Anthropology

Bruce Bower reports from Chicago at the annual meeting of the American Anthropological Association

Beware of Greeks bearing culture

With the publication earlier this year of the second volume of his book *Black Athena* (Rutgers University Press), Martin Bernal assumed a major role in the ongoing scholarly debate over the roots of Western civilization. In a packed convention hall, Bernal, of Cornell University, elaborated his thesis — buttressed with linguistic, archaeological and historical evidence — that Egyptian and Phoenician cultures greatly influenced the rise of Greek civilization beginning around 3,000 years ago.

The notion that Greek gods, language, technology and political life derived from African and Semitic peoples, either through the borrowing and adaptation of ideas or through military conquest, held sway among historians until the 1820s, Bernal argues. At that point, the "ancient model" gave way to the assumption that white, Indo-European speakers from the north, known as Aryans, conquered Greece and endowed it with civilization. Several factors spurred the sudden academic change of heart, Bernal asserts: racism toward Africans; prejudice toward non-Christians; a widespread belief that Greece represented a formative stage of later European civilization, in contrast to the separate, more advanced Egyptian culture; and popular philosophical arguments that people living in cold climates achieved the greatest intelligence and morality. Racism still fuels academic neglect of Egyptian and Phoenician influence on Greek culture, Bernal contends.

In Bernal's opinion, ancient Egyptians did not belong to a "black race," although they lived in Africa. "Race is a social construct," he maintains. Egyptians carried a mix of physical features from Africa, Asia and the Mediterranean, making the title of his book somewhat misleading, Bernal acknowledges.

"My enemy is not Europe, but the concept of 'pure' civilizations," he contends. "The mixture of different influences has served as the creative force behind all civilizations, including those of Egypt and Greece."

Race falls from grace

Martin Bernal's characterization of race as a social entity, rather than a biological one, echoes a growing trend among anthropologists to reject the usefulness of the three traditional racial categories — Caucasoid, Negroid and Mongoloid — for the study of human populations.

"We should abandon race designations and use geographic designations only, such as western Africans and northeastern Europeans," argues anthropologist C. Loring Brace of the University of Michigan in Ann Arbor, who first promoted this position more than 20 years ago. Racial characteristics, such as skin pigmentation, change rapidly in response to environmental conditions and thus serve as poor clues to anatomical relationships between human populations, Brace maintains. Minor anatomical features that mainly evolved randomly, such as tiny bones on the skull formed by cranial sutures, provide a better comparison for groups living in different parts of the world, he asserts.

Anatomical variations among people of the same race render such categories meaningless, Brace adds. For instance, Mongolians display marked anatomical differences from the Chinese. "To classify the people of China as Mongoloid is on a par with classifying the people of Europe as Swedish," Brace contends.

Others see a place for racial categories. With the advent of agriculture about 10,000 years ago, three general racial groups evolved in Africa, Asia and Europe, replacing small groups of hunter-gatherers, holds Donald E. Tyler of the University of Idaho in Moscow. No labels accurately denote the anatomical differences of the three races, Tyler says. The terms "black," "white" and "Asian" serve social purposes, but each encompasses people with diverse anatomical features, he notes.

Earth Science

Global warming: Checking out the sun

Why has the globe's surface warmed so dramatically in the last century? Scientists and policymakers are anxious to determine whether this climate change stems from greenhouse-gas pollution or from entirely natural processes. In the past, several researchers have suggested that solar changes underlie the 20th-century warming, but their evidence left many experts unconvinced. Now, two Danish geophysicists present intriguing data that revive the sun-climate theory.

Eigil Friis-Christensen and Knud Lassen of the Danish Meteorological Institute in Copenhagen chose a new method to compare solar activity and temperature records. Scientists had previously used sunspot frequency as an indication of the sun's energy output; the Danish duo instead looked at the length of the solar cycle, which varies from 10 to 12 years. They based their technique on evidence that solar radiation is slightly more intense during shorter cycles.

When they plotted solar-cycle lengths against land temperatures recorded in the Northern Hemisphere since the late 1800s, the two curves looked almost identical, they report in the Nov. 1 SCIENCE. They also compared cycle lengths with Iceland sea ice records since 1740. Again, a correlation between cycle length and climate appeared. "I think what we have found is that the global warming up until now has been forced by variations in the activity of the sun," Lassen says.

While the findings have renewed interest in a possible link between the sun and climate change, most scientists remain wary of drawing conclusions. The connection may be merely coincidental; in the past, many impressive correlations have crumbled under closer scrutiny.

Confirmation of the Danish findings would indicate that greenhouse-gas pollution has not significantly raised Northern Hemisphere temperatures to date. But that could change, Lassen notes. "We cannot tell what will happen in the future, but we think there's a good possibility in years to come you will feel the greenhouse warming," he says.

Lassen suggests that other types of pollution in the heavily industrialized Northern Hemisphere may have compensated for greenhouse gases by cooling this half of the globe. In the Southern Hemisphere — for which temperature records are less reliable — greenhouse gases may have had a greater impact than in the north. Scientists say such differential warming could alter the climate worldwide.

The price of ozone erosion

Thinning of the global ozone layer can harm millions of people as well as the world's ecosystems, according to a United Nations panel charged with assessing the environmental effects of ozone loss. When concentrations of this protective gas decrease by 10 percent — as expected by the end of this century — the "extra" ultraviolet radiation reaching Earth's surface will cause 300,000 additional cases of skin cancer and 1.6 million additional cases of cataracts each year worldwide, the panel concludes. Scientists recently announced that ozone has already thinned significantly over most of the globe.

The panel, which released its report last month, notes that land- and water-dwelling plants could suffer, but it emphasizes that scientists still know little about such effects.

At a Senate hearing last month, Susan Weiler, head of the American Society of Limnology and Oceanography in Walla Walla, Wash., testified that new studies in Antarctica by other scientists show phytoplankton growth slowing by 6 to 12 percent when ozone levels dropped 40 percent. These tiny plants anchor the ocean food chain, so damage to them could spread throughout that chain, says Weiler. "We simply cannot predict at this time what the [ecological] changes are going to be," she warns.