

Alexander Marshack ©

Drawing of horse from Pech Merle cave: Repeated use hints at ritualistic meaning.

The Origins of Culture

New evidence indicates that early humans were far more sophisticated, and their culture far more complex, than previously supposed

BY JOHN H. DOUGLAS

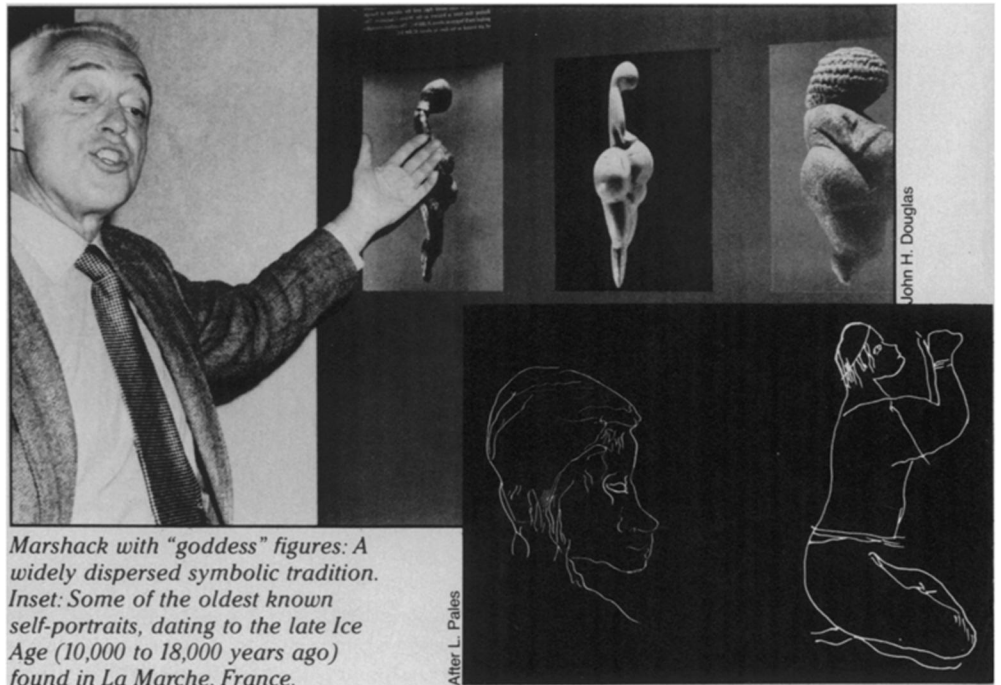
We are the product of two evolutions: the biological changes that have taken place on a time scale of millions of years and the much more recent developments of custom and art, whose pace is still accelerating. Biological evolution has usually taken most of the spotlight — the recent discovery of what may be another branch on the human family tree (SN: 1/20/79, p. 36) has already touched off another round in the long debate. Yet our common ideas of what makes us human usually involve the creative products of emotion and imagination. Discoveries relating to this cultural evolution were reviewed recently at the 1979 Louis Leakey Memorial Lectures in San Francisco, in conjunction with an exhibit of ice age art at the California Academy of Sciences.

The extreme antiquity of some sort of cultural effort was emphasized in the keynote lecture, presented by Phillip V. Tobias, chairman of the Department of Anatomy at the University of Witwatersrand in Johannesburg. One of the oldest pieces of evidence of purely cultural — as opposed to utilitarian — activity comes from the discovery of red ocher with skeletons of *Homo habilis*. Ochres are the

brightly colored earthy minerals of iron long used for pigments. Their discovery with the earliest of the true humans (*Homo habilis* shows the first unequivocal use of tools) indicates the possibility of ritual use more than a million years ago.

Even the earlier *Australopithecus*, or ape-man, may have shared some characteristically human cultural features. Pebbles with face-like features have been found with australopithecine remains, and

although the features appear natural, rather than worked, the pebbles had been collected and brought to the site from somewhere else. One way or the other, a huge evolutionary cultural gap is evident between the time of *Australopithecus boisei* — a “thug of a hominid,” Tobias calls him — and the 60,000-year-old grave discovered in Shanidar, Iraq, where the body had been lovingly strewn with at least eight kinds of flowers. The turning point,



Marshack with “goddess” figures: A widely dispersed symbolic tradition. Inset: Some of the oldest known self-portraits, dating to the late Ice Age (10,000 to 18,000 years ago) found in La Marche, France.

After L. Pales

John H. Douglas

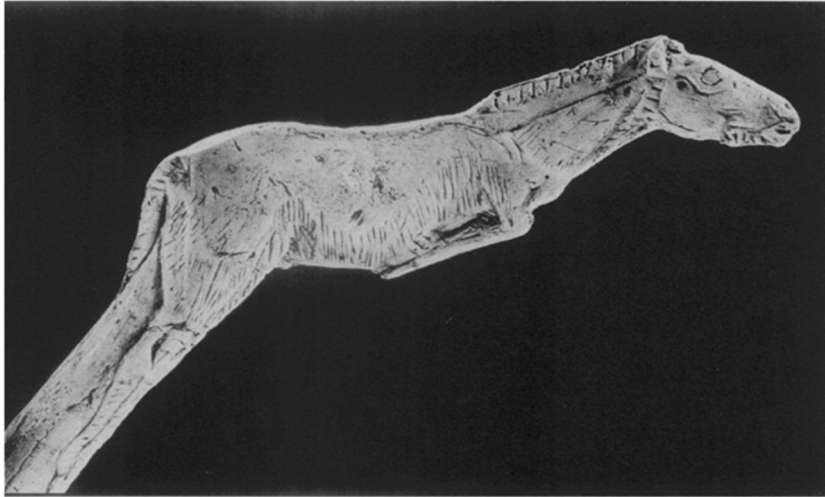
Tobias concludes, came with *Homo habilis*, the first hominid to be "culture bound."

The real Golden Age of prehistoric art did not occur, however, until the mysteriously sudden arrival of modern man (Cro-Magnon) in Europe. His origins are still unknown, but recent evidence points to a migration from southern Asia by way of the Middle East. A new appreciation of Cro-Magnon's sophisticated art and culture has resulted largely from the patient work of Harvard University researcher Alexander Marshack, who delivered two

By using ultraviolet and infrared light to illuminate cave paintings, Marshack found that these, too, had apparently been re-used time and again. Since infrared film essentially sees through red ochre colors, examination of some paintings using this technique revealed a previously unseen under-drawing. Examination of a horse image in the cave of Pech Merle, in France, revealed two separate drawings, filled in with red and black dots and hand prints over a period of time by different persons.

Most recently, Marshack has been studying the "macaroni" markings found

American Museum of Natural History



The leaping horse of Brunequel cave. Microscopic examination of such engraved objects often reveals repeated use and great care taken to show seasonal changes.

separate addresses at the Leakey lectures and was curator for the Academy of Sciences exhibition.

A few years ago, Marshack began to study bone engravings from about 30,000 years before the present under the microscope and tried to correlate them with natural phenomena a cave dweller might want to keep track of. The result was a carefully documented, but nevertheless controversial, theory that the earliest modern humans made notations of the lunar cycle, possibly to keep track of the seasons (SN: 2/19/72, p. 124).

Since then, Marshack has continued his microscopic analysis of engraved artifacts and has used sophisticated lighting techniques to study large cave paintings. From both investigations he has drawn the same important conclusions: that cave dwellers were indeed conscious of seasonal variations in animals and plants, and that the images they made of these objects were used repeatedly, as if in a ritual.

Under the microscope Marshack found that on one engraved bone staff each of the animals seemed to represent an attribute or activity associated with spring. For example, a tiny engraved fish, once thought to be a common mackerel, appeared clearly under microscopic examination to be a salmon with the hooked jaw characteristic of the annual spawning migration. Also, the microscope revealed that marks on many artifacts had been made by different engraving tools at different times.

throughout Europe on fragments of bone. Previously these have been dismissed as merely "doodles," but Marshack says they belong to a widely dispersed symbolic tradition. Through them we see evolving the ability to symbolize the external world in different ways, he says. A more easily recognizable symbolic tradition can be seen in the tiny "goddess" figures found widely dispersed through Europe by about 30,000 years ago. Although they are the products of widely separated societies, each shows the same peculiar characteristics, such as tiny feet, pendulous breasts and exaggerated hips.

To interpret what these and other early symbols may mean, some anthropologists have begun to compare them with the works of "primitive" people of the present day. Such studies have generally led to a

better appreciation of just how sophisticated the social and ritual life of a people can be, although they may remain *technologically* primitive. This work was discussed by J. Desmond Clark of the University of California at Berkeley, and Patricia Vinnecombe of the University of Sydney.

Clark, who is considered one of the world's leading authorities on African prehistory, discussed the rock art remaining from a time when the Sahara desert was a "hunter's paradise." The pictures themselves show lively hunting scenes, complete with dogs and bows and arrows. The game shown include life-sized elephants and extinct buffalo pursued by masked hunters using a variety of hunting techniques. No complete study of myths and art of modern African hunters has been published, Clark says, but some obvious links to older forms have been discovered. Similar paintings today almost always have some connection to ritual, he says, as in a sequence of paintings used in elaborate initiation rites.

Game animals are almost always a favorite subject in prehistoric drawings, and the complex nature of the relationship between hunter and game has been demonstrated by Patricia Vinnecombe's work with the !Kung (pronounced with a cluck) bushmen of South Africa. The bushmen believe that different objects and animals possess various amounts of mystical power, with the most power bestowed on the eland, the large African antelope they hunt for food. The rites involving the eland are graphically displayed in !Kung art.

"The bushman's horizon is bounded by the eland," Vinnecombe says; it is the center of social cohesion, the most important theme in art and ritual. To gain some of the eland's power, a boy will kill an eland and take its characteristic tuft of hair. Before he can marry, the boy must take the father of the prospective bride the heart of an eland. Great empathy with the power object is shown even at the moment of a kill: After shooting an eland with a poison arrow, the hunter acts as if he, too, were sick and injured until the beast dies.

Not only is the eland a favorite subject of art, but of dance as well. On the occasion of a girl's first menstruation she is put into a seclusion hut while other members



Clark and Vinnecombe: From studies of modern tribes comes understanding of ancient art.

of the tribe do a symbolic mating dance imitating elands. In addition to wishing for the girl's fertility, the tribespeople are also explicitly hinting at the pleasure of sex that lies ahead of her. Vinnecombe says the girls involved are often so overcome by the beauty of the spectacle that they weep for joy.

Vinnecombe also presented some as yet unpublished data on the culture of Australian aborigines, gathered for a doctoral thesis by Howard Morphy of Australian National University. By developing a close relationship with an aboriginal leader, named Narratjin, Morphy was able to learn the meaning of many symbols used in their

art. In marked contrast to the realistic portrayal of power objects by the !Kung, the aborigines have developed a highly abstract art. A piece of bark painted with almost unidentifiably abstract signs may represent a map of sacred ground, with significant features of the terrain symbolically represented.

Social structure depends heavily on a hierarchical "right to knowledge"—that is, the interpretation of the bark symbols can only be passed from one generation to another in a ceremonially correct way. Unlike many other traditions, the making of art is highly restricted and the designs are meaningful only to initiates. Narratjin's

description of the artistic process sounds surprisingly similar to those of many "modern" artists: "Put into your mind all of your thoughts. You connect this to all of your power. *This* is what you paint."

Both the traditions of the !Kung and the Australian aborigines are now seriously threatened, and some anthropologists are beginning to ask how such groups can receive some of the material benefits of the modern world while still preserving their traditional culture. One way is through the sort of respect Vinnecombe showed to the artist Narratjin; before coming to the conference she asked him for *permission* to explain the meaning of his symbols, which he had shared with Morphy.

In his summary statement, Tobias, too, called for more compassionate understanding as we progress along our still rapidly changing cultural evolution. "Knowledge and compassion," he said, "are the twin guides to the future of our species." □

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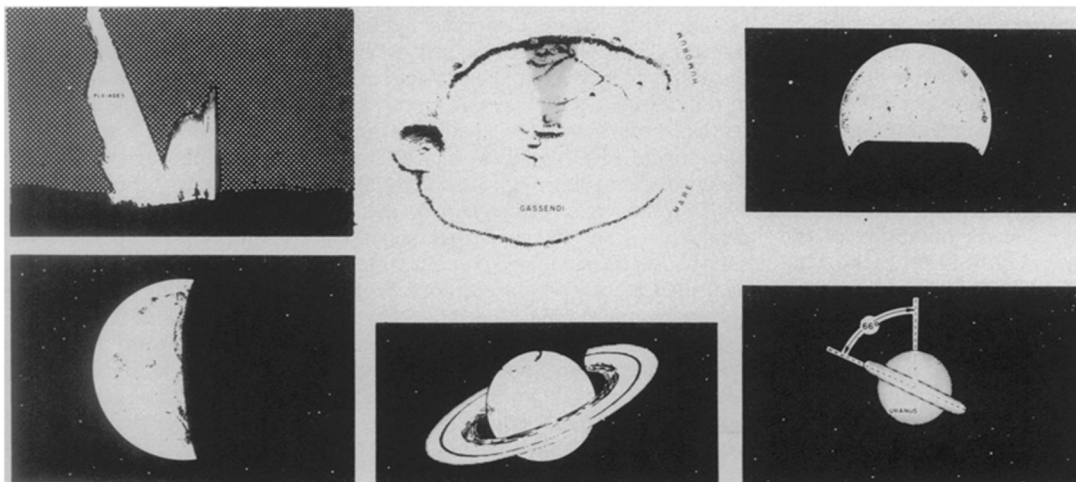
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1. Zodiacal light with spurious lobe. 2. Color phenomena (shaded areas) in lunar crater. 3. Distorted shadow during lunar eclipse. 4. Radial spokes on Venus. 5. Planet shadow with "wrong" curvature on Saturn's rings. 6. Sketch of ring of Uranus seen in 1847.

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The complete files of **Nature**, **Science**, **Sky and Telescope**, **Observatory**, **Monthly Notices**, **Popular Astronomy**, **J. Brit. Astro. Assn.**, and others. Over 1000 volumes surveyed.

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