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Contents

- Survival of the American frontier* 1
RFF fellowship and grant awards 4
U.S. nuclear power—Has its time passed? 5
Energy discussion papers 8
Urban national parks—For people or for plants? 9
RFF studies the IAEA 14
Book review 14
Agricultural and food policy conference tapes 15

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Survival of the American frontier

"UP TO AND INCLUDING 1880 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line." These undynamic words—the most famous the U.S. Census Bureau ever produced—are the opening lines of Frederick Jackson Turner's 1893 essay, "The Significance of the Frontier in American History." The young historian argued that the frontier—particularly the pursuit of its land—had shaped much of the nation's development and character, and that the disappearance of the frontier marked a transition to a new, more forbidding national era. For almost a century, the frontier thesis has been one of American history's most influential ideas.

Turner and the Census Bureau thought in terms of a national frontier line beyond which there were fewer than 2 people per square mile—a population density equivalent to Washington, D.C., having no more than 125 people. From 1790 to 1880, the frontier line moved steadily westward, from the Appalachians to the Great Plains. But the 1890 Census was the first that could not show a national frontier line; the march of western settlement, especially growth along the Pacific coast, meant that the frontier had largely disappeared west of the Sierra-Cascades and no longer was contiguous east of them. Thus Turner declared the frontier gone.

Nearly a century later, the declaration looks odd and premature. The idea of a single national frontier line seems a vast statistical abstraction, a national average that is locally meaningless. Suppose we apply the nineteenth-century density standard another way—disaggregating it at the county level—and bring it up to date. The 1980 Census reveals 143 counties, all in western states, with fewer than two people per square mile (see figure 1). Every county lies west of the 98th meridian, a traditional boundary of the arid West (and approximately the location of the last national frontier line in 1880). All but the Alaskan counties lie east of the Sierra-Cascades. The frontier counties have a small total population of 572,000, representing one American in 396. But because western counties are large, the frontier counties have a total area of 949,500 square miles—one-quarter of the United States. For a place that is supposed to have disappeared generations ago, a lot of frontier is left.

The frontier counties fall mostly in four areas: rural Alaska, the Owyhee-Bitterroot valleys of the Northwest, the Great Basin in Nevada and Utah, and the Great Plains from Montana to Texas. Alaska, whose license plates proclaim it "The Last Frontier," is 96 percent frontier counties. Nevada is 80 percent frontier, Idaho 44, Montana and Utah 41, New Mexico and Oregon 27, Nebraska 24, South Dakota 21, Colorado 17, Texas 16, and Wyoming 15 percent. California, with four of the nation's sixteen largest cities, has two frontier counties that are 7 percent of the state. The Lower 48 frontier counties total 13 percent of the contiguous United States.



Figure 1. Geographic center of population, 1790–1980. From U.S. Center of the Census, *Statistical Abstract of the United States, 1981* (Washington, D.C., 1981).

A vast unknown

Much other evidence of the frontier's survival, in the frontier counties and elsewhere, does not depend on the nineteenth century's density standard. According to the Interior Department's Bureau of Land Management, 383 million acres of federal public land—all in the West, comprising more than 17 percent of the United States—never even have been surveyed, and over 50 million more acres were surveyed inadequately more than a century ago. Large chunks of western territory have yet to be fully explored—for instance, the northern Snake River Valley in Idaho, the Wah Wah Mountains in western Utah, Monument Valley in northern Arizona, and the Owyhee River canyons near the intersection of Oregon, Idaho, and Nevada.

Discoveries

Every year archaeologists and geologists make extraordinary western discoveries that are large, above ground, and easily visible, had anyone journeyed near them before. The last twenty years have seen the discovery of the Lassen County Indian rock carvings in northeastern California, Leviathan Cave in eastern Nevada, the limestone natural bridge near Arco, Idaho, and single redwoods of particularly large size in northern California. Machu Picchu, the fifteenth-century Inca settlement on a plateau nearly 8,000 feet high in the Peruvian Andes, was found in 1911; 11,900

feet up on Forest Service land in the Toiyabe Range of central Nevada, a spectacular 8,000-year-old American equivalent, Alta Toquima—the summer refuge of possible ancestors of the Shoshones—was found only in 1978. Other discoveries undoubtedly have been concealed, especially if the discoverers were Indians.

The continuing land rush

Homesteading—settling on free public land, the most widespread and symbolic act of trying to people the frontier—persists to a surprising extent a half-century after the 1934 Taylor Grazing Act supposedly abolished it. Because Alaska's previous territorial status exempted it from the act, homesteading on federal land in the state lasted into the 1960s, and in 1982 the Interior Department revived it experimentally in central Alaska's Kuskokwim Mountains. On several occasions since 1934—for example, at the 1947 opening of the Buckeye Gillespie Dam on southwestern Arizona's Gila River—the federal government relaxed its prohibition on homesteading to promote settlement near specific projects. Because of legal delays, the federal government in 1981 transferred eleven homestead sites to latter-day settlers whose ancestors had first filed applications before 1934; and as of late 1982, the government still was processing similar applications on 178 more sites—84 in Alaska, 64 in Montana, 14 in South Dakota, 13 in Nevada, and 3 in Idaho. Some states, including Alaska, still allow homesteading on state-owned land.

Squatters

Then there is illegal homesteading that, whether temporary or permanent, amounts to frontier-style squatting on the vast western public lands. More than 3,000 Alaskans are squatting on the 78 million acres of state land, many more are squatting on the larger federal holdings, and some are putting up no-trespassing signs. In 1983 it was revealed that Alaska Governor Bill Sheffield held an interest in an illegal duck-hunting camp on a state waterfowl refuge; he publicly renounced his holding, but his opponent in the last election and three judges, including one on the Alaska Supreme Court, have not given up theirs. In southern California's Mojave Desert, Red Mountain (population 130) is a remote settlement of retirees who live year-round as squatters on federal land. "The entire town is in trespass," says a Bureau of Land Management official.¹

Sometimes illegal homesteading threatens to turn violent in the old frontier manner. The national forests, parks, rangelands, and wildernesses conceal apparently large numbers of marijuana growers, timber rustlers, economic refugees, counterculturalists, and fringe political groups. In one, California's Humboldt County, the sheriff's office received 200 complaints in 1982 from recreationists who had been chased off Bureau of Land Management property by armed cultivators of clandestine pot plants. In the Northwest, paramilitary survivalists have used public lands and army-surplus tanks to prepare for Armageddon. In response, the BLM has begun forming its own armed force—a sort of contemporary cavalry—to patrol its land.

War games

Such low-level violence suggests the military uses of the modern-day frontier. Once it was a place to be defended not only against the Indians, but also—at different times and places—against the British, French, Mexicans, Spanish, and Russians. Today it is a place not to wage or threaten war, but to practice for it. The frontier's size, diversity, and emptiness make it a national security asset of incalculable strategic significance, particularly for training troops and testing weapons. For many years after the 1949 Communist takeover in China, the U.S. Army trained Tibetan guerrillas in the Colorado Rockies. The 1980 Iranian rescue mission practiced on the Utah salt flats. The military operates mountain and desert warfare

¹ Jay Mathews, "Desert Squatters Try to Wrest Legitimacy From U.S. Government," *Washington Post*, July 19, 1983.

schools in several other western states, and arctic warfare ones in Alaska.

In 1981 there was a serious Defense Department proposal for a week-long war game in the Mojave Desert to simulate a full-scale Persian Gulf crisis, including destruction of the oil fields and Soviet intervention. The exercise, it developed, could be conducted essentially in secrecy—one minor public road would have to be closed for part of a day. The government has exploded nuclear bombs—some of doomsday size—in the southern Nevada portion of the Great Basin for forty years (and in Alaska's Aleutian Islands until 1973).

Changing, but changeless

The frontier is not what it was in the 1870s. It is smaller, less contiguous and isolated, more law-abiding and regulated, less rugged, dangerous, and impassable. It has more and higher technology, less free land, and no longer provides a safety valve for people unneeded in cities or settled rural areas. Its products account for a much smaller proportion of the overall economy and of the natural resource subset. The frontier looks different: the nineteenth-century cowboy culture that reached its height during the 1866–90 Cattle Kingdom is gone, replaced by a high-tech culture of agribusiness, big mining and timber operations, and large water projects. Except for Alaska, the frontier has not for generations been the dream of those who seek a fortune or a new life.

Yet the frontier lives on, protected from large-scale settlement by its climate (northern Alaska and central Nevada), its terrain (southern Utah, central Idaho, and eastern Oregon), its distance from metropolitan areas (central Montana, the western Dakotas, and most of Alaska and Wyoming), its lack of water, its frequent lack of other exploitable resources, and most federal land policies. There is also the simple fact that much frontier land is almost unlivable, economically unattractive, and abundantly surrounded by more such land.

It seems extraordinary that the nation does not acknowledge the unwon West as a huge empty region in our midst, but there are good reasons why we do not know what to make of the surviving frontier. The frontier is off the beaten track; our national governing classes, as well as many of the rest of us, have no reason to notice it. At best, it is a place to fly over. Barring occasional episodes such as the recent Sagebrush Rebellion, the public lands that form the core of the frontier rarely are a high-priority national issue—their uses no longer determine the future of the American economy, and their disposal to settlers no longer controls the

course of western expansion. The high growth rate of many western cities and towns masks the fact that they amount to burgeoning urban outposts scattered across the far larger, sparsely populated frontier. (This clustering of growing urban populations has led to the ironic finding of recent censuses that many western states have become so urbanized that the West now is America's most urban region.) Leaving aside the brief Japanese occupation of some of the smaller Aleutians during World War II, the nation has not faced a true military threat on the frontier for well over a century.

Most important, the nation largely accepted Turner's argument that the frontier was passing, that America was about to become what he called a "closed-room society"—more like what Europe was rather than what America had been. We therefore have difficulty grasping that the land future of the American West is not yet entirely decided; we assume that the settlement of the West is over. Thomas Jefferson, believing that Americans would need one hundred generations to settle the West but then would be sustained by it for one thousand, went ahead with the controversial Louisiana Purchase in 1803.

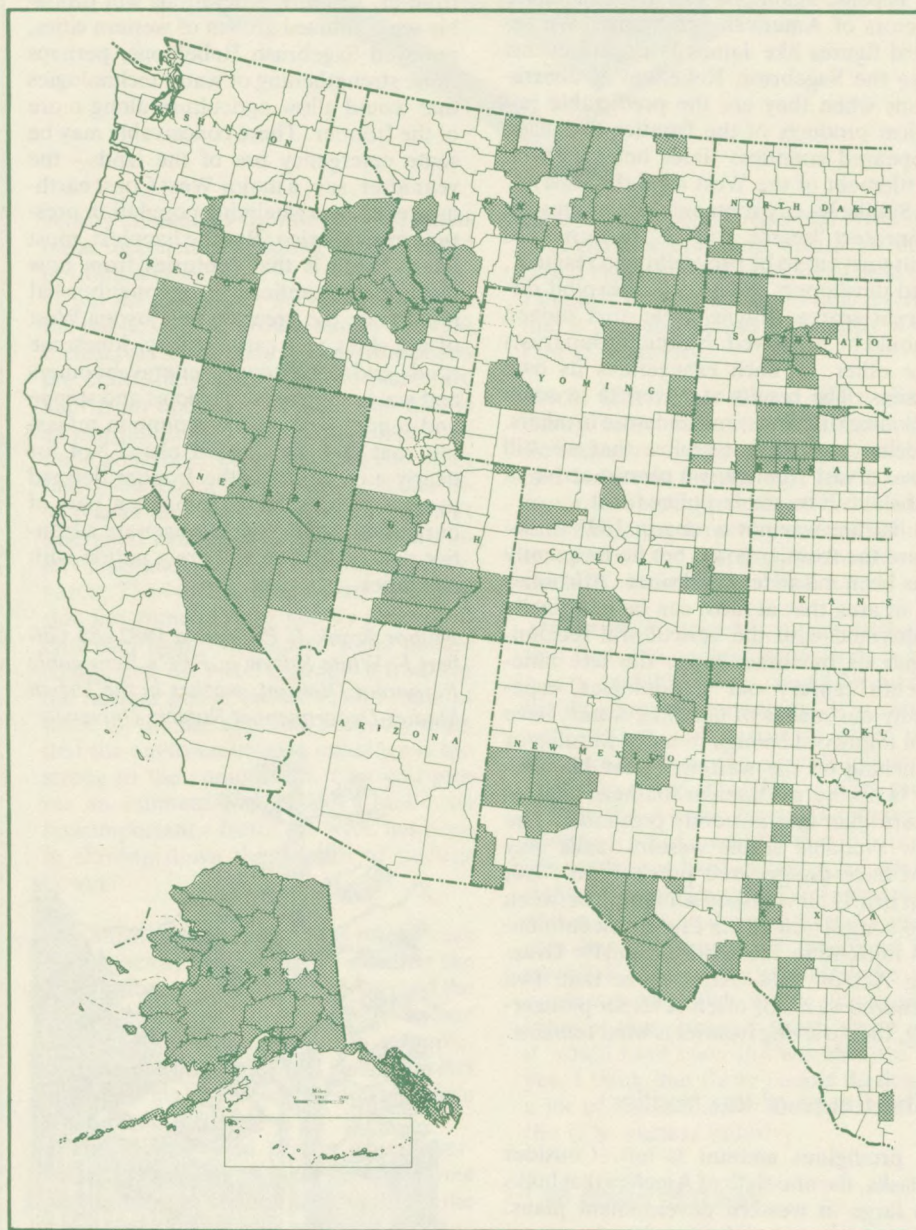


Figure 2. The American frontier, 1980. The shaded areas indicate counties with fewer than 2 persons per square mile. The map's eastern border is the 98th meridian.

Seven generations later, he may have been more prescient than we realize.

Misunderstanding and misdirection

Because we ignore the survival of the frontier, we repeatedly misunderstand the West. We allow the western portions of the Great Plains to become dependent on water-intensive farming methods that cannot be sustained in arid frontier settings, and now are surprised when—for the third time in a century—nature and the economy cyclically turn hostile, Dust Bowls loom, and the Great Plains promise to become again one of the great failure sectors of American agriculture. We regard figures like James Watt and events like the Sagebrush Rebellion as aberrations when they are the predictable political products of the frontier that have appeared countless times before in the settlement of the West (and the East).

Similarly, environmentalists often seek to protect “scarce, fragile” western areas that turn out to be prevalent and resilient, and developers often seek to exploit different scarce, fragile areas that indeed should be preserved. Neither group trusts the other, so each exaggerates its own claims. The results are overuse in some resource situations, and underuse in others. Because we do not realize that we still have a vast frontier, we cannot arrive at a balanced or stable policy for it.

Turner was not wrong in 1893 to declare the frontier gone, but he frequently has been misunderstood since. A frontier is an area that at most can be marginally cultivated with the agricultural technologies of the time. Since the late nineteenth century our technologies, especially our means of handling water, have not improved enough to make farming or ranching on the western Great Plains—or in northern Alaska or southern Utah—more than intermittently profitable. The few available arable western lands may not have disappeared precisely in 1890, but nearly all vanished sometime between the completion of the first transcontinental railroad in 1869 and the Taylor Grazing Act of 1934. After more than two hundred years of often feverish pioneering, the surviving frontier is what remains.

The future of the frontier

A prodigious amount is left. Consider Alaska, the one-sixth of America that bulks so large in western development plans. The state, even after a decade of extremely high population growth (19 percent since 1980 alone), still has an overall density (0.8 people per square mile) that

easily qualifies all of Alaska as frontier by the nineteenth-century standard. Alaska has half the nation's coal reserves, almost half its supply of fresh water, its most fertile fishing grounds, and huge stores of natural gas. Alaska will produce as much oil in the next ten years as the Lower 48 states have since the first well in Titusville, Pennsylvania, in 1859. In the 1980s we have an American North almost as large, uninhabited, virginal, rich, and environmentally vulnerable as the American West was in the 1870s.

We also have large parts of the American West essentially unchanged from the 1870s.

It is difficult to predict the fate of the frontier. Coming generations will probably see continued growth of western cities, renewed Sagebrush Rebellions, perhaps some strengthening of water technologies that would allow agriculture along more of the frontier. There conceivably may be some emergency use of the lands—the year after, say, a major West Coast earthquake, or overwhelming population pressure from Mexico. But the happiest, most likely vision is that centuries from now most of the frontier will be roughly what it is today: the great mythic joyous West of big skies and cattle drives, lonesome roads and oasis towns, energy boomers and water shortages, of cactus and steppe and tundra—of purple mountain majesties that lack the fruited plain. Not for nearly a century has the frontier defined us as a people, but it remains a part of our national life. We no longer are a frontier nation, but we still are a nation with a frontier.

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RFF fellowship and grant awards

Dissertation fellowships

The Food and Agricultural Policy Program, headquartered in RFF's Renewable Resources Division, offers support for the completion of dissertations by doctoral candidates. The winners of the 1984 awards to support research on food, agricultural, and resource policy issues are Scott H. Irwin of Purdue University, whose topic is “Agricultural Options: Pricing and Policy Issues”; and Glenn C. Fox of the University of Minnesota, who will study “Optimal Investment in Agricultural Research.”

The dissertation fellowships are made possible by the Jessie Smith Noyes Foundation and are administered by RFF's National Center for Food and Agricultural Policy under the direction of Kenneth R. Farrell.

Small grants program

RFF's small grants program is designed to support the individual scholar with an innovative idea in a relatively ignored area of research, or the researcher who needs help in bringing a significant research undertaking to fruition. Paul R. Portney, director of the program, recently announced the 1984 grant awards. The recipients, their affiliations, and topics are:

- Richard Bishop, University of Wisconsin, “Contingent Valuation: A Test of Validity”
- Haynes Goddard, University of Cincinnati, “Economics of Environmental Protection in Mexico”
- Kenneth Hendricks, State University of New York, Stony Brook, “Estimation of Dynamic Investment Functions”
- Tracy Lewis, University of British Columbia, “What Have We Learned Since Hotelling?”
- Catherine Morrison, Tufts University, “Productivity Growth and Capacity Utilization in the Electric Utility Industry”
- Rolf Peterson, Michigan Technological University, “The Role of Wolf Predation in Regulating Moose Behavior.”

U.S. nuclear power— Has its time passed?

In this examination of the U.S. commercial nuclear power industry, Resources senior editor Kent A. Price interviews John F. Ahearne, former member and chairman of the principal federal agency that oversees the industry, the Nuclear Regulatory Commission.

Dr. Ahearne is a Ph.D. physicist who has held top-level positions in the U.S. Departments of Energy and Defense and in the White House during the Carter administration. President Carter appointed him to the Nuclear Regulatory Commission for a five-year term ending in June 1983; he served as NRC chairman during a period following the Kemeny Commission's review of the accident at Pennsylvania's Three Mile Island nuclear power plant. In February 1984 he became vice president of Resources for the Future.

PRICE: As you are aware, the commercial nuclear power industry in this country is in serious trouble. New plants have been canceled in mid-course, new orders have not been forthcoming, and the press is full of stories about the possible demise of the industry. According to some, part of the problem is that the critics of nuclear power—the environmental movement, if you will—raise questions, cause delays and litigation. The pro-nuclear power people—the industry spokespersons—charge that these so-called intervenors on the environmentalist side are the principal causes of the delays in construction and licensing of plants, the principal causes of cost overruns. Do these intervenors really cause big delays in licensing plants?

AHEARNE: I don't think so. Actually, I think that the intervenor effect has been exaggerated both by the industry and by the intervenors themselves. Let me explain.

The industry side is that intervenors have been a principal reason why plants have been delayed. Back when I worked in the White House, I tried to see whether that case could be supported from any data, and I looked at a lot of nuclear power plants that had been raised as cases by the industry. And in every instance, it really was not the intervenors who had caused the delay—but problems with the industry's construction or the design or the process they went through in locating the plant. When I moved to the Nuclear Regulatory Commission, I kept looking to see whether intervenors could be identified as a principal cause of delay, and I never did. It certainly is true that utility executives' ulcers, nerves, and temperament were ad-

versely affected by the intervenors, but as far as their actually causing delay, I could not find a case.

On the other side, the intervenors and the public interest groups like to describe themselves as the main reasons that plants are built safely or that unsafe plants are kept from operating. I think that also is an exaggeration. I believe that they have some positive effect, but just as I couldn't find good examples to show that the intervenors had delayed plants, I couldn't find good examples to show that the intervenors had added significantly to safety.

PRICE: The Nuclear Regulatory Commission has come in for a goodly amount of criticism, from both sides. Some people charge that the NRC is simply a front for the nuclear power industry, and some of those on the industry side probably think that the environmentalist influence is too strong in the commission. Can you give me an estimate—an insider's look—on how important a factor the NRC has been in slowing down the growth of nuclear power?

AHEARNE: I don't think it has been a very major factor, although the rules that the NRC enforces certainly have increased the cost of nuclear power plants and in some cases have slowed it down. For example, the National Environmental Protection Act has had a major impact on slowing down some plants.

The NRC's legal process is cumbersome, it's lengthy, it leads to what some people have described as a sham in the sense that there's a lot of action, a lot of noise, and a lot of argument, but there doesn't seem to be much effect on the overall process. That's typical of adjudi-

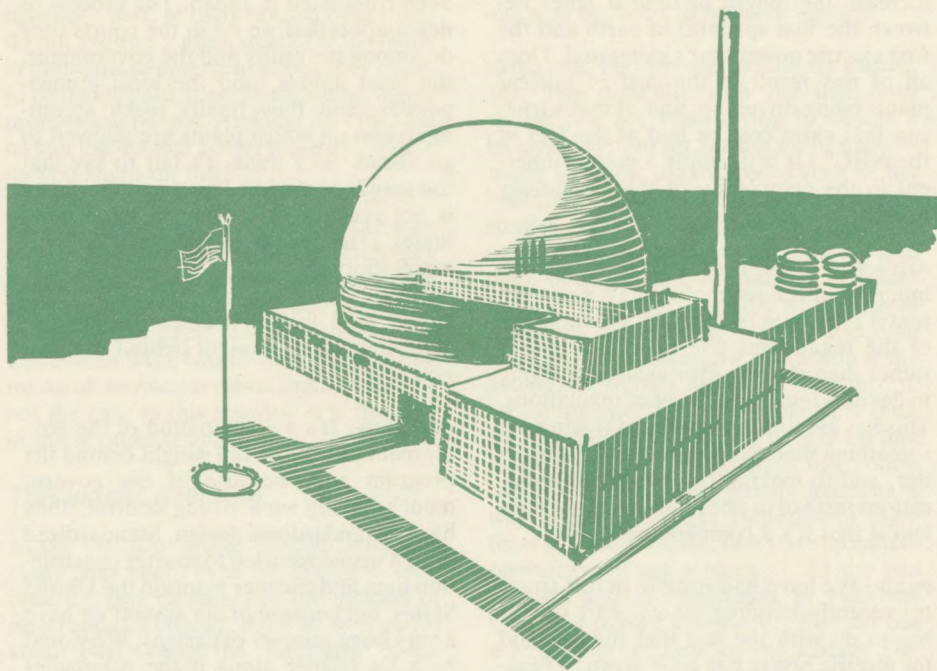
cation, in my belief. Also, the NRC is an inefficient organization with a lot of internal bickering and squabbling, and it is, I think, overly legalistic—a characteristic that it probably shares with much of current U.S. society.

PRICE: If it hasn't slowed down the industry more than it would have been slowed anyway because of general legal and economic factors, say, has it been a factor in keeping plants safe? You indicated that the intervenors can't claim a lot of credit for keeping plants safe—can the NRC claim that credit?

AHEARNE: To answer your implied question first, the nuclear industry does have a very enviable safety record for a large, highly complex technology. It stands up very well in comparison to other technologies, such as the aircraft industry. I do believe that the NRC and its predecessor, the Atomic Energy Commission, deserve a lot of credit for that. Their people work very hard in reviewing applications, in developing rules and regulations, and in inspecting the plants, and I believe they have improved the quality of construction. They have elevated the seriousness with which utility management looks at these projects much above what it would have been in their absence. So, yes, I think that those people do deserve a lot of the credit for the safe record of the U.S. nuclear industry.

The costs of delay

PRICE: We've just discussed safety and the application of various federal laws in the process of constructing and licensing a nu-



clear plant. Both of these things tend to increase the length of time it takes between the first spadeful of earth and the first electric power that's generated. Does all of this result in the cost of nuclear plants being driven up, and, if that's true, can that extra cost be laid at the feet of the NRC? Or is it simply a matter inherent in the complexity of the technology itself?

AHEARNE: I think to a large extent it's inherent in the technology. To some extent it's the fault of the NRC in that many of the regulations pile upon themselves rather than starting over again and trying to devise a less complex set of regulations. This has led, in some cases, to tearing out something that was put in under NRC order, and to making two or three modifications instead of one. But the basic problem is that it's a complex technology.

PRICE: We have had trouble in this country recently building plants. Part of this has to do with the fact that the demand for electric power has gone down, a function mostly of higher energy prices. But still, in other countries nuclear power has not been in this kind of trouble. Why is it that in France, for instance, in Japan, in Germany, they can build plants quicker, cheaper, and—apparently—safer than we can in the United States?

AHEARNE: It's often said that Japan and France and Germany do much better in building their plants, but I think usually by people who aren't quite familiar with the details of those countries' operations. France, for example, does build its plants quicker than we do and, since time is money when you're borrowing large amounts of capital to build a plant, therefore cheaper. But in France there is one company that builds them, one company that operates them, and one company that designs them. And all of those companies have a very substantial government involvement. The influence of the government keeps the design standardized and also accelerates much of the review process that in this country is set up in the Administrative Procedures Act—a lot of procedural rights of citizens. In France, the government handles all of that.

Germany and Japan, on the other hand, have had a lot of problems with their nuclear plants. The German nuclear industry essentially stalled for five to seven years as battles were fought out in the courts because of the extremely complex legal system they have for moving plants forward. In Japan a few years ago they launched a major review to find out why plant construction was taking so long—twelve to fourteen years. That's not the type of number we hear about. We hear about the much shorter time it takes once

all the lengthy process of negotiation has been completed in Japan. The process of negotiation that we do in the courts they do among the utility and the government, the local unions, and the local municipalities, and they finally reach accommodation on which plants are allowed to go ahead. So I think it's fair to say that the length of time in Japan and Germany is not really shorter than in the United States. The length of time in France is much shorter.

PRICE: And that is because the government puts its full weight behind the program?

AHEARNE: It's a combination of the government putting its full weight behind the program and, because of the government's having such strong control, they have a standardized design. Standardized design would have led to shorter construction time and cheaper plants in the United States, but because of our system we have a very large number of designs. We would be a lot farther along if the companies didn't have to keep making a sales pitch that they will make a slightly modified version for company X and another for company Y and still another for company

Z. In France, if you want to buy one, you buy the one model.

Assessing the risk

PRICE: The Three Mile Island affair in March of 1979 was a very big accident but, as the nuclear industry likes to point out, no one was killed there. It was a contained accident: it was serious, but certainly not a disaster. But it was a disaster in a way for the prospects of the nuclear industry, because so much weight is given to public opinion in this country, to political acceptability. It can be argued that Three Mile Island possibly dealt a fatal blow to the industry. When will the next accident happen? And is it likely to be on the order of Three Mile Island?

AHEARNE: Three Mile Island clearly was a financial catastrophe: it put a major utility on the verge of bankruptcy and it's not yet clear how it's going to get out of that financially. And it was a catastrophe psychologically to a large number of people living around the plant. The mental stress that those people went through and still are going through has been traumatic. As



you correctly say, it also put the industry as a whole on the ropes.

You can go through a probability estimate based on U.S. experience, and you end up with a probability of another accident like Three Mile Island occurring before the year 2000 of between 20 percent and 80 percent if there have been no major changes since the Three Mile Island accident to improve safety.

PRICE: But the Three Mile Island accident was the result of a whole series of unique progressions of malfunctions going wrong at the same time. Is that likely to happen again?

AHEARNE: All big accidents are the result of a lot of unique progressions going wrong at the same time. What I'm saying is that probability analysis leads to the 20 to 80 percent estimate, if no major changes have occurred. The NRC and the industry argue that safety has been improved by a factor of 10, which then knocks it down to a less than 10 percent probability. My own guess is that there will be another accident of that magnitude before the year 2000. The only questions are whether enough safety features will have been put in to make sure that nobody will be hurt off-site, and whether the insurance system the utilities will have developed will be enough to prevent the kind of bankruptcy threat that Metropolitan Edison and its holding company have gone through.

PRICE: That leads to a kind of bottom line question. Are U.S. nuclear plants safe? Can people have confidence in these plants? If the country is going to be depending for a current 13 or 14 percent of its electricity on nuclear plants and a projected increase as new plants come on-line, can the public have confidence in these things? Even a 10 percent chance of major error seems pretty high to me.

AHEARNE: I think the public can have confidence that the plants will be safe, but the pressure ought to be kept on the regulators and particularly on the utilities. The fundamental weakness, in my mind, in the American utility industry is management. I don't think that the people who own nuclear power plants and manage their construction and operation understood the difficulty of the technology. They tended to approach it as they did their old coal-fired plants. They didn't appreciate that this was a different type of technology, requiring much more competent people, and they have been reluctant to face up to the fact that they essentially are in a new generation, a new technology.

PRICE: Some have said that the people who operate nuclear power plants ought to be regarded as comparable to, say, airline pilots. That is, they're both groups

running highly technical machines, but machines that, in their normal operation, do not require a great deal of skill—only in moments of emergency. But they ought to be highly paid, highly competent, highly professional people. And that isn't the case now in the nuclear power industry. Where do you stand on this?

AHEARNE: I'm one of those who say they ought to be like airline pilots. I think they ought to be college graduates, they ought to be competent technically, and they ought to be paid to keep that level of competence behind the controls in the operating rooms of the nuclear power industry. That's not the case in this country; it is the case in many other countries.

The waste dilemma

PRICE: Nuclear waste storage concerns many who might even be willing to concede the general safety of the process of generating electricity, but who worry a lot about what's called the "back end" of the nuclear fuel cycle. That is, what do you do with this literally hot stuff that is left over afterwards? There are fuel rods, there are things as seemingly innocuous as white laboratory coats, things that vary in the range of danger they offer to living organisms, from those that must be isolated for a few years to those that would have to be isolated indefinitely. One could even say infinitely, in terms of human lifespan, or, for that matter, the lifespan of most governments. Just how will the United States solve the problem of getting rid of nuclear waste?

AHEARNE: You mention the wide range of hazard associated with nuclear waste. At the low end of that range—the white lab coats and so forth—the present solution is to package the items and bury them in relatively shallow trenches, a few feet deep. The package simply is dumped in the trench and earth is packed over it in an area where water does not seep through. At the moment there are only three of those sites in the country—in South Carolina, in the state of Washington, and in Nevada. There's a big effort under way by the states to try to develop five or six regional sites around the country. Incidentally, those have to be created independent of what happens to the nuclear power industry, because there is a lot of medical and other waste material to be disposed of in low-level waste sites.

The high-level waste is the real problem. Those are the items whose hazardous lifetimes are in the tens of thousands of years or at least a thousand years. They primarily are the product of nuclear power plants—the used-up nuclear fuel rods. Or, if reprocessing were to occur, the waste that comes from that.

PRICE: When you say "primarily," do you mean as opposed to military wastes?

AHEARNE: As opposed to military wastes, yes. The difficulty with the high-level wastes has not been trying to devise a technical system for getting rid of them—many scientific organizations such as the National Academy of Sciences have done studies on how you can do it. All have reached the conclusion that storing waste deep underground, encasing it in something like a glass, perhaps with a metal container around that, will be adequate to provide the necessary protection if the geological studies are done carefully to locate the site. The real difficulty is finding any state that is willing to take on that kind of site: so far no state has volunteered. In fact, what usually happens is whenever the Energy Department identifies a potential state, that state mobilizes opposition to get it blocked. At the end of 1982 and the beginning of 1983 the Congress passed a waste act that set out a lengthy procedure for the Energy Department to find sites, characterize them—that is, go through the technical analysis—discuss it with the states, and present it to the Congress. If the state objects, Congress must override the state's objection. To many of us, that makes it still a very "iffy" proposition. The Energy Department hopes to be able to start construction on the first nuclear waste repository sometime early in the 1990s.

PRICE: You're suggesting, then, that it's mostly a political and public relations problem and not really a technical problem at all. Is that a fair characterization?

AHEARNE: Well, I wouldn't say "just"—I think it's fair to characterize it as primarily a problem of trying to develop public understanding and treat the public's concern adequately. Those, in a democracy, are fundamental issues. And so far, the government has done a very poor job of it.

No need for the breeder

PRICE: Not long ago Congress drove what perhaps is the last nail in the coffin of the breeder reactor in this country. I know it's a technical subject, but can you give our readers a simple explanation of a breeder reactor? Does it have a future in this country or elsewhere?

AHEARNE: Uranium, when it comes out of the ground, basically is of two kinds. When you send a neutron into one kind, the atom splits, producing energy. If you do it very quickly, you get an atomic bomb. If you do it very slowly and carefully, under controlled conditions, with very little of

it, you get a nuclear reactor. The nuclear reactors we have in this country work on that kind of uranium. That actually is a very small percentage of the uranium found in the ground—less than 1 percent. If you send in a neutron to most uranium, it doesn't split; you don't get energy out. But if you send in a high enough energy neutron, the uranium will change to something that can fission—for example, plutonium—which then can be used in a nuclear reactor to generate energy. What a breeder does is to use the uranium from the ground, suitably packaged and modified, and generate high-energy neutrons for other material, for example, plutonium. While generating those high-energy neutrons you do get heat out, you can produce electricity, but at the same time those neutrons then go into the rest of this unusable uranium, transforming it into a usable form. So you end up "breeding" fuel. You make more fuel than is used up, because you have taken some of that unusable material and made it usable. Therefore, the real advantage of a breeder is that you end up with more fuel.

PRICE: So if fuel is scarce, that's a big advantage.

AHEARNE: That is the sole argument: if fuel is very scarce, it's a big advantage. Back in the early 1970s when it was forecast that a thousand nuclear plants would be built in the United States by the year 2000, and it was thought that we were running out of uranium, it appeared that if we wanted a nuclear future we were going to have to go to the breeder just to be able to have fuel. What has happened since then is that we have found more uranium, and instead of a thousand plants, there probably will be only a few more than a hundred by the year 2000. So the fuel crisis is no longer there. The breeder is a more complicated machine, and even its most ardent proponents agree that it will cost more to build. Consequently, its reason for being adopted in the United States has disappeared.

There are breeder programs in a few other countries. The Soviet Union has a big breeder program. France is the most noticeable one—it has pushed its breeder program very hard. Whether that's going to become another Concorde for France is still an open question. But France does have a reason we don't have: we have a lot of uranium, as the United States is one of the largest holders of uranium resources in the world. France has none. French nuclear power plants have to run on imported fuel. Consequently, it's very much to their advantage if they can figure out some way to get a lot more out of their fuel—and a breeder would do it.

PRICE: When you say "Concorde," do you

mean something that works well but costs too much?

AHEARNE: Something that is a technological leader at a time far before it's really needed.

Fear and the fatal flaw

PRICE: There is fear—I think we have to recognize this—about the nuclear process. One thing people are concerned about, particularly when something like Three Mile Island happens, is that a commercial nuclear power plant, an installation that produces electricity, essentially through a fancy way of boiling water and turning a turbine—they are afraid that that facility can "blow up" like an atomic bomb. Is this possible, or is it not?

AHEARNE: No, it's not possible. Basically, to get a sustained nuclear reaction to go very rapidly, which is what becomes a bomb, you need much more highly enriched uranium, much more concentrated uranium than is used in a nuclear reactor. A reactor typically contains uranium that is only 3 percent material that can fission and produce energy. In a bomb, typically it's 90+ percent. There is a threshold below which you no longer can get the fission reaction to occur for an explosion, and that point occurs long before you reach 3 percent. So, physically, you cannot get a bomblike explosion out of a nuclear power plant. You can, of course, generate a lot of energy and a tremendous amount of steam, which can force a rupture and can release a lot of radioactivity. That can happen. But an atomic explosion cannot.

PRICE: So we can talk about serious accidents, but people don't have to worry about an atomic explosion occurring at their local friendly electric-generating plant.

Dr. Ahearne, a summary question. I opened our interview with allusions to the troubled state of the U.S. nuclear power industry. Does the industry have a future in the United States?

AHEARNE: I've written several articles in the last couple of years on that question. In one I called the nuclear industry a Greek tragedy and identified, as in Greek tragedy, the fatal flaw. That fatal flaw, I think, is the lack of public acceptance that leads, perhaps indirectly, but eventually, to poor management of the nuclear industry. So I conclude that unless the management approach to the nuclear industry changes substantially, there will be no future in this country for nuclear. At the moment, I do not see those changes being made.

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Urban national parks—For people or for plants?

PERHAPS NO QUESTION has been so debated within the National Park Service as that of the appropriateness of urban parks in the National Park System. Aside from the use-versus-preservation question, no issue has been its equal in forcing the agency to ask itself questions about its basic mission or in involving it in controversy. Moreover, it is a policy area in which definitive commitments, rather than settling things, seem only to launch new rounds of dissension and indecision.

Although the agency's assumption of urban responsibilities is commonly viewed as very recent, the Park Service has been involved with parks in and near cities for a long time. In 1933 it was given responsibility for managing the parks of Washington, D.C., and the following years saw historic sites in several cities added to the National Park System. For example, the agency took over responsibility for managing Federal Hall in lower Manhattan in 1939. Independence National Historical Park in center city Philadelphia was established in 1948, and Jefferson National Expansion Monument, located on the waterfront in downtown Saint Louis, was authorized in 1954.

Federal interest in open space in and near major urban places quickened in the late 1950s and began to gather momentum in the next decade. By the mid-1960s several things—the New Conservation, the Urban Crisis, and the Great Society—had come together to place urban open space high on the federal agenda. This immediately made a previously neglected policy area an attractive piece of bureaucratic real estate, one which promised great benefits to agencies that could claim a part of it. However, for the Park Service there were serious drawbacks to an urban commitment on a large scale, and agency leadership was well aware of them.

First was the question of its ability to assume the role of lead agency in any urban open-space policy thrust by the federal government. Its western, nature-oriented image, which had served it so well in the past, made the Park Service seem to many an inappropriate and unqualified agency for an urban mission. There undoubtedly was something to this: large urban parks would present the agency with management problems, constituents, and demands it had not previously encountered.

Moreover, the agency had no proven criteria for selecting urban parks. It did not have a clear idea of which parks would be good ones from the standpoints of ease of management or political support, nor even which ones would be able to meet their stated objectives. One thing was cer-



tain, however; urban parks would require large staffs, large development outlays, and large budgets, perhaps large enough to starve the other parks in the System. This meant that a major urban commitment would be a very big gamble at unknown odds.

It also was clear that an urban commitment would mean an infusion of new kinds of professionals into the agency—sociologists, psychologists, urban recreation and design specialists, and so on. Urban parks therefore would mean that the traditional rangers and managers would have to share their agency—and its rewards—with persons having very different skills and values.

Nevertheless, by the end of the 1970s the National Park Service was deeply and directly involved in urban recreation. The Gateway and Golden Gate National Recreation Areas had been authorized in New York and San Francisco, along with other NRAs in the Cuyahoga Valley of Ohio, along the Chattahoochee River in Georgia, and in the Santa Monica Mountains of California.

Incompatible purposes

Secretary of the Interior Walter Hickel, speaking in support of urban national

parks, said, "We have got to bring the natural world back to the people, rather than have them live in an environment where everything is paved over with concrete and loaded with frustration and violence."

Of course, there is a very good reason why urban areas are paved over with concrete: the natural environment will not stand the intensity of use that urban life subjects it to. Historically, permanent concentrations of people have meant intensely altered environments. Places of concentrated urban leisure must be modified considerably to serve their function. Hickel could ignore this fact because he did not have to face the hard realities of implementation that park managers and planners would have to confront.

The preservation of nature and indigenous landscapes is incompatible with mass recreation. No amount of artful design will cover this fact. A million people cannot walk in solitude through unspoiled nature. At a national seashore, for example, they have to have toilets and places to change and throw their litter. If such places are not provided, people will improvise. A million people also will need lifeguards to protect them, police to restrain and sometimes remove the inevitable law-breakers, and sanitation workers to clean up the mess they leave when they go home.

Without these services and facilities, a beach is not capable of fulfilling the mass access goals that figure in the rhetoric justifying it. Yet, if they are provided, the resource's unspoiled quality is destroyed. Compromise is possible, but a compromise is just that—forsaking the complete attainment of one goal for the partial attainment of another.

A contradiction thus lurks in the very heart of the urban national park concept. The park is to be an agent of the improvement of urban life, and it is also to be an agent of preservation in the face of altered natural resources and their integration into the modern urban system. Out of this central contradiction came the ideational crosscurrents and conflicting political interests that have formed the context of the Park Service's urban park policies.

Deterrents to mass access

For those who lived on the periphery of the metropolis, the arrival of the urban public in search of recreation always has been viewed with horror. In the 1920s and 1930s, the estate owners on the north shore of Long Island and the farmers and fishermen on the south shore fought Robert Moses's recreation plans with equal vigor (and, in the end, with equal lack of success).

To those in Brooklyn and Queens neighborhoods near the proposed Gateway National Recreation Area, who had watched as the city's shifting racial pattern

and sequence of housing changed white neighborhoods into minority ones all around them, the prospect of being outflanked by a massively used, multiracial national recreation area was not pleasant. Fearing that a general public would bring with it high levels of litter, violence, and vandalism, they fiercely fought the development of Gateway as a truly regional facility because, to them, the very survival of their neighborhoods was at stake. In other cities, white neighborhoods came to feel similar paranoia as they saw the political power of minorities increase, while city hall, sometimes under black mayors, came to be viewed as unsympathetic to their needs.

Because they had such a stake in park development, the local organizations that were active in the establishment of the urban parks usually remained active in overseeing their development. In some cases, important battles were won in the early days of park planning. In others, the ability of the Park Service to resort to condemnation was severely curtailed when Congress, prompted by the wishes of park neighbors, imposed low limits on the amount of land the Service could acquire or on the amount of money it could spend to develop recreation facilities.

Large-scale socioeconomic trends also worked in favor of local wishes and against the development of urban parks into facilities for the public *en masse*. First, the days of cavalierly running expressways through city and country were over by the time the first urban parks were established. The local opposition to, and a po-

litical disaffection with, road building as it was practiced in the 1950s and 1960s, plus the general impoverishment of the public fisc, meant that it was no longer possible to plan a facility for a metropolitan public and assume that once the facility was established, the means of getting there would follow. If anything, the reverse was now the case; the availability of roads, bridges, and public transportation was a severe limiting factor in recreation planning. By the 1970s planners were asking themselves if it was wise to plan regional recreation facilities if regional access did not already exist. They had the example of Fire Island: more than a decade after the establishment of the national seashore as a metropolitan facility, getting to it was still an ordeal of delay and expense.

A second trend over which the agency had little control that encouraged the development of the urban parks along local, neighborhood lines was the rise of participatory, or open, planning. The citizens who took advantage of participatory planning usually were those who felt they had the largest personal stake in the parks—those who lived close to them and wanted to see their development produce as few changes and disturbances in their lives as possible. Those who already used the areas in their present form and who, therefore, did not favor changes that would threaten their enjoyment, also were likely to take advantage of direct public participation.

The mandated public meetings on the general management plan turned into raucous, hostile encounters between the Park Service and citizens who accused it of wanting to destroy their neighborhoods. The other side of the argument—that inconvenience for a few might greatly improve recreation opportunities for the many—was not well articulated through this process. Citizens who might have benefited from ambitious planning for urban parks lived far away, were scattered throughout the metropolitan area, and undoubtedly had other things closer to home to worry about.

Support for the parks

There were, however, several voices that spoke for including more than local considerations in park planning. For example, some metropolitan political interests had designs for urban national parks that ran counter to those of the local community groups; these interests wanted to see park access made as wide as possible. In the case of New York, two organizations in particular played this role—the Regional Plan Association, a venerable organization that had promoted integrated regional planning for almost fifty

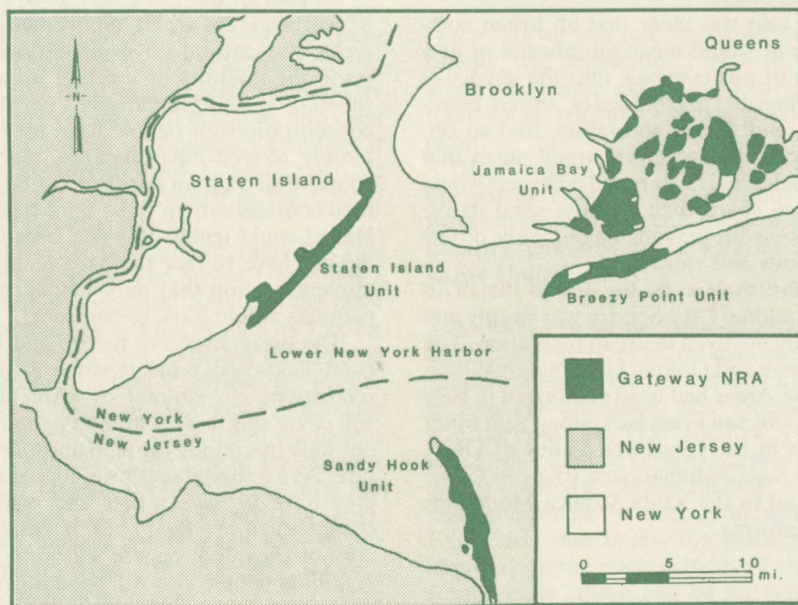


Figure 1. Gateway National Recreation Area. (From Ronald A. Foresta, *America's National Parks and Their Keepers*, Resources for the Future, Washington, D.C., 1984.)

years and that indeed had first proposed Gateway in the early 1960s; and the Gateway Citizens Committee, a "citizens" organization with individual and corporate members, a decidedly upper-class cast, and a philanthropic interest in seeing that the park was made available to the city's poor.

Staying with the New York example, organizations representing minority groups and politicians from minority districts insisted that the park should serve their members and constituents, and this meant increased access to, and expanded facilities in, the units that made up Gateway. Thus arose what has been called the Manhattan Alliance, a coalition of the unquestionably poor and the clearly privileged, both putting their weight behind Gateway in the service of the entire region. There were similar alliances in Cleveland, Atlanta, San Francisco, and Los Angeles speaking for increased access to their cities' urban national parks. The voices speaking for broad access and large-scale development were not always well articulated, however, and by and large they were ineffectual.

Conflicting guidelines

In the face of this contest of political power and points of view, agency tradition offered conflicting guides. Traditions could be used to support either a mass recreation or a preservation role, either a policy in which the Park Service tried to incorporate its parks in or near cities into the metropolitan systems, or one in which the Park Service actively resisted such incorporation.

Out of these traditions, two general positions emerged among those who dealt with urban parks. One agency planner, discussing urban parks, told the author that "there are two kinds of people in the Service, the resource types and the people types. The former say manage the people to preserve the resource, and the latter say manage the resource to serve the people. The Service looks at some of its parks, and it can't figure out whether it ought to be preserving resources or serving people."

The view held by the "people types" was considered the traditional one among agency managers and planners. It was the metropolitan view that emphasized mass access, large-scale facilities, and fee-simple acquisition of parkland. Implicit in this view was the notion that the Park Service should be an instrument of the expansion and rationalization of the metropolitan system, and, through it, of progress as it is conventionally considered. A corollary of this view was that the preservation of the indigenous landscape and its human and natural characteristics was clearly secondary to popular access and service to the entire region.

This metropolitan view identified the national interest with the interests of the entire metropolis and tended to see opposition to what it interpreted as metropolitan ends as selfish and narrow-minded.

The complement of the metropolitan view was the localist view. Whereas the former was considered traditional, the latter was considered modern. It was associated with the dynamic younger planners and it tended to be far more local in its sympathies. It stressed preserving the indigenous landscape for the high value it had to those relatively few people whose lives were lived on it, or who took special enjoyment from it. The localist views of the younger planners reflected a sensitivity to the political realities of urban park planning. Indeed, the younger planners of a localist persuasion in the Park Service



stressed their realism as frequently as their idealism. According to one, "Listening to [a park's neighbors] is simple common sense. They can stop you dead in your tracks, so what are you going to do? When they talk, you listen." Another planner, who had successfully handled several politically sensitive park-planning assignments, usually proceeded by listening carefully to what those living close to the parks said they did or did not want.

There was clearly an affinity between planners who had to confront strong local power and ideas that justified acceding to that power. A moral position that emphasized their sensitivity to local demands and stressed the Park Service's role in preserving indigenous nature, the local community, or the traditional landscape allowed Park Service personnel to respect local demands without feeling that they had sold out their agency's principles. If it could be argued that the Service's true responsibilities in urban areas were largely local, then there was no hypocritical set of double messages; upholding Service principles and not arousing the locals were confluent, not conflicting, goals. The stronger the local power, the more useful to managers and planners was a localist view of the role of the urban national parks.

Gateway National Recreation Area

The degree to which local pressure and the localist view have shaped the devel-

opment and management of the urban national parks can be seen in the agency's plans for these open spaces. Gateway National Recreation Area is one of the two oldest urban parks, and the largest in terms of staffing and annual budget. In the original 1969 plan, Breezy Point was to be the recreation center for the park. Mass recreation was clearly to be the unit's primary goal, and the Breezy Point landscape of prior structures and use was to be wiped clean. Obsolete Fort Tilden was to be removed, and so was the Breezy Point Co-op, a mixed enclave of vacation and all-year houses. Existing roads were to be obliterated. In their places were to be ferry terminals and broad promenades leading directly across the narrow peninsula to the large public swimming beaches. Behind the beaches the agency planned golf courses, playing fields, parking lots, an amphitheater, an environmental education complex, and areas of what it called creative open space. At the tip of the point was going to be a "walk-and-wander" nature area. The facilities would be designed to accommodate 300,000 people on a summer weekend day and 27 million visitors a year.

The changes made in response to local pressures are great and obvious in the 1979 plan for the unit. The slate is no longer to be wiped clean of prior structures. The two sections of the Breezy Point Co-op are still there, and so are the roads connecting them to the rest of New York City. The residential enclaves proved politically immovable after they enlisted the support of both the city government and the local congressmen. U.S. Army and Coast Guard facilities also remain; they too proved immovable in the face of demands that they stay. Fort Tilden has been declared an historic district and its ammunition storage magazines, Nike missile sites and radar tracking stations have been declared historically significant, and the Park Service is to restore and interpret many of these features. The plan for what remains is one of conceptual and physical clutter, with very different goals than those originally planned.

Change in emphasis

Accommodation of mass recreation and ease of public access have been deemphasized. The two centrally placed ferry terminals on the original plan have been reduced to one, and it has been shifted far west of the best beaches. The promenades to take people directly across the peninsula from the ferry terminal on the bay side to the beaches on the ocean side are gone now, and so are the playing fields and the walk-and-wander area. The large swimming beaches are greatly reduced,

while access to most of the point relies on a Rube Goldberg arrangement of interconnected shuttle bus routes. The exact degree to which mass recreation has been deemphasized can be seen in the number of visitors now being planned for. Whereas peak-day planning initially aimed at accommodating 300,000 people, that number is reduced in the current plan to 90,000. A large percentage of this will be local use, and the number represents little, if any, increase over the area's recreational use before Gateway was established.

This decreased emphasis on mass accommodation has been accompanied by an increased concern for low-density use. The plan envisions maximum densities of one person for each 575 square feet of beach. Since most recreation standards recommend between 50 and 100 square feet per person as an acceptable minimum for an urban beach, Breezy Point's tip will indeed offer a high-quality recreation experience to those who can get there.

While the importance of recreation has been played down, the preservation of nature has been emphasized. Terns were found nesting at the western tip of Breezy Point, and so the walk-and-wander nature area was turned into a restricted access area. Small patches of "locally unique" woodland were discovered, and they too were afforded the protection of restricted public access. In fact, the impulse for na-

ture preservation is so strong that where natural resources worthy of protection do not exist, they will be created. The beach in front of the Breezy Point Co-op, identified as "the widest and best" on Breezy Point in the first plan, is to be the site of extensive dune building. Once the dunes are built, in the words of the current plan, they will be "managed as protection zone lands and protected from random access by means of boardwalks, designated routes to the beach, or other operational methods."

Overall, the current plan leaves very little of Breezy Point available for unrestricted use. On the other hand, plans for groups of visitors now figure large. There are to be youth hostels in the Fort Tilden area, and supervised group campsites are planned for the area east of the Breezy Point Co-op. Much of the park is now to be accessible only by special permit, which for all practical purposes closes it to public uses except for preplanned and supervised group activity. There are now plans for large charter bus parking lots near the West Beach, Tilden Beach, and the group campsites, and for a special program center to accommodate groups. Much environmental education is to take place in three "gateway villages," which are envisioned as "major educational centers" and as "object lessons in the relationship of man and his environment."

Response to local pressure

All of these goal shifts served to bring planning into line with political reality. By reducing mass access to Breezy Point, the agency brought its plans into conformity with the wishes of the Breezy Point Co-op, whose continued existence attested to its political potency, and with the wishes of the park's neighbors in Brooklyn, who feared that mass access to Breezy Point would increase traffic congestion on their streets. The emphasis on "quality" recreation experiences covered the retreat from mass accommodation and it served well as a cover. By stressing a quality park experience rather than the total number of park visits, the agency did appear to bring one of the qualities of the great national parks—spaciousness—to Gateway.

Likewise, the emphasis on resource preservation at Breezy Point counterbalanced Gateway's failure to live up to its promise as a truly metropolitan recreation facility. While Gateway was being condemned by the current plan to remain a collection of local parks in terms of access and use, the designation of so many of its features as nationally significant historic resources justified keeping the Park Service involved. In addition, the shift of emphasis to resource preservation brought

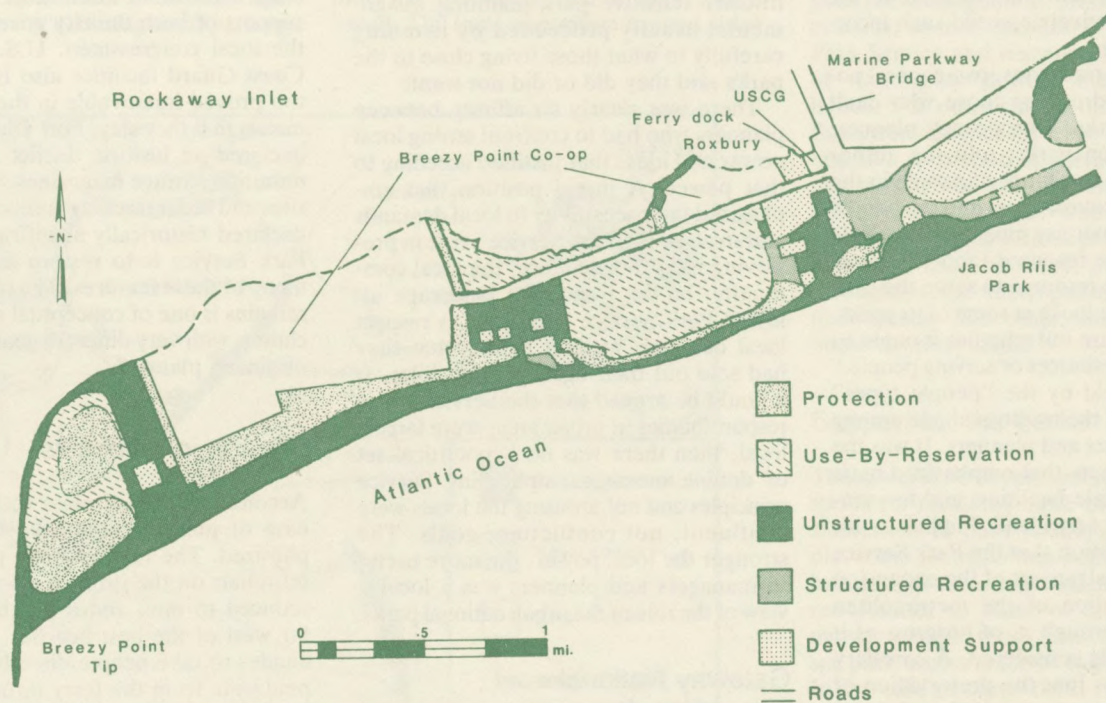


Figure 2. The 1979 plan for the Breezy Point unit of Gateway National Recreation Area. (From National Park Service, *Gateway NRA General Management Plan*, p. 35.)

Gateway planning in line with planning trends throughout the Park System. At Gateway, however, the intrinsic qualities of the resources to be protected were of little importance. It was the strategic advantages of preservation that mattered. Even invented resources, such as the reconstructed dunes in front of the co-op, seemed adequate for this purpose.

The shift in emphasis to group accommodations also served strategic ends. It allowed the agency to promote some non-local park use and, by so doing, to accommodate those few pressures for wider use that did exist. It was wider use in a form more palatable to Breezy Point's neighbors than unstructured recreation would have been, however. In the current plan, group campsites and group activities are consistently referred to as *supervised*. By stressing organized group visits, the Service also gave itself control over the timing of many park visits. It could discourage the visit it did not want, the one on a summer weekend, and encourage the one it did want, the off-season visit, which increased annual visitor counts without increasing the political (and staffing) problems associated with high peak-day usage.

Thus, we see that at Gateway, emphasis on preservation and education allowed the agency to shift planning away from mass access while emphasis on group accommodation allowed it to channel what little public access remained into the most politically acceptable and managerially convenient forms. Such shifts of emphasis were by no means limited to Gateway; they occurred in different degrees and in different mixes in most of the urban national parks. Although all of the urban parks initially were justified by their mass recreation potential, little of their actual development planning reflected this.

How successful are the parks?

Before the Gateways were established, there was considerable uncertainty over the wisdom of establishing urban national parks. Neither the problems those parks brought with them nor the solutions worked out for them have done much to dampen disagreement. In the cities, the Service hoped to find large, appreciative new constituencies, and a new role in keeping with the spirit of the times. In short, the agency was to find a part of its lost relevance in an urban commitment. Instead it found dilemmas, internal dissonance, and severe political constraints. The agency found that, having committed itself to urban parks, it could neither control their authorization, nor gain the initiative in planning for their use.

Table 1. Urban National Parks

| Metropolitan area | Unit of National Park System | Authorized acreage ^a | Date established |
|-------------------|----------------------------------------------------|---------------------------------|------------------|
| Washington | National Capital Parks | 6,470 | 1933 |
| Boston | Cape Code National Seashore | 44,596 | 1961 |
| New York | Fire Island National Seashore | 19,579 | 1964 |
| Chicago-Gary | Indiana Dunes National Lakeshore | 12,535 | 1966 |
| New York | Gateway National Recreation Area | 21,947 | 1972 |
| San Francisco | Golden Gate National Recreation Area | 38,677 | 1972 |
| San Francisco | Point Reyes National Seashore | 67,265 | 1972 |
| Cleveland-Akron | Cuyahoga Valley National Recreation Area | 37,460 | 1975 |
| Atlanta | Chattahoochee River National Recreation Area | 8,515 | 1978 |
| Los Angeles | Santa Monica Mountains National Recreation Area | 150,000 | 1978 |
| New Orleans | Jean LaFitte National Historical Park and Preserve | 20,000 | 1978 |

Note: "Urban national park" is not a formal category within the National Park System; this designation was made by the author, who included large national park units in and near major cities if they had recreation as one of their primary purposes. This leaves out units whose historic preservation function clearly excludes serious recreation. For example, Independence National Historical Park in Philadelphia, Boston National Historical Park, Fort McHenry National Monument in Baltimore, and Federal Hall National Memorial in New York City are not included. Also excluded are units where the preservation of unique natural resources was so paramount a rationale for establishing the park that it disallowed more than minimal recreation from the onset. Thus, units like Channel Islands National Park near Los Angeles and Biscayne National Monument near Miami, Florida, are not included in this list.

Source: U.S. Department of the Interior, National Park Service, *Index: National Park System and Related Areas as of June 30, 1981* (Washington, D.C., Government Printing Office, 1981).

^a "Authorized acreage" refers to the area within which the Park Service may acquire land to meet its park development goals. In the case of the older parks, this number is close to the actual acreage owned outright by the federal government. In the newer parks, allowance for permanent inholdings, less-than-fee purchase arrangements, and incomplete development plans mean that federally owned acreage usually is considerably less than the authorized figure.

The entire urban wing of the National Park System was an experiment. It was also a gamble; commitments were made in the hope that circumstances would support them. For a public agency, there is nothing inherently wrong with experimentation, with shifting resources from one area of social concern to another or from policies in accord with one perspective to those in accord with another.

However, an agency must also be willing to evaluate such experiments realistically—and this has not been the case with the urban national parks. Perhaps because many traditions and aspirations have been brought to the urban national parks, the Park Service can fabricate justifications for any stance it takes, decisions it makes, and choices forced on it. Perhaps because its planning skills are so good, the temptation to cover failures with virtuosic planning and call them successes has been too great to resist. Rationalizations, however, can get only so convoluted and artful before they collapse of their own weight. The agency must be willing to establish criteria for success and write off ventures that fail to live up to these criteria.

Perhaps what makes the urban parks most troublesome for the policy analyst

is that they cannot be written off as unambiguous failures. Clearly, Gateway has fallen far short of its original goals, but it is not obvious that those goals are unattainable. Here the agency is facing a basic problem in uncertainty. The park's ultimate success will depend on circumstances over which the Park Service has no more than minimal control and very little capacity to predict—future attitudes toward our cities, the urban policy of the next administration, and even future transportation innovations (or the lack of them). There is no way of knowing now whether future events will continue to make it increasingly difficult for the Park Service to attain its goals in its urban parks or whether the tide will turn. The latter seems unlikely, but it is by no means impossible.

Given this uncertainty, the Park Service should not forget why it is in the urban park business in the first place; that is, to provide access to the special recreation resources of the region. It would be easy to lose sight of this; all the agency has to do is start believing that protecting the modest natural and historic resources found in the urban national parks justifies its

(Continued on page 14)

(Continued from page 13)

continued presence. It does not. The only thing that justifies its continued presence in the urban parks it currently manages is a reasonable hope that it can someday turn them into what they were meant to be. Only if the Park Service keeps this in mind and at the very center of its urban presence will it be willing to continually assess its urban parks and decide whether the borderline cases are moving toward more complete success or are becoming unredeemable failures. The jury is still out on many of the urban national parks, but when it returns, the agency must be willing to listen to the verdict, understand it, and act accordingly.

This article has been adapted from America's National Parks and Their Keepers, by Ronald A. Foresta, a 1980-81 Gilbert F. White Fellow at Resources for the Future. Dr. Foresta teaches geography at the University of Tennessee, where he specializes in the study of public land policy.

RFF studies the IAEA

RESOURCES FOR THE FUTURE recently has undertaken a critical assessment of the International Atomic Energy Agency (IAEA). Among other subjects, the study will consider the IAEA's historic and prospective role in ensuring that worldwide adoption of nuclear power and other peaceful uses of the atom does not lead to a spread of nuclear weapons. Particular attention will be directed to the IAEA's strengths and to the problems encountered in its work under the Nuclear Non-Proliferation Treaty and international safeguards system. In addition, the study will evaluate the mutuality of interest among the nuclear weapons states and the larger community of nonweapons states to cooperate within the IAEA framework.

The authors of the study are Lawrence Scheinman, professor of international law and relations, Cornell University, and John A. Hall, former IAEA Deputy Director General for Administration. Major guidance for the initiation and conduct of the study has been provided by T. Keith Glennan, former NASA Administrator and U.S. Ambassador to the IAEA, with the assistance of Herman Pollack.

An advisory committee, which includes several former high-ranking government officials and others concerned with proliferation issues, is composed of T. Keith Glennan, Father Theodore M. Hesburgh, Herman Pollack, James R. Schlesinger, Glenn T. Seaborg, Gerard C. Smith, Henry D. Smyth, Gerard F. Tape, and Warren Donnelly.



Book review

Water Rights: Scarce Resource Allocation, Bureaucracy and the Environment, Terry L. Anderson, ed. (Cambridge, Mass., Ballinger Publishing Company, 1983). 470 pp. \$35.00 cloth. \$11.95 paper.

Water use and abuse

This book was published by Ballinger for the Pacific Institute of Public Policy Research, whose "program is designed to broaden public understanding of the nature and effects of market processes and government policy." Perhaps unsurprisingly, therefore, this compilation of nine essays by different authors clearly argues a point of view—that in the allocation of water resources privatization of water rights and development of market processes should play substantially greater roles than they now do. But even readers who do not agree with this orientation will find the work carefully researched and, for the most part, the arguments clearly reasoned. For those interested in the efficiency of water use, this is an important document.

The issue of the role of markets in water allocation can usefully be separated into four subcategories: (1) consumptive use of surface waters in water-scarce regions, (2) the allocation of scarce groundwaters, (3) the devotion of surface waters to instream uses (fishing, navigation, hydropower), and (4) the allocation of water to waste-disposal services (water quality issues).

The question of the role of market processes in these categories is by far the most thoroughly explored with respect to the first. Many years of experience and research exist in this connection, and a fair consensus is found among economists that the efficiency of water use could be

enhanced by permitting market processes to play a larger role with respect to consumptive use. While the prior-appropriation doctrine in arid areas in the United States has resulted in tradeable rights to water, various barriers to transactions remain. For example, in some states water cannot be traded independently of land, and water districts often have rules preventing transfer of water outside their boundaries.

The first half of the book makes the case for removing such constraints and offers suggestions for improving the efficiency of market processes. One such suggestion repeated in several of the chapters is that consumptive use rather than diversion should be the basis of defining the magnitude of a tradeable right (in irrigation, one-third or so of the diverted water often returns to the water course). This change in definition would help avoid some "third-party" issues associated with water transfers and may comport more clearly with the concept of a right to "use" water.

As water becomes ever more scarce in arid areas, the ideas put forward by the authors are coming increasingly into play. In several states a strong beginning has been made toward shifting to consumptive use as the concept of what constitutes a tradeable right, and other barriers to transactions, have started to fall. Delworth Gardner, in a chapter on water use in California agriculture, puts the situation well: "Water policy is dynamic and responsive to economic pressures, and the next decade is likely to bring many changes in the rules of water pricing and allocation. . . . Water users themselves are taking significant steps to improve water mobility in time and space."

As we move from the first sequentially through the second, third, and fourth categories, we find increasingly less agreement and experience in the water fraternity at large concerning the appropriate role of water rights and market processes.

In the chapter, "Privatizing Groundwater Basins," authors Terry L. Anderson, Oscar R. Burt, and David Fractor describe the systems that have developed to regulate the use of scarce groundwater and prepare a scheme of defining individual user rights to groundwater and to permit market processes to determine allocation. Existing doctrines such as "correlative rights" and "reasonable use" do not provide a firm basis for a market to function. The authors argue for a much tighter definition of rights and elimination of existing barriers to trading, but acknowledge that in cases where groundwater is relatively abundant and its marginal value in use relatively low, the game may not be worth the candle. Their dis-

discussion of the system that has developed in the Tehachapi Basin is of particular interest. There, in response to severe, chronic groundwater overdraft, groundwater rights have been quantified specifically and a limited but, within bounds, effective market for groundwater has developed.

The weakest argument for a greater role for markets in water allocation appears in the chapter by James Huffman, treating category three. Instream uses are not traditionally "beneficial" uses in the prior-appropriation doctrine prevailing in the arid West. That doctrine is oriented to the development of water for offstream uses. In recent years a number of states have taken action to reserve, in one way or another, water flows for instream purposes. The author argues that a more efficient procedure would be to define specific rights to instream use, with the same standing as prior-appropriation rights, and allow individuals who value instream uses to acquire those rights.

This argument is hard for me to buy because of what economists call the "external" effects of such purchases. To illustrate, if a fisherman were to buy a right to a number of cubic feet per second in a tributary of the upper Colorado River, he would benefit not only himself but also, among others, probably thousands of fishermen along many hundreds of miles of river and several major hydropower facilities serving perhaps millions of energy users in Los Angeles. In such circumstances, economic theory is very clear that efficient allocation of resources cannot occur through market processes. Interestingly, however, the state of Colorado has adopted a kind of halfway policy under which the state must exercise its responsibility for protecting instream uses but it must do so through the purchase of water rights. Experience under this law will be well worth watching.

In the last chapter, M. T. Maloney and Bruce Yandel address what part tradeable discharge permits might play in the efficient allocation of the waste-assimilative capacity of water courses. There has been very little experience with market processes in this area, but the authors laud the federal law under which a nationwide system of discharge permits has been developed: "In effect, the Act tightened the property dimensions of the right to pollute. . . ." They believe this lays a necessary foundation for tradeable permit systems, albeit ones to be developed in a gradual and measured manner. There is no little irony in this point of view. Many economists, including this reviewer, have argued for a system of effluent charges as an alternative to the "command and control" policy of water pollution control that actually was adopted as federal policy in

1972. Environmentalist opponents of this policy alternative consistently assailed it as "a license to pollute" while presumably, in their minds, the system of discharge permits was not.

Maloney and Yandel provide an interesting and informative discussion of a tradeable permit policy that has been implemented in the Fox River Basin in Wisconsin. They recognize, however, that the circumstances there are not typical; for example, there is only one major pollution type of interest, biochemical oxygen demand, and no large value placed on maintaining strict ambient conditions at particular points. Theirs is a sober and reasoned assessment of the potential role of tradeable permits in water quality policy.

The book does stress a point of view, and its treatment of issues is often, but not always, as balanced as it might be. Still, it is a work of careful scholarship and deserves serious attention from those interested in water policy in particular and resources policy more generally.

Reviewer Allen V. Kneese, a senior fellow in RFF's Quality of the Environment Division, is the coauthor (with F. Lee Brown) of The Southwest Under Stress: National Resource Development Issues in a Regional Study and the author of a forthcoming RFF book, Measuring the Benefits of Clean Air and Water.

Agricultural and food policy conference tapes

CASSETTE TAPES of the proceedings of the Conference on "Alternative Agricultural and Food Policies and the 1985 Farm Bill," sponsored by the University of California's Giannini Foundation of Agricultural Economics and RFF's National Center for Food and Agricultural Policy, held June 11-12, 1984, are now available. The conference featured presentations by William Leshner, D. Gale Johnson, Bruce Gardner, Richard Just and Gordon Rausser, G. Edward Schuh, Willard W. Cochrane, and other prominent economists. For specific information on the conference topics, contact Kenneth R. Farrell, director, National Center for Food and Agricultural Policy, Resources for the Future, 1755 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Tapes are available for each session (at \$8.00 per tape for one to five tapes) or for the conference in its entirety (at \$5.50 per tape) and should be ordered from Audio-Stats Educational Services, 924 North Market Street, Inglewood, California 90302. For further information regarding the tapes, contact Audio-Stats directly (213-673-8821).



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