

Archaeology

From meetings in Seattle of the Paleoanthropology Society and the Society for American Archaeology

Cutting-edge pursuits in Stone Age

Sophisticated stone toolmaking of a type often considered to have arisen around 40,000 years ago was practiced by predecessors of modern humans living much earlier, a new study finds.

"You can't establish the presence of modern human behavior solely on the basis of how stone tools were made," says Ofer Bar-Yosef of Harvard University. "For perhaps the last 1 million years, I suspect, there's been little difference in the technological capabilities of hominid species."

Bar-Yosef and Liliane Meignen of the Center for Archaeological Research in Valbonne, France, examined a large collection of stone tools unearthed at Israel's Hayonim Cave. The finds date to about 200,000 years ago. Makers of the implements remain unknown, although they may have been an early form of *Homo sapiens*, Bar-Yosef suggests.

Most of the Hayonim material consists of narrow, elongated blades with sharpened points, according to Bar-Yosef and Meignen. Similar stone artifacts have been found at a pair of 250,000-year-old sites in Israel and Africa (SN: 12/2/95, p. 378). All of these blades contrast with less elaborate stone tools found at many other sites from around the same time.

Modern humans also exhibit technical disparities in toolmaking that reflect adaptations to local environments rather than differences in intellectual potential, Bar-Yosef says. For instance, 28,000- to 14,000-year-old stone tools from Tasmania display a uniformly simple style that was well-suited to survival on the island's stark landscape, reports Simon Holdaway of Australia's La Trobe University in Bundoora. During the same time period, more elaborate toolmaking flourished in Western Europe's river valleys.

Findings at Hayonim and earlier sites (SN: 1/4/97, p. 12) indicate that over the past 1 million years, human ancestors have routinely planned future activities and passed on cultural

knowledge from one generation to the next, Bar-Yosef argues.

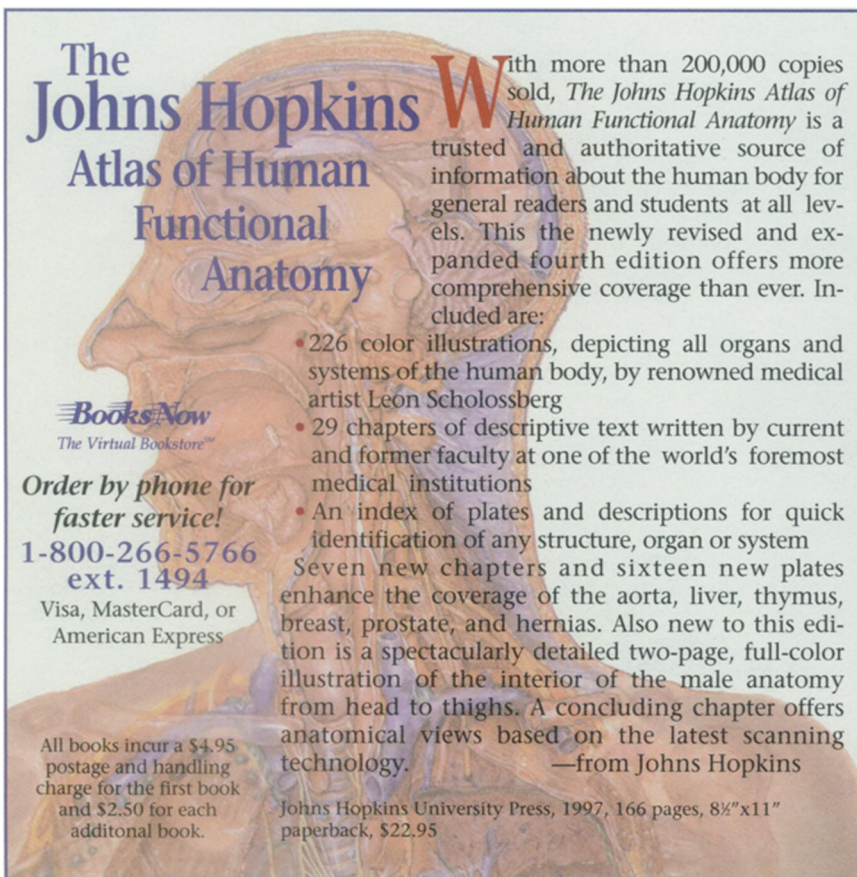
These skills may have fueled early advances in hunting as well as in stone toolmaking, says Mary C. Stiner of the University of Arizona. Hayonim residents were hunting deer, antelope, and other large game by 200,000 years ago, Stiner holds. Ancient sediment in the cave contains burned bones of these animals, and many of the bones bear incisions made by stone tools during butchery.

Art and other symbolic behavior may also have emerged much earlier than traditionally thought, reports April Nowell of the University of Pennsylvania in Philadelphia. Microscopic analyses conducted by Nowell and Francesco d'Errico of the Institute of Quaternary Prehistory and Geology in Talence, France, suggest that a stone tool created grooves delineating what appears to be a woman's head, neck, and arms on a small rock from an Israeli site dating to about 250,000 years ago. —B.B.

New light on ancient smokers

Native American pipes date to more than 3,000 years ago, but direct evidence of tobacco smoking has extended back only to around A.D. 200. A new analysis substantially pushes back Native American tobacco use and holds promise for further investigation of ancient smoking habits, reports Sean M. Rafferty of the State University of New York at Binghamton.

Rafferty applied gas chromatography and mass spectroscopy to pure samples of nicotine to identify a "fingerprint" of the substance. The same chemical signature appeared in small samples of ash residue from a 19th century African pipe and a pipe found at a Native American site in Vermont dated at between 1715 B.C. and A.D. 105. Chemical investigations may yield evidence that ancient people smoked other plants—at least in pipes that curators haven't cleaned, Rafferty says. —B.B.



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