

The Great Neanderthal Debate

A Book Review By Richard G. Klein

The Neanderthal Legacy: An Archaeological Perspective from Western Europe. PAUL MELLARS, Princeton University Press, Princeton, NJ, 1996. xix, 471 pp., illus. \$69.50

The Neanderthals are the most famous and best understood group of non-modern fossil people. More than 70 sites scattered across Europe and west Asia have yielded a few nearly complete skeletons and numerous fragmentary bones from more than 275 individuals. Everywhere, the sites appear to date between approximately 150,000 and 35,000 years ago. Yet older European sites contain fossils that anticipate the Neanderthals, and now it is agreed widely that Europe was their evolutionary cradle. There is considerable dispute, however, about their evolutionary fate. Some specialists believe that they evolved directly into modern Europeans, while others argue that they were extinguished when modern humans swept into Europe from an Afro-Asian source 45,000 to 40,000 years ago. An intermediate position is that Neanderthals and modern invaders interbred and that living Europeans are the resulting hybrids.

The "Neanderthal debate" has raged for decades, but recent discoveries have narrowed its terms, and closure is on the horizon. Virtually all specialists agree that the Neanderthals were physically unique in three skull features. The Neanderthals differed not only from modern people, but also from their African and East Asian contemporaries. Most important, fresh fossil discoveries and radiometric dates show that when the Neanderthals were nearing their apogee 100,000 to 80,000 years ago, the occupants of Africa and its immediate southwest Asian margin



Klein, a Professor of Anthropology at Stanford University, serves as Sub-discipline Chair in Prehistory for the Leakey Foundation's Scientific Executive Committee.

(Israel) were far more modern in appearance. When these findings are coupled with genetic studies that place the last shared ancestor of living humans in Africa after 300,000 years ago, the notion that the Neanderthals played a major role in modern human origins becomes improbable. Debate continues because the fossil and genetic observations are circumstantial: arguments that data are being forced into a preconceived mold or that additional evidence will produce a different conclusion can always be made. No amount of fossil or genetic evidence may ever produce a full consensus, but in The Neanderthal Legacy, Paul Mellars shows that a third source—archeology—also strongly suggests that the Neanderthals represent an evolutionary sidetrack.

Archeological investigation of the Neanderthals began in southwestern France, a region with an abundance of rich cave and rock-shelter sites, more than a century ago. Following the French lead, archeologists throughout

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Notes from the Field: Reconstructing Ancient Environments

By Craig S. Feibel

Direct evidence of hominid evolution lies in the detailed fossil record of our earliest ancestors. However, much of the story surrounding modern human development is written in the context of that fossil record. Reconstructing the setting for early hominid activities as well as the environmental changes which propelled adaptation are central to our understanding of hominid evolution.

Craig Feibel, a geologist in the Department of Anthropology at Rutgers University, was awarded a grant to support his involvement in three ongoing field research projects. The overall aim of his research is to move toward an interdisciplinary reconstruction of the paleoenvironmental context in which early humans evolved. The projects supported include three of the most prolific fossil- and artifact-producing sites: Kanapoi, west of Lake Turkana in Kenya; Koobi Fora on the east side of the lake; and Gesher Benot Ya'aqov in Israel. Feibel also intends to take advantage of the geographic and temporal breadth offered by these study areas to develop a comparative basis for paleoenvironmental history.

My two trips to Kanapoi were accompanied by Dr. Meave Leakey of the National Museums of Kenya, Dr. Ian McDougall of the Australia National University, and my graduate student, Jonathan Wynn of the University of Utah. We measured and described a number of critical sections and continued mapping. After years of fruitless searching, the prominent volcanic ash at Kanapoi finally yielded pumices which may provide a more narrow date range. The first pumices we found were tiny, about the size of peas, and we spent hours picking them up with tweezers. But after several

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President's Message: Educational Opportunities Abound

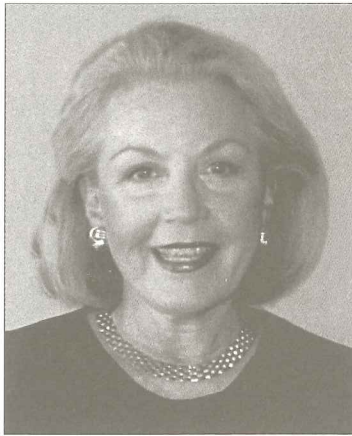
Dear Members,

In more than 20 years of association with the Leakey Foundation, it has been fascinating to learn about the wide variety of disciplines that encompass the study of human origins. The educational programs that the Foundation supports, including public lectures and symposia, offer a unique vantage point to the most stimulating new research.

In October, the Foundation sponsored a lecture by Dr. Richard Wrangham, a prominent anthropologist and co-author of the highly acclaimed new book, *Demonic Males: Apes and the Origins of Human Violence*. This provocative book is clearly *au courant* having drawn attention from popular press such as *Time*, *The Los Angeles Times*, and *The New York Times*.

Wrangham's outstanding lecture was held at the University of Utah in Salt Lake City in conjunction with our Annual Board meeting. Dr. Wrangham drew from his recently released book to contrast the violent nature of chimpanzee males with the behavior of bonobos—another great ape species distinguished as among the most peaceful mammals. The prevalence of human brutality suggests that our ancestral heritage may be traced to the more violent chimpanzees. However, Dr. Wrangham's talk raised questions about whether the strategies that the bonobos use to "keep the peace" might work for humans. The lecture was a great success, inspiring thoughtful discussion of this timely issue.

Over the years I have been impressed by the extent of the technological advances that have allowed us to move from educated *speculation* about our human origins to substantive *knowledge*. Due in part to these advances, closure is on the horizon for one of the most tenacious puzzles in



paleoanthropology: whether modern humans evolved independently in several different regions of the world or dispersed around the globe from a common location—the cradle of humanity. A Foundation-sponsored symposium entitled, "Out of Africa," slated for December 7 at Stanford University, will examine this question. An eminent

panel of six international speakers will inform us about the fossil evidence for the evolutionary emergence of modern humans. In this issue, SEC member Richard Klein's review of panelist Dr. Paul Mellars' book provides an excellent survey of the topics that the symposium speakers will debate. I hope you will consider joining us for this exciting event.

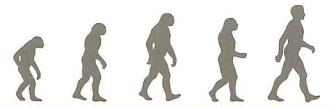
Dr. Alan Walker, a paleontologist studying the earliest stages of human evolution, will deliver the annual Leakey Lecture on February 20 at the California Academy of Sciences. Dr. Walker's talk will focus on his involvement in recent expeditions that discovered the earliest *Australopithecus*. Although fossil analysis is not complete, these findings are furthering understanding of the sequence of anatomical and behavioral changes in modern human evolution. Watch for more information in upcoming issues of *AnthroQuest*.

By sponsoring educational programs, the Leakey Foundation aspires to keep our members, and the greater public, informed about the latest developments in human origins research. We continue to be pleased by the positive response to these events. Join us and take advantage of some of these unique educational opportunities.

Sincerely,

A handwritten signature in cursive script that reads "Kay Woods".

Kay Harrigan Woods
President



The Leakey Foundation

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Neanderthal *continued from front page*

Europe now commonly use the term "Middle Paleolithic" to describe the artifacts made by the Neanderthals and "Upper Paleolithic" to describe those made by their anatomically modern "Cro-Magnon" successors. Mellars painstakingly synthesizes archeological research at more than fifty Middle Paleolithic sites in southwestern France and then compares the results to those obtained at an even larger number of regional Upper Paleolithic localities. His exhaustive survey documents five unequivocal contrasts: (1) Middle Paleolithic people made a much smaller range of discrete stone artifact types than their successors, and in general, these types are more variable in form; (2) Middle Paleolithic people much more rarely obtained flint from sources located farther than a few kilometers from their sites; (3) Middle Paleolithic

people seldom, if ever, used bone, ivory, or shell to make formal artifacts that abound in Upper Paleolithic sites; (4) Middle Paleolithic people also rarely, if ever, manufactured items of personal adornment that distinguish even the earliest Upper Paleolithic sites, and they left no other compelling evidence of art (or "symbolism") for which the Upper Paleolithic is justly famous; and (5) Middle Paleolithic sites have provided little to no evidence for structures or for spatial segregation of activities, although unambiguous "ruins" and organized living areas are commonplace in Upper Paleolithic sites.

Mellars notes that in each respect, the Middle Paleolithic recalls the preceding Lower Paleolithic, while only the Upper Paleolithic closely resembles historical stone-age cultures. He also stresses that the contrasts do not involve simple averages within widely

overlapping ranges. Rather they are highly discrete, pertaining even when comparisons are limited to the latest Middle Paleolithic and the earliest Upper Paleolithic. Finally, he emphasizes that the Upper Paleolithic appeared abruptly across Europe, that available dates tentatively place it earlier on the east (before 40,000 years ago) than on the west (about 40,000 years ago), and that its earliest (Aurignacian) manifestation was artifactually more uniform over most of Europe than the Middle Paleolithic cultures it replaced. To Mellars, the sum implies that early Upper Paleolithic artifacts mark a Cro-Magnon invasion that quickly extinguished the Neanderthals. He speculates that Cro-Magnon success was founded on superior cognitive and communicative abilities, but he admits that this reasoning is circular, for it rests

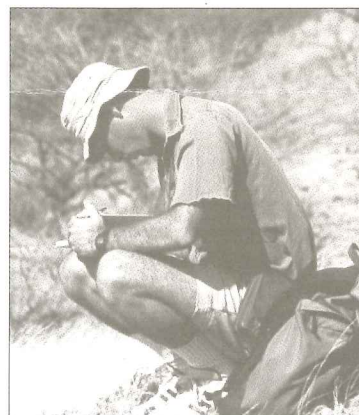
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days we encountered a spot with large pumice cobbles—ideal dating material. These may furnish a tight upper limit on the age of the Kanapoi hominids and would also affect interpretations of ages in the nearby Baringo Basin. Our paleoenvironmental work focused on detailed investigation of sediment characteristics and invertebrate fossils. Jonathan Wynn undertook an analysis of the Kanapoi *paleosols*, or fossil soils from an extinct ecosystem. These paleosols are numerous, extensively exposed, and unusual for the Turkana Basin in that they are also highly fossiliferous. Indeed, it appears that many of the hominid specimens may derive from a single, laterally extensive paleosol. This soil has also produced an extremely rich assemblage of micromammals. Thus, studying this paleosol is important not only because of its direct implications for past climates and vegetation, but also for the clues it provides to the fossil formation processes operating at the time of their accumulation. Kanapoi has drawn considerable attention following the August 1995 announcement in *Nature* of the new hominid species

Australopithecus anamensis which is at least four million-years-old.

Studies in the Koobi Fora region were undertaken in association with the Koobi Fora Field School. The month that Jonathan Wynn and I spent there was devoted mainly to paleoenvironmental investigations associated with the circa 4 Ma interval of time which produced the rich fossil assemblage from Allia Bay and the circa 1.6 Ma interval which hosts most of the archaeological sites on the Karari Ridge. At Allia Bay we focused on a single widespread paleosol which is close in age to the hominid fossils. This paleosol has a suite of unusual features including a layer rich in plant impressions. On the Karari we worked on several major paleosol levels. Unfortunately, our work there was cut short when one of our kitchen staff was bitten by a cobra. We had to make a mad dash for the village of Ileret and radio for the Flying



Craig S. Feibel

Doctors to airlift him out.

Two weeks at Gesher Benot Ya'aqov (GBY) in the northern Jordan River Valley produced some spectacular finds (for a geologist anyway!). Working with Dr. Naama Goren-Inbar and Idit Saragusti, the field study was very intense and reward-

ing. GBY is a site rich in Acheulean handaxes and fossils. The sequence has been waterlogged since the time of deposition, very close to half a million years ago. This condition resulted in the preservation of an organic-rich sequence with pollen, seeds, fruit, and abundant fossil wood. Vertebrate remains are also abundant; I discovered a complete rodent mandible exposed in the side of one of the geological trenches. Working conditions were a bit difficult—the profiling of trench walls was accomplished standing knee-deep in water and mud while battling a horde of frogs and pugnacious freshwa-

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Calendar of Events

- 1996 December 6 **Board of Trustees Meeting, Stanford University**
Granting Session
- December 7 **Out of Africa Symposium, Stanford University***
Speakers: Dr. Günter Bräuer - University of Hamburg
Dr. Robert Franciscus - Stanford University
Dr. Jean Jacques Hublin - Museum of Man, Paris
Dr. Arthur Jelinek - University of Arizona
Dr. Paul Mellars - Cambridge University
Dr. Fred Smith - Northern Illinois University
- 1997 February 20 **Annual L.S.B. Leakey Lecture**
California Academy of Sciences, San Francisco, CA*
Dr. Alan Walker, Pennsylvania State University
- April 25 **Board of Trustees Meeting, San Francisco, CA**
Granting Session
- September 27– **Annual Meeting, Cape Town, South Africa**
October 2
- December 5 **Board of Trustees Meeting, Stanford University**
Granting Session
- December 6 **Tentative Lecture, Stanford University**
- 1998 Spring **Tour of Turkey**
(final dates and location to be determined)

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on archeological, rather than on physical (or neurological), evidence.

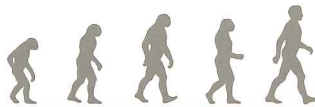
Some archeological readers undoubtedly will complain that Mellars has applied an explicitly evolutionary perspective to the archeological record and that other perspectives might produce different conclusions—including the conclusion that there can be no conclusion, since inevitably archeological interpretation is a product of personal judgment applied to circumstantial evidence. However, in this sense, archeologists are like jurors, who also may be forced to decide between competing interpretations of circumstantial, even ambiguous or partially contradictory evidence. For those who believe it is possible to determine what happened to the Neanderthals and who are willing to accept the judicial model, Mellars has produced an exceptionally thorough, well-reasoned, and compelling brief. ■

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ter crabs. The sedimentological data recovered this season will help to fill an extremely large void in our understanding of Middle Eastern environmental conditions during this time period.

I plan to return to all three sites to continue my research. The rift valley, from Israel to Mozambique, is an archive of evidence relating to hominid evolution and its context over the past four million years, providing the link for these far-flung studies. As details continue to emerge about the environment in which early hominids lived, it becomes critical to directly compare and contrast the settings we can document at these sites. Support from the Leakey Foundation has been crucial in allowing me to view this context through both space and time. ■



The Leakey Foundation

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