed or terrestrial soil expanded upward. The underwater pingos were unknown until 1969. Following the discovery of oil in Prudhoe Bay, the vessel *Manhattan* also was trying to navigate through the Beaufort Sea to the Northwest Passage when one of its escort ice-breakers ran over a pingo. Though on land the features were familiar sights, rising at irregular intervals like pimples on the landscape, scientists and navigators did not suspect that the mounds also occurred underwater on the basin-like terrain of the Beaufort seafloor.

If pingos still form underwater, the process is occurring at the leisurely pace of geologic time and probably poses no threat to recent measurements. Bob Harmes, a geologist at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia, reports the primary analysis of pore water samples and marine microfossils in pingo sediments is raising questions about the origin of the features. It may be, he says, that they formed on land rather than underwater and simply were inundated when the land subsided or sea levels rose following an ice age. —C. Simon