ufacturer rather than the individual responsible for the decision to smoke.

To summarize, then, the "Zimring thesis"—that most of the decline in smoking must be attributed to social change rather than government action—is plausible as an account of the U.S. experience to date, simply because federal policy has been so limited. That thesis will have to be revised if the Clintons are successful in their effort to impose a 75-cent-a-pack federal tax, or if there is a breakthrough in the tort cases.

One important mechanism by which the public concern about smoking has produced remarkable change is through restrictions on where it is acceptable to smoke. We all remember when smoking was permitted on domestic flights, and some of us remember (with fondness) a time when the flight attendants distributed small packs of cigarettes with the coffee. Increasingly state and local ordinances limit smoking in public places, and it is more common than not for employers to restrict smoking in the workplace. In their chapter Robert Kagan and Jerome Skolnick assert that recent regulations prohibiting smoking in offices and restaurants have been effective. A survey conducted by these authors found a remarkably high degree of compliance with smoking bans, in part because these regulations have provided nonsmokers with greater authority to insist on their right to clean air. In protecting nonsmokers, then, we have made great progress, and are well ahead of other Western countries.

Certainly the interests of smokers have not been ignored in all this. Though it may seem reasonable that smokers would have to pay more for life and health insurance (and less for annuities and insurance to support nursing home care), in fact the insurance companies have been reluctant to get involved in rating on this basis. Some employers have attempted to use smoking status as a basis for screening job applicants, but, as Stephen Sugarman notes, about half the states have passed some form of legislation protecting the rights of smokers in employment. Further, the courts are sure to be concerned about the fact that smoking is highly correlated (negatively) with socioeconomic status, and discriminating on this basis may have disparate impact on protected racial minorities.

With some 30 percent of teenagers smoking, the public health crusade is far from victorious. This book provides a good deal of interesting background but little guidance for policy-makers seeking to evaluate the various policy alternatives now under discussion. As a reformed sinner, I find that the emphasis on cultural and social change is interesting and rings true. As a policy analyst, however, I would have preferred more attention to evaluating the most promising next steps.

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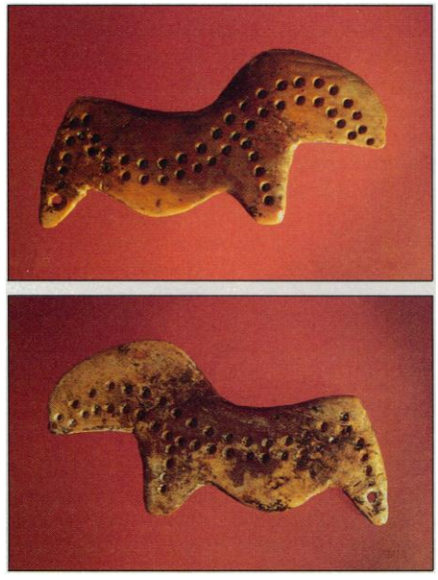
Culture in the Paleolithic

Before Lascaux. The Complex Record of the Early Upper Paleolithic. HEIDI KNECHT, ANNE PIKE-TAY, and RANDALL WHITE, Eds. CRC Press, Boca Raton, FL, 1993. x, 304 pp., illus. $75.

For decades, paleoanthropologists have debated the intensely interesting question of when, where, and how the human lineage reached its fully modern form. There is now general agreement that people broadly understood (hominids) first appeared in equatorial Africa more than 4 million years ago and were confined to Africa until some time between 1.5 million and 1 million years ago. At a still-to-be-fixed time within the latter interval, an archaic form of *Homo* spread from northeast Africa into adjacent southwestern Asia and from there eastward to the Far East and northward and westward to Europe. Archeological finds indicate that archaic humans were firmly established in the Far East 1 million years ago and in Europe no later than 700,000 years ago. With regard to modern human origins, the central issue is the pattern of evolution after Eurasia was first peopled.



The two faces of a drilled animal pendant from Sungir, a large Early Upper Paleolithic living site about 150 kilometers east of Moscow. Associated radiocarbon dates indicate that the pendant is between 30,000 and 25,000 years old. Its surface is heavily stained with red ocher, and the depressions drilled into it contain black pigment. [From R. White's paper in *Before Lascaux*]

Virtually all specialists agree that the modern human form originated relatively recently, probably no more than 150,000 years ago, but there is disagreement on whether it appeared more or less simultaneously in Africa, Europe, and Asia or originated in a relatively restricted locale and then spread from it to replace surviving archaic populations elsewhere. Those who favor widespread, more or less simultaneous evolution toward modern humans stress supposed racial continuities between archaic and modern populations in widely separated regions. In contrast, those who favor a restricted origin emphasize the occurrence of modern or near-modern human populations in Africa and on its immediate southwest Asian periphery between 120,000 and 90,000 years ago. In this interval, the sole inhabitants of Europe were the well-known and decidedly archaic Neanderthals. The east Asian contemporaries of the Neanderthals appear to have been about equally non-modern, on the basis of an admittedly sparse and poorly dated fossil record. The sum supports the now celebrated "out-of-Africa" hypothesis, whereby modern humans evolved first in Africa and spread from there to Eurasia. Until recently, a widely cited analysis of mitochondrial DNA variation in living humans implied that the spread occurred without interbreeding, but this analysis was statistically flawed, and some paleoanthropologists see fossil evidence for gene exchange between dispersing moderns and resident archaics, particularly in southeastern Europe.

For advocates of the out-of-Africa model, a potential complication is that the Neanderthals were apparently replaced only between 50,000 and 40,000 years ago, long after modern or near-modern humans had already appeared in Africa. The reason for the delay is probably that the earliest modern or near-modern Africans were behaviorally as primitive as the Neanderthals, and it was only about 50,000 years ago that they acquired the fully modern ability to adapt to the environment through the agency of culture. Armed with this ability, fully modern humans spread very rapidly, reaching Spain on the far west and Australasia on the far east by at least 40,000 years ago. The issue of how they became behaviorally modern is controversial. Some authorities believe the process was driven by rapid changes in social organization. Others favor a biological (or neurological) cause, perhaps a mutation promoting the fully

modern capacity for language roughly 50,000 years ago.

The present book focuses on the earliest evidence for fully modern human behavior in Europe and on what this implies for modern human origins. If the out-of-Africa hypothesis is correct, for example, the demise of the Neanderthals between 50,000 and 40,000 years ago should coincide closely with the appearance of people who were more modern not only in anatomy but also in behavior. In fact, most specialists, including the editors of the book, see strong evidence for such a coincidence in advanced cultural traits that appear widely in Europe beginning roughly 40,000 years ago. The indications include the manufacture of more sophisticated and more highly standardized stone artifact types; a radical increase in the degree of geographic and temporal variation in artifact types (suggesting the fully modern human ability to innovate); the earliest evidence for routine, long-distance transport of stone and other raw materials (implying wider and possibly more complex social networks); the oldest traces of substantial dwellings, sophisticated hearths, and tailored clothing (allowing the first colonization of truly arctic environments); the initial manufacture of points, awls, and other formal artifacts from bone, antler, ivory, and shell; the oldest unquestionable evidence for art and items of personal adornment; and the oldest secure evidence for ritual or ceremony as reflected in both art and burials. In both Europe and western Asia, the advanced culture complex marked by these traits is commonly called the Upper Paleolithic, as distinct from the preceding and more primitive Middle Paleolithic culture complex of the Neanderthals.

A few authorities have argued that only the Late Upper Paleolithic, after 20,000 years ago, was truly progressive and that the Early Upper Paleolithic, between roughly 40,000 and 20,000 years ago, was actually more like the Middle Paleolithic. If this is true, it might imply that Early Upper Paleolithic people evolved directly from their Middle Paleolithic, Neanderthal predecessors, in contradiction to the out-of-Africa hypothesis. All authorities acknowledge that the famous paintings and engravings in caves like Lascaux belong mainly to the Late Upper Paleolithic, but the editors of the present book and many other specialists believe that in all other important respects the Early and Late Upper Paleolithic form a unitary whole that departed dramatically from the Middle Paleolithic. It was to underscore this point that the editors invited other archeologists to join them in a wide-ranging discussion of the Early Upper Paleolithic. In total, 20 specialists have contributed 16 essays, focusing variously on Early Upper Paleolithic stone artifacts, bone artifacts, art, or food debris (animal remains) in parts of western Asia, Spain, France, Germany, the Czech and Slovak Republics, and Russia.

Unfortunately, few of the contributions explicitly confront the issue of continuity within the sequence from Middle to Early Upper to Late Upper Paleolithic, and those that do sometimes conclude (unconvincingly, I believe) that there was no break between the Middle and the Early Upper Paleolithic. For the most part, the authors show little or no interest in prehistory outside their target areas, and this inevitably limits the applicability of their conclusions to any broadly interesting question. As a group, then, the essays are valuable mainly for their technical description of various Early Upper Paleolithic sites or objects and not for their analytic or evolutionary insights. There are some conspicuous exceptions, of which the most notable are the chapters by Knecht on Early Upper Paleolithic antler working, by Soffer and her colleagues on spectacular 26,000-year-old fired ceramic objects from Early Upper Paleolithic sites in Moravia, and by White on Early Upper Paleolithic beads and pendants from across Europe.

In sum, the book was meant to address a crucial evolutionary event in the history of our species but falls short of its goal because most of the contributors focus on more parochial issues or take a descriptive approach. Where the book succeeds, it is as an authoritative, up-to-date source for detail on selected Early Upper Paleolithic cultures and culture traits, including some in central and eastern Europe that have never been treated so fully in English before.

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New World Representations

Picturing Nature. American Nineteenth-Century Zoological Illustration. ANN SHELBY BLUM. Princeton University Press, Princeton, NJ, 1993. xxxiv, 403 pp., illus. $59.50 or £50.

The 19th century was an expansive one for the field of natural history in a young nation whose natural history was very nearly its only history and whose social and political system was conceived with the laws of nature in mind.

When the Comte de Buffon assigned the New World a deleterious climate and its flora and fauna low rank, he sparked in Americans a patriotic interest in natural history. The summum bonum for the naturalist would be an American natural history that by setting Europe straight about New World nature would elevate American science to parity with European. "Picturing nature" was thus a matter of more than ordinary importance. On it depended public support for government enterprise in science. The author of this handsome volume tracks science and art as, yoked to natural history, they jog along through the century, in harmony or in discord as may be.

Early American zoological illustration achieved a distinctiveness by departing from the English tradition of the late 18th century, in which the patron-collector "wrote and published, and the traveler-illustrator . . . supplied his patron with specimens and drawings, often from the colonies" (p. 117). When the American insisted on doing his own illustrations for publication, art and science met in an arrangement that doubtless owed much to the paucity of patrons in an equalitarian society. Alexander Wilson, whose nine-volume *American Ornithology* (1808–14) was "the first comprehensive work of American natural history" (p. 30), might be taken as the type specimen of the naturalist-illustrator. Wilson's was a personal production. Putting himself in the text, he enthusiastically described his encounters with individual birds, some of them pets, and when prose failed him he turned to verse.

That stance was soon challenged by Thomas Say, who declined to intrude in the text and, confining himself to the roles of collector and entomologist, betrayed no interest in forming personal relationships with his subjects. "Physical detail of the insect alone, translated into text and illustrations, had to authenticate his observation" (p. 57). Say's illustrations, luminous hand-colored engravings from drawings by his wife, Lucy, would appeal to non-specialist readers. Those readers found a still greater appeal in John James Audubon's bird paintings, for whereas Wilson strove to render great birds, Audubon presented great art in which birds figured largely, winning thereby a large public audience while losing a smaller but influential scientific one.

The greater part of zoological illustration appeared in government documents: the reports of the state geological and natural history surveys, the Bureau of Topographical Engineers, the United States Exploring Expedition of 1838–42, the Smithsonian Institution, and after the Civil War, the United States Geological Survey. Blum traces developments through the century in