

Williams worries that the traditional humanistic enterprise of trying to understand ourselves is coming to seem odd, archaic, and unnecessary at a time when education is focused increasingly on the technical and the

commercial. He fears that reflective activity may be preserved, at best, “as part of the heritage industry.” And if that should occur, “it will not be the passionate and intelligent activity that it needs to be.”

SCIENCE, TECHNOLOGY & ENVIRONMENT

Who Killed the Woolly Mammoth?

“Mass Extinctions Pinned on Ice Age Hunters” by Leigh Dayton, “A Multispecies Overkill Simulation of the End-Pleistocene Megafaunal Mass Extinction” by John Alroy, and “New Ages for the Last Australian Megafauna: Continent-Wide Extinction about 46,000 Years Ago” by Richard G. Roberts, Timothy F. Flannery, et al., in *Science* (June 8, 2001), American Assn. for the Advancement of Science, 1200 New York Ave., N.W., Washington, D.C. 20005.

It’s an Ice Age mystery: What caused the sudden mass extinction of huge, exotic mammals and flightless birds in the late Pleistocene era, 11,000 to 50,000 years ago? Climate change has been suggested. But the evidence is mounting against the prime suspect in the case, *Homo sapiens*, reports Dayton, a science writer in Australia.

Dating megafauna-bearing sediments from 28 sites across Australia, scientists led by Roberts, a geochronologist at the University of Melbourne, and Flannery, a mammalogist at the South Australian Museum in Adelaide, found that a continent-wide extinction of large animals took place about 46,000 years ago—not many millenniums

EXCERPT

The Planet Speaks?

The first thing to know about global warming is this: The science is sound. . . .

But it isn’t just the scientists who are hard at work on this issue. For the past five years, it’s almost as if the planet itself has been peer-reviewing their work. We’ve had the warmest years on record—including 1998, which was warmer than any year for which records exist. And those hot years have shown what even small changes in temperature—barely a degree Fahrenheit averaged globally—can do to the Earth’s systems.

Consider hydrology, for instance. Warm air holds more water vapor than cold air, so there is an increase in evaporation in dry areas, and hence more drought—something that has been documented on every continent. Once that water is in the atmosphere, it’s going to come down somewhere—and, indeed, we have seen the most dramatic flooding ever recorded in recent years. In 1998, 300 million humans, one in 20 of us, had to leave their homes for a week, a month, a year, forever, because of rising waters.

Or look at the planet’s cryosphere, its frozen places. Every alpine glacier is in retreat; the snows of Kilimanjaro will have vanished by 2015; and the Arctic ice cap is thinning fast—data collected by U.S. and Soviet nuclear submarines show that it is almost half gone compared with just four decades ago.

In other words, human beings are changing the planet more fundamentally in the course of a couple of decades than in all the time since we climbed down from the trees and began making use of our opposable thumbs. There’s never been anything like this.

—Bill McKibben, author of *The End of Nature* (1989), writing in *In These Times* (Apr. 10, 2001)

after humans appeared on the Australian scene. Though the evidence is circumstantial, Roberts thinks it “definitely” implicates humans. But the lethal blow that humans delivered to frightful 660-pound, claw-footed kangaroos, flightless 220-pound *Genyornis* birds, and other huge beasts was indirect, he believes. Aborigines habitually set fire to the landscape, perhaps to make hunting and traveling easier, and so reduced the megafauna’s food supply. Hunting and climate change may have pushed the big animals the rest of the way to extinction.

“In North America, by contrast,” writes Dayton, “hunters may have been in the thick of the faunical fray.” Ice Age America had saber-toothed tigers, giant antelopes, woolly bison, and woolly mammoths. But by the end of the Pleistocene era, 11,000 years ago, more than two-thirds of the large mammals had died out—once again, after humans had arrived on the scene. According to the “blitzkrieg” hypothesis put forth in 1967 by geoscientist Paul Martin of the University of Arizona, Tucson, early hunter-gatherers followed their prey across the top of Asia to North America, then southward. Wiping out animals locally, the hunters ultimately drove populations to extinction.

To test Martin’s theory, Alroy, an evolutionary biologist at the University of California, Santa Barbara, recently ran computer simulations of such an invasion of human hunters in North America, starting 14,000 years ago, and the impact it would have had on 41 species of large, plant-eating animals. “Alroy found that no matter how he adjusted the variables, mass extinctions ensued,” Dayton writes. “Even the slowest, clumsiest hunters unleashed ecological devastation,” and the largest animals were hardest hit. Hunting and human population growth could have done in the megafauna even without climate change.

But “not everyone is convinced,” notes Dayton. Biologists Ross MacPhee and Alex Greenwood, of the American Museum of Natural History in New York City, say that Alroy’s hunter argument fails to explain why extinctions ceased 10,000 years ago, instead of continuing into the current era, the Holocene. But MacPhee and Greenwood don’t let *Homo sapiens* completely off the hook. They suspect that the human newcomers brought with them a lethal, highly contagious virus, and that it did in the woolly mammoth and the other behemoths of the Ice Age.

No Hocus-Pocus

“The Truth and the Hype of Hypnosis” by Michael R. Nash, in *Scientific American* (July 2001), 415 Madison Ave., New York, N.Y. 10017-1111.

It is a scene familiar from countless movies. A pocket watch swings back and forth on a chain while a voice soothingly intones, “You are getting sleepy, very sleepy.” But hypnosis is more than Hollywood fantasy. It has important, widely recognized medical uses, reports Nash, a professor of psychology at the University of Tennessee, Knoxville.

A National Institutes of Health panel found in 1996 that hypnosis alleviated pain in patients with cancer and other chronic conditions. It also has reduced pain in burn victims and women in labor. A recent review of various studies found that hypnosis relieved the pain of 75 percent of 933 subjects taking part in 27 different



“You’re getting sleepy . . .”