

of our national life. "America's version of *apartheid*," he writes, "while lacking overt legal sanction, comes closest to the system even now being reformed in the land of its invention." Since the mid-1970s, he argues, American whites have increasingly opposed efforts to bring blacks into the mainstream, even while they have become more protective of their privileges and open in their racism.

Sifting reams of statistics, Hacker highlights troubling white-black differences in income, education, and other areas, intent upon refuting any explanation for such inequalities other than white racism. Many analysts cite *cultural* causes as well, observing, for example, that the number of black households headed by women has risen in the past 40 years from 17 percent to 56 percent. Hacker simply dismisses this staggering increase by noting that the ratio of black households to white households headed by women has remained a constant 3:1 ratio over these years.

To show that race is everything, Hacker must also argue that all blacks share essentially the same plight. Income data from 1970 to '90 documents the growth of the black middle class. Hacker, however, suggests that newly affluent blacks are still not really middle class. A "typical" black family with a \$60,000 income, he imagines, would be headed by a bus driver and a nurse, but in a comparable white family the husband would be an executive, his spouse a homemaker. For all his statistics, Hacker indulges in considerable speculation about the lives and feelings of whites and blacks, apparently without the benefit of personal interviews. In the process he creates his own condescending stereotypes: Whites are invariably unwitting racists; blacks are perpetual victims who owe their meager gains only to the sufferance of whites.

The verdict in the Rodney King case might appear to lend some plausibility to Hacker's vision of a racist America (although whites joined blacks in a nearly unanimous condemnation of the outcome). Yet Hacker seems to have doubts about his own thesis. After the first reviews of *Two Nations* pointed out flaws in its arguments, Hacker reversed the "spin" of his book by publishing an essay in the *New Republic*, entitled "The Myths of Racial Division." But that, too, does not quite get it right.

Science & Technology

MAPPING THE NEXT MILLENNIUM: The Discovery of the New Geographies. By Stephen S. Hall. Random House. 477 pp. \$30

Each month a single NASA satellite generates enough data to fill the present Library of Congress. A new "Library of Congress" every month? The human mind reels before so much information. Supercomputers must transform this data into visual patterns readable at a glance, or else it would remain a chaos of interminable detail.

Hall, author of *Invisible Frontiers: The Race to Synthesize a Human Gene* (1987), presents an arresting argument: The frontiers of the various sciences are best understood as efforts to organize mountains of information into maps. Just as the maps of Vespucci and Magellan once changed people's notion of the Earth, so today contemporary scientists creating maps of the ocean floor, areas of the brain, the interior of a fertilized egg, the Milky Way, and the location of electrons in atoms are changing our understanding of what the universe is like. Hall escorts us on a tour of 18 scientific disciplines by showing us their maps.

In 1978, for example, the satellite Seasat—in the three months before it ceased to function—fired off continued pulses of radar at the ocean's surface, producing 25 to 30 million measurements. No one knew quite what to do with them. Then William Haxby of the Lamont-Doherty Geological Observatory produced a computerized map of the ocean's gravity field mimicking the topography of the ocean floor. Haxby's map confirmed for the first time the old hypothesis that much of the Earth's land mass had once formed one large continent.

From the bottom of the ocean Hall propels us to the high heavens. When Margaret Geller, John Huchra, and Valérie de Lapparent plotted the galaxies in the northern celestial hemisphere, they were confident that these galaxies reflected a predicted random distribution. Only after measuring 1,100 galaxies, Hall writes, "in a kind of push-button epiphany unique to our computer age, did they produce a picture of their data in the form of a map, and saw, with surprise bordering on stupefaction, that contrary to theory galaxies bunched up in bubbles

and other large-scale structures."

Are such patternings of information really maps? The 11th edition of the *Encyclopedia Britannica* (1910) defined a map as "a representation, on a plane and a reduced scale, of part or the whole of the earth's surface." How far Hall has travelled from that definition is evident in the illustrated examples of his book, which resemble less "geographical" or even spatial representations than drug-induced hallucinations. Hall's cartographic metaphor does strain to include all recent scientific developments. Yet when Gregory Chudnovsky computed π out to the billionth digit—a figure which, if printed out by a computer, would require a stack of paper 12 stories high—he commented, "The usefulness of this information is only based on its physical, spatial correlations, *not* in this idiotic long sequential display of it." That remark, Hall believes, could serve as the coda to today's scientific world.

RUBBISH!: *The Archaeology of Garbage.* By William Rathje and Cullen Murphy. HarperCollins. 250 pp. \$23

The question of who we are has engaged the best minds of philosophy, literature, psychology, and . . . garbology? Yes, garbology. And the answer this new science offers is succinct: We are what we throw away.

The new science is, in most ways, not really that new. Archaeologists have analyzed garbage everywhere from the pyramids of Egypt to the lawns of Monticello for clues to the civilizations that produced it. The Garbage Project, founded at the University of Arizona in 1973, has simply adapted the investigative procedures of the older science to the study of contemporary trash. Since that year, teams of researchers have sifted through neighborhood trash cans and scoured landfills, braving smells and slime and scorning garbage disposers in order to sort and catalogue some 250,000 pounds of trash. As archaeologist Rathje, the Garbage Project's director, and Murphy, managing editor of *The*

Atlantic, relate, some of their discoveries have been startling.

The researchers found, for example, that the three big foes in the environmental wars—diapers, fast food packaging, and polystyrene foam—account for only three percent of landfill content. (One organization had earlier put the figure at over 70 percent.) The real enemy is paper, yard waste, and construction debris. Even plastic, the symbol into which "Americans seem to have distilled all of their guilt over the environmental degradation they have wrought," is less of a problem than previously thought. The cost-cutting practice of "lightweighting," by which manufacturers create the same product with less plastic (its use in milk jugs has been reduced by almost half), has dramatically lessened plastic's burden on landfills.

The Garbage Project found that many of the widespread myths about the disposal of our garbage were little more than rubbish. For example, millions of refrigerators, sofas, tables, chairs, and other household goods thrown away every year are recycled by scavengers. And contrary to common belief, the United States has plenty of room left for new landfills. If properly managed, full landfills can be employed in a range of other uses. In fact, as Murphy and Rathje remind us, many of our cities are already built on the garbage of the past, rising like Venice upon layers of buried trash. Large swaths of New York City and Boston's Back Bay neighborhood stand on covered dumps.

It seems that we never completely escape what we throw away. But in the end, according to the authors' shrewd and lively account, contemporary America, per capita, makes significantly no more garbage than other societies have—or do. (American households, on average, generate even less garbage than do households in Mexico City.) To be sure, many steps remain before Americans achieve "a truly rational garbage regime," but of the "ten commandments" the authors sensibly recommend, the first is that we abjure the notion that our garbage problems constitute a crisis.