

Yellowstone's Unnatural Disaster

"Yellowstone: Ecological Malpractice" by Charles E. Kay, in *PERC Reports* (June 1997), Political Economy Research Center, 502 S. 19th Ave., Ste. 211, Bozeman, Mont. 59718.

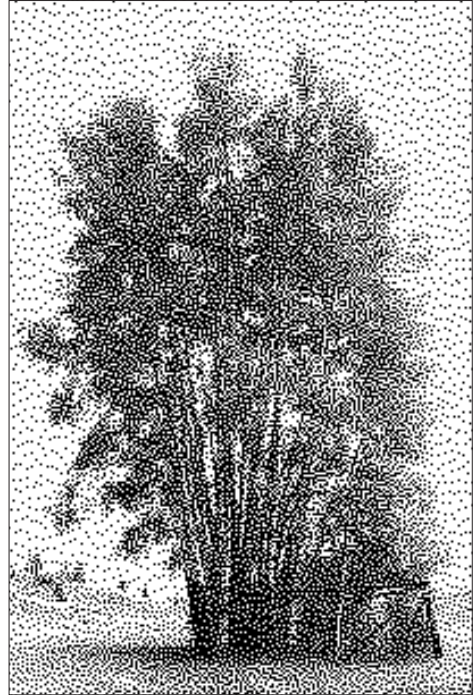
When hundreds of buffaloes from Yellowstone National Park's northern herd roamed outside the park in search of food last winter, they caused a regional uproar. Ultimately, at the insistence of Montana ranchers, worried because many of the animals carried a disease that causes miscarriages in cattle, some 1,100 bison were killed.

But the root problem, argues Kay, a Utah State University political scientist with a Ph.D. in wildlife ecology, has yet to be addressed: overgrazing of Yellowstone's northern range by the park's bison and elk. Wandering buffaloes are the least of the effects. Overgrazing, he maintains, "has denuded the range, destroying plant communities and eliminating critical animal habitat. The result has been a drastic decline in Yellowstone's biodiversity."

Kay blames the overgrazing on the National Park Service's policy of "natural regulation" of the populations of elk, bison, and deer, under which their numbers are left to be determined solely by the available food supply. (The unusually harsh winter of 1997, for example, cut the bison population in half, to less than 2,000.) Until natural regulation was adopted in 1968, the Park Service deliberately thinned the herds.

As evidence that overgrazing has occurred, Kay offers turn-of-the-century photographs of Yellowstone habitat and recent photos he has taken of the same places. Forty-four sets of "repeat" photographs indicate that tall willows on the northern range have declined by more than 95 percent since the park was established in 1872. Other sets of photos show that the area occupied by aspen has shrunk by more than 95 percent. In fenced enclosures, however, the trees are thriving.

The dearth of willows, aspen, and cottonwoods, which beavers need for food and



In 1986, this stand of aspen in Yellowstone, shielded from grazing wildlife, had grown more than 60 feet tall.

to build dams, has prevented the beavers from playing their ecological role, Kay says. As a result, many streams in Yellowstone have cut deeper channels, lowering water tables and helping to destroy vegetation on the banks. Grazing elk and other animals do more damage. A visit to the Lamar River in the park left Oregon State University hydrologist Robert Beschta shocked: "I've seen plenty of examples of streams degraded by domestic livestock. But this is among the worst."

The effects of overgrazing are far-reaching, says Kay. It has even deprived Yellowstone's grizzlies of berries—prompting some bears to leave the park for what frequently turn out to be fatal encounters with the human animal.

The Thief of the Mind

"Plundered Memories" by Zaven S. Khachaturian, in *The Sciences* (July–Aug. 1997), 2 E. 63rd St., New York, N.Y. 10021.

Alzheimer's disease, the most common form of dementia in the elderly, currently afflicts at

least four million Americans, and care for Alzheimer's patients costs \$100 billion a year. If

no cure is found, warns Khachaturian, director of the Ronald and Nancy Reagan Research Institute of the Alzheimer's Association, in Chicago, the number of Alzheimer's patients will double every 20 years.

The insidious disease "quietly loots the brain, nerve cell by nerve cell, like a burglar returning to the same house each night," Khachaturian notes. Forgetfulness is typically the first symptom; then comes "more severe memory loss, followed by confusion, garbled speech and movements, hallucinations, personality changes and moods that can swing from anger to anxiety to depression." Death may not come for as long as 20 years after the first symptoms appear. (The period from onset to death now lasts, on average, eight years, but that is likely to lengthen, Khachaturian says, as the relatively healthy baby boomers age.) Patients are not the only victims: Alzheimer's usually takes a toll, psychological and financial, on their families as well.

The disease was identified in 1901 by Alois Alzheimer, a German physician, but the era of modern research only began 75 years later with the discovery of a link between a biochemical

brain defect (a deficiency of acetylcholine) and Alzheimer's. Scientists next investigated the protein chemistry responsible for the "odd brain-tissue growths" that are now considered "the hallmarks of Alzheimer's disease," Khachaturian says. More recently, researchers have turned their attention to the genetics involved.

In 1993, Allen D. Roses, a neurologist and geneticist at the Duke University Medical Center, identified a gene indicating a greater likelihood of getting Alzheimer's. This year, investigators at Duke and Massachusetts General Hospital have reported finding a chromosome where a second "susceptibility" gene is located. When this second gene is finally pinpointed, Khachaturian says, then physicians should be better able to predict who is likely to get "late-onset" Alzheimer's, the most common form of the disease.

This will present physicians with an ethical dilemma: whether to tell likely future victims of their fate when no cure is yet available. Khachaturian, however, thinks that the genetic approach is bringing the pieces of the puzzle together. He believes that a cure "will appear in the next five to 10 years."

Paradigm Lost

In *The Structure of Scientific Revolutions* (1962), historian Thomas Kuhn (1922–96) overturned the vision of science as a pristine enterprise driven by pure reason. He argued instead that science moves erratically—and not always toward the truth—its direction determined by whatever paradigms are accepted by scientific communities. Like the much-overused term *paradigm shift*, which Kuhn also invented, writes anthropologist Clifford Geertz in *Common Knowledge* (Spring 1997), this idea took on a life of its own.

Despite cries of "subjectivism," "irrationalism," "mob psychology," and, of course, the favored execration of the entrenched these days, "relativism," all of which have been repeatedly launched against Structure . . . its agenda, whatever the fate of its particular assertions, is here to stay. The subjection of the sciences to the attentions, sustained and superficial, informed and ignorant, of historians, sociologists, anthropologists, economists, even of science writers and English professors, unwilling to stop at the borders of disciplinary authority or to cower before the solemnities of Nobel laureates, grows apace. This particular genie, once out of the bottle, can't be stuffed back in, however frightening or ill-behaved he (she?) may be—or to whom. . . .

Kuhn was far from comfortable with doctrines that questioned either the possibility of genuine knowledge or the reality of genuine advance in it. Nor, for all his emphasis on sociological considerations in understanding theory change, was he ever anything less than scornful of the notion that such considerations affect the truth value of theories of how light propagates or planets move.

Kuhn is not the first person to have accomplished, early on in a career, something that upset a lot of apple carts and who then had to come to terms with its far-reaching implications, some more than a bit unpalatable, as it became in its turn common wisdom.