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When Scientists Disagree

We have met the enemy—and he is us.
—Pogo

No singular event more amply illustrates the promise and the chaos of modern environmentalism than the first Earth Day. According to Harold Sprout, "Not since the Japanese attack on Pearl Harbor has any public issue received such massive support in all the news media, local as well as national."[1] The organizers of Earth Day sought to define the celebration as a "commitment to make life better, not just bigger and faster, to provide real rather than rhetorical solutions" to the environmental crisis.[2] As broadly as possible, Earth Day intended to demonstrate the extent to which American values regarding the environment had changed—particularly in relation to the increased rejection of American standards of acceptable risk—while also articulating the scope of this cultural shift in American society.

Earth Day also reaffirmed Commoner's connections between peace and environmentalism. The Vietnam War was still very much a source of fractious sentiment in the United States, and antiwar activists were prominent among the Earth Day celebrants. Balloons and banners across the country boldly stated, "war is the worst pollution," "war is not healthy for children and other living things," and "Earth—love it or leave it."[3] An Earth Day commentator trying to assuage differences between antiwar and environmental activists concluded that "most people don't want the world to go up in smoke—or under in smog."[4] Commoner was far more explicit in making the connection. In an Earth Day talk at Brown University, he charged that the herbicide attacks on Vietnamese forests and agricultural fields constituted "the first ecological warfare conducted by the U.S. since

the attacks on American Indians."[5] In the days preceding 22 April, Earth Day coordinator Denis Hayes's Washington, D.C., office was deluged with requests for information, slogans, and banners. When one visitor asked for a bumper sticker, one of Hayes's young staff members reportedly replied: "We don't have any bumper stickers. You want to know why? They go on automobiles."[6] Indeed, Earth Day marked a popular association between environmental health and conservationist principles. By no stretch of the imagination did Earth Day revelers share a uniform notion of what environmentalism was or what the day stood for, but there did appear to be a general acceptance that environmental health—broadly defined—was inherently connected to human physical and spiritual health, defined equally broadly. And certainly, Earth Day represented a forum in which the ecological message could be applied holistically. Hayes, a twenty-five-year-old Harvard law student, presented an expansive interpretation of the environmental crisis and Earth Day's ambitions at a press conference in Washington, D.C., when he exclaimed: "Ecology is concerned with the total system—not just the way it disposes of its garbage."[7]

When Senator Gaylord Nelson of Wisconsin conceived of Earth Day in November 1969, he could not have imagined the extent to which Americans would heed his call for a nationwide environmental teach-in on college campuses. Nelson would submit that Earth Day ultimately represented "truly an astonishing grass-roots explosion."[8] Congress stood in recess, the National Education Association estimated that 10 million public school children participated in teach-in programs, and citizen groups in more than 2,000 communities across the United States took to the streets.[9] In all, some 20 million Americans participated in public Earth Day activities across the country, making the first Earth Day the largest single-day public demonstration in American history. In New York City, Fifth Avenue was closed to traffic between 59th and 14th streets for two hours after noon, and 14th Street between Third and Seventh avenues, "left free for pedestrians between noon and midnight, became an ecological carnival."[10] Despite a notable absence of smog in Los Angeles as a result of cooler than average temperatures, hosts of students and activists attacked air pollution across the city. University of Southern California students buried an automobile engine—one of many buried across the country—as the Tommy Trojan statue witnessed the proceedings from behind a gas mask.[11] At an antipollution rally in Atlanta's Hurt Park, a sign reading

"Fight Dirty" reportedly "summed up the thousands of words spoken throughout Georgia . . . in observance of Earth Day."[12] Thousands congregated on the Washington Monument grounds at the Sylvan Theater for several hours of speakers and folk songs, concluding with a performance by the folksinger and environmental activist Pete Seeger, Earth Day's honorary chairman.[13] Just outside the nation's capital, fifteen housewives bicycled to the Potomac River and held a stand-up picnic at a nearby dump after picking up piles of dead fish from the shore.[14] At the University of New Mexico in Albuquerque, students collected signatures on a big plastic globe, which they called the "enemy of the earth award" for twenty-eight state senators accused of weakening recent antipollution legislation.[15] In St. Louis, the United Auto Workers led a parade through the city center featuring a smogfree, propane-powered car, and in Tacoma, Washington, high school students rode down the highway on horseback.[16] Fifteen hundred students in Louisville Kentucky, crowded into the concourse at Atherton High School in a demonstration designed to illustrate the problems of overpopulation, which ended with pushing, grabbing, and pinching. In Madison, University of Wisconsin students braved freezing weather to greet the dawn with biblical readings and an apology to God for environmental abuse, while just up the road, high school students in West Bend paid to take part in the destroying of a car, the proceeds going to a school antipollution group.[17] Even a goat in Centralia, Washington participated, wearing a sign reading "I eat garbage, what are you doing for your community?"[18] In addition, elementary and high school students across the country participated in collecting litter and cleaning community and city parks, streets, and landmarks.

Earth Day deserves careful attention as a key event in the reification of American environmentalism. Historical accounts that "periodize" American environmentalism often recognize Earth Day as that key moment when the movement became "modern." The suggestion is that conservation impulses and urban reform issues became allied under the same roof. But such contentions regarding Earth Day's role in the history of American environmentalism tend to limit the larger evolution of American environmental values. Samuel P. Hays correctly asserts: "Earth Day was as much a result as a cause."[19] Indeed, Earth Day 1970 might be recognized as the coming-out party for modern environmentalism in the United States, inasmuch as the event demonstrated a considerable public interest in issues of

environmental health. According to the political scientist Walter Rosenbaum, "In the early 1970s, environmentalists mobilized for political action in a uniquely congenial climate of opinion; perhaps at no time in this century was the American public more receptive to the environmental gospel."[20] That congenial climate could never have been realized without the publication of Rachel Carson's *Silent Spring* in 1962, Commoner's public information efforts in his opposition to nuclear weapons testing in the years preceding the 1963 Test Ban Treaty, and the growing recognition of the dangers inherent in the rampant technological optimism that consumed American culture.

Environmentalism's political power had a resounding impact in the White House, too. If he was nothing else, President Richard Nixon was a cagey political survivor; his political reemergence after losing the 1960 election to John Kennedy was testament to that. Very early in his presidency, Nixon recognized that his administration would have to appear supportive of environmental protection. While the silent majority that had put Nixon in power remained wary of the counterculture embodied in the antiwar movement, the New Left, and Black Power, polls indicated that they were concerned about the environment. Indeed, concern about the environment and support for Earth Day did not split along traditional lines of generational or political persuasion. In the days leading up to the April 1970 festivities, the Georgia Comptroller General and Republican candidate for governor, James L. Bentley, had sent out $1,600 worth of telegrams at taxpayers' expense, warning that Earth Day might be a Communist plot, because the date chosen for the event was Lenin's birthday.[21] But on the left, the journalist and social commentator I. F. Stone called Earth Day a "gigantic snowjob" that diverted public attention from the ongoing war in Southeast Asia.[22] Another leading leftist voice, *Ramparts* magazine, concurred, calling Earth Day "the first step in a con game that will do little more than abuse the environment further."[23] Capitalizing on the popular concern over the state of the environment—and without the risk of alienating his core constituency—Nixon had signed the first Endangered Species Act in 1969 and the National Environmental Policy Act in 1970, co-opting an issue commonly held by prominent Democratic rivals such as senators Edmund Muskie and Henry Jackson. He also devoted considerable energy to the environment in his 1970 State of the Union address, calling environmentalism the new "selflessness" and announcing that "the

great question of the '70s is: shall we surrender to our surroundings or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, to our land, and to our water?"[24]

Indeed, emblazoned over Commoner's portrait on the cover of *TIME* magazine in February 1970 was "Environment: Nixon's New Issue." But while Nixon offered his tacit approval of Earth Day, he spent a routine day in his White House office, unable to get an invitation to speak; an article in the *Chicago Tribune* the following day wryly noted: "Nixon seemed almost the only public figure in the country not making a speech."[25] Meanwhile, outside the Department of the Interior, 2,500 demonstrators protested that department's controversial oil leases, chanting "Off the oil!" "Stop the muck!" and "Give Earth a chance!"[26] In Denver, antinuclear activists bestowed the Colorado Environmental Rapist of the Year award on the Atomic Energy Commission, while at the University of Alaska, Interior Secretary Walter Hickel was booed off the stage before he could finish outlining administration support for the Alaska Pipeline.[27] A "Herblock" cartoon in the *Washington Post* on 23 April 1970 satirized the administration's environmental policies, portraying an official presenting the administration's position on air pollution from the back of a car belching exhaust fumes over a distressed onlooker. Beside the government official in the car were fat cats representing the auto and oil companies.[28] For all the environmental legislation the Nixon administration supported prior to Earth Day and in the years following, and as much as Nixon liked the notion of comparing himself to Theodore Roosevelt as a Republican champion of efficiency, progress, and conservation, 22 April 1970 found the Nixon administration under siege by environmental activists all over the United States.[29]

Sharing the Nixon administration's astute observation that the environment was an issue they needed to appear to support, the American business community, often the target of environmental protests, also endorsed Earth Day. The Scott Paper Company pledged $36 million to control pollution at its plant in Washington state, and suggested it might spend an additional $20 million on its plant in Winslow, Maine.[30] Dow Chemical and the Ford Motor Company sponsored speakers at the University of Michigan teach-in; New York's Consolidated Edison provided an electric bus to New York mayor John Lindsay to facilitate his transportation between scheduled events; and Monsanto reasserted its promise to become one of

the industrial leaders in pollution control technologies.[31] Much of this corporate environmental benevolence was met with less than sincere gratitude from activists who saw such outreach as nothing more than another example of the Janus-faced nature of American industry and corporate "greenwashing." In Miami, yellow dye was dumped into sewage treatment plants to track the progress of wastes into waterways.[32] Also in Florida, activists dumped a dead octopus and several fish at Florida Power & Light's headquarters to protest the company's thermal pollution in Biscayne Bay, and a group called the Environmental Vigilantes deposited used crankcase oil in the reflecting pool outside the Standard Oil of California building on Market Street in San Francisco. They acknowledged their act was "indefensible—and indistinguishable from the corporate policy of Standard Oil Company of California,"[33] but that was the point. By polluting the physical environment, American business interests were increasing their wealth by socializing the costs of their industries. The petrochemical industry, for example, made money only because it could pollute. The extent of those social costs depended on society's evaluations of the risk, and Earth Day indicated that the American public was starting to consider the size of the bill too great.[34]

Even the media took the opportunity to criticize American business. The *Washington Post* reported on the introduction of Hopfenmaier's new public relations kit, demonstrating its support for Earth Day, at its rendering plant in Georgetown. As the manager spoke, "the big Hopfenmaier smokestacks on the Georgetown waterfront were belching their regular emission of contaminants, produced in the plant by 'cooking' livestock remains for use as fertilizer and soap by-products." In another display of environmental compassion, Washington-based Pepsi Cola Bottling Company's marketing director, James P. Anderson, outlined the company's new antilitter campaign and kit, which contained litter bags, bumper stickers, "a brochure on a 28-minute beautification movie starring Lassie," and a letter to bottlers from Pepsi president James B. Sommerall asserting that "you can be a leader in the civic activities of your community by participating in local antilitter programs." According to the *Washington Post,* however, "about half of yesterday's Pepsi production in Washington was packaged in the nonreturnable bottles and cans of the type ecologists say contribute heavily to the nation's mountains of refuse."[35] Already, many en-

vironmental activists seemed unwilling to accept industrial and legislative compromises in place of more large-scale action and prevention.

But as the Nixon administration and other politicians, corporate and industrial interests, and (not least) the media jostled for public attention on Earth Day, there emerged a growing concern that the message might be watered down. Robert Gottlieb observed, "What became most disconcerting to the traditional conservationists was the intense media coverage of Earth Day and the sense of discovery, especially by the media, that a new issue and a new movement had emerged full-blown with little connection to earlier conservationist and protectionist movements."[36] Similarly, many environmentalists worried about the longevity of environmental concern expressed by the participants in Earth Day. Frank Renshaw, the chairman of a teach-in sponsored by five Cincinnati colleges, declared: "We hope that each participant, supplied with some of the facts about environmental problems in his own backyard, will commit himself to a program of action." The University of California zoologist Kenneth Watt shared Renshaw's hope, but also expressed a deeper concern. Speaking at Swarthmore College, Watt urged students to maintain the day's momentum. "The history of movements like this is not very promising," he warned. "We had great movements on civil rights and the Vietnamese war. The problems are still with us but the movements have died away."[37] An Earth Day editorial comment in the *Chicago Tribune* echoed Watt's concern. "After the last speech has been made and the last car buried today," it averred, "we hope that Earth day will be followed by a quiet determination by everybody to enlist for the duration in this war. . . . This will take more than speechmaking, or listening to speeches, or publicity stunts. People, not machines, are the prime cause of our environmental troubles."[38] Their concerns were ultimately well founded. Eight days after Earth Day, Nixon announced his decision to send American troops into Cambodia, and within a week four students had been killed at Kent State University in Ohio. Americans and the media turned their attention elsewhere.[39]

Commoner expressed a different source of dissatisfaction with the Earth Day proceedings. "What surprised me most," he wrote in *The Closing Circle,* "were the numerous, confident explanations of the cause and cure of the crisis." As Americans marched together throughout the country, it seemed that every environmentalist had a different explanation for the rise

of the environmental crisis. Some blamed affluence; others blamed poverty. Still others blamed human nature, capitalism, socialism, religion, or technology. Commoner continued: "Having spent some years in the effort simply to detect and describe the growing list of environmental problems—radioactive fallout, air and water pollution, the deterioration of the soil—and in tracing some of their links to social and political processes, the identification of a single cause and cure seemed a rather bold step." The environmental crisis was much more complicated than that, but during Earth Week, Commoner "discovered that such reticence [to accept complex answers] was far behind the times." In cleaning up litter and marching for clean air and water, Americans seemed uninterested in the origins of the problem. "It seemed to me," Commoner reflected, "that the confusion . . . was a sign that the [environmental crisis] was so complex and ambiguous that people could read into it whatever conclusion their own beliefs—about human nature, economics, and politics—suggested."[40]

Reflecting in 1985 on the inchoate outburst of sentiments toward the environment, Commoner recalled that "there was damned little organization at first; everybody was sounding off in one direction or another. What really held it together was the very simple moral statement that future generations depend on the environment and we have been blind as to what's happening to it."[41] And here was the strategic problem the environmental movement faced in the wake of Earth Day: "Like a Rorschach ink blot, Earth Week mirrored personal convictions more than objective knowledge."[42] As Commoner found himself at the vanguard of a new environmental movement, he saw it as his duty to articulate the origins and the stakes of the environmental crisis and to confront the Babelian state of American environmental concern. Just as American environmentalism was enjoying the height of its success, internal rifts threatened to tear apart its tenuous alliances and growing political power. These internal rifts revolved around dictating priorities for future action, and foreshadowed not just future divisions but also the subsequent move away from Commoner, his environmental politics, and his apparatus for activism.

Commoner was one of the most active figures involved with the Earth Day teach-ins, lecturing on four university campuses in Rhode Island and Massachusetts. The day before Earth Day, he was at Harvard University, where he outlined his agenda and motivations for the Earth Day celebrations.

"Everyone now knows that the environmental crisis is upon us," he began. "What is not so clear," he continued, "is how we got into this mess and what we need to do to get out of it."[43] Earth Day was an important event, therefore, because it offered the opportunity to chart a path out of the environmental crisis. "I have come here because there is something I want to say about the environmental crisis," Commoner told Brown University students attending his Earth Day lecture. "But I have also come here to learn."[44] For Commoner, the teach-in element of Earth Day was critical to the continued success of environmental protection, conceptually and from a policy standpoint. While issues of environmental health transcended generational barriers, Commoner recognized the vitality of the student movements of the 1960s and hoped to channel that energy into activism for the environment. Averting the environmental crisis was also a long-term and complicated mission; there was no quick fix. Students constituted a fundamentally important constituency, Commoner told them:

> It is marvelously fitting—and to me deeply moving—that the nation's new fight for survival is being led . . . by the youth. For young people and future generations are the real victims of impending ecological catastrophe. You were born under the shadow of the bomb. You are the first generation in the history of man to carry strontium-90 in your bones and DDT in your fat; your bodies will record in time the full effects of environmental destruction on mankind. It is you who face the frightful task of seeking humane knowledge in a world which has, with cunning perversity, transformed the power that knowledge generates into an instrument of catastrophe.[45]

Like countless other professors, politicians, and activists, Commoner pointed to the gravity of environmental decline and offered encouragement for the struggle to come. "The grinding oppression of environmental deterioration . . . degrades the hope of our citizens in the future and their will to secure it," but grassroots activism to restore environmental health and enforce antipollution ordinances promised to "give tangible meaning to the spirit of environmental revival."[46] There was hope. But Commoner was also determined to outline the course that he felt was most important. Indeed, it was on Earth Day that he introduced a more comprehensive explanation for the environmental crisis, which would become the foundation for *The Closing Circle*. "I should like to propose a thesis which, I believe, may provide some useful insights into [the environmental crisis]," he told his Brown University audience. "The thesis is this: environmental pollution is not to be regarded as an unfortunate, but

incidental, by-product of the growth of *population,* the intensification of *production,* or of technological progress. It is, rather, an intrinsic feature of the very technology which we have developed to enhance productivity."[47] Radioactive fallout; the production of photochemical smog; new detergents, insecticides, and fertilizers; and countless other synthetic chemicals and carcinogens released into the environment were all testament to Commoner's position.

The problem seemed to arise from a misguided sense of scientific priority. Citing sewage removal in an NBC interview that aired before Earth Day, Commoner claimed: "If we look at the ecological facts, it's perfectly clear that organic wastes belong in the soil; that is where nature can accommodate them into the cyclical process. . . . If we can put a man on the moon it's within our power to collect the organic matter of sewage, handle it in a way to prevent the spread of disease and get it back in the soil."[48] And this was a problem: in 1970, the United States could land a man on the moon, but could not maintain a healthy environment for its citizens. "The environmental crisis, together with all of the other evils that blight the nation—racial inequality, hunger, poverty, and war—cry out for a profound revision in our national priorities," Commoner insisted on Earth Day. "None can be solved until that is accomplished. But, tragically, the nation remains immobilized by the cost of the Vietnam War and the huge military budget, by the talent- and money-gulping space program, by the disastrous cuts in the federal budget for research support, by the reduction in funds for the cities and education."[49]

But if Commoner's Earth Day message and his speeches and interviews before and after Earth Day were consistent with the holistic nature of the environmental critique he had developed through the 1960s, only one message consistently filtered through public and media discourses: Barry Commoner did not consider current population growth to be a real ecological problem. This was a gross misstatement and oversimplification of Commoner's position, but it was his attack on population control advocates in the United States that stuck in the popular interpretation of his ecological activism. The basis of Commoner's talk at Harvard University the day before Earth Day was a disavowal of population as the *source* of the environmental crisis. "In my opinion," he declared, "population trends in the U.S. cannot be blamed for the deteriorated condition of the environment."[50] Commoner contended that the real source of environmental pol-

lution was the proliferation of new, polluting technologies since World War II. "In most cases the increases [in pollution] in the last 20 to 25 years have been in the order of 500 to 1,000%," whereas the concurrent changes in population were a more modest 40 to 45 percent. "Of course," he continued, "if there were no people in the country there would be no pollution problem, but the fact of the matter is that there simply has not been a sufficient rise in the U.S. population to account for the enormous increase in pollution levels."[51]

Over the following year, people all over the United States wrote to Commoner, criticizing his opposition to population control. "Your April 22 speech at Brown University has recently come to my attention," wrote Ruth Troetschler of Los Altos, California, "and I was surprised that you, a scientist with long-term environmental concerns, should have indicated that we do not have a population problem."[52] Mrs. Lynne H. Perry of Austin, Texas, asked: "Isn't it rather foolish and dangerous to publicly sanction the continuation of indiscriminate breeding, to be unconcerned about the addition of millions more tomorrow when we haven't yet managed to cope effectively with the problems of the numbers we have now?"[53] Dr. L. E. Marshall of Estherville, Iowa, charged that Commoner's public efforts to quell concerns about population growth in America constituted "*overt, dangerous, irresponsibility*" that was helping the country "about as much as bubonic plague."[54] Even the supportive letters suggested that the population question was culturally divisive, and supporters of Commoner's position tended not to fully appreciate the sophisticated nature of his larger message. Sister Veronita Ruddy of Bloomington, Illinois, asked Commoner to "accept my congratulations for being one of the few scientists who is not being influenced by the propaganda of Planned Parenthood on the subject of over-population."[55]

Commoner did oppose the suggestion that the environmental crisis in the United States was attributable to overpopulation—"it is a serious mistake to becloud the pollution issue with the population for the facts will not support it," he told his Harvard University audience the day before Earth Day—but he never dismissed overpopulation as a legitimate and very serious problem on a global scale and especially in the developing world.[56] What Commoner specifically rejected was the notion that population control would solve the environmental crisis. Even on this last point, though, he faced considerable opposition. By Earth Day, the ecologist Paul

Ehrlich was the leading proponent of human population growth as a cause of—and population control as a solution to—the environmental crisis. Recognizing the environmental movement's lack of priorities, Ehrlich emphasized the ecological significance of global overpopulation as the catalyst for the existing environmental crisis and an appropriate priority for environmental organizations.

In his very popular book *The Population Bomb* (1968), Ehrlich had taken a neo-Malthusian approach to the environmental crisis, arguing that overpopulation posed an ecological strain on the Earth's carrying capacity and food production limits. His argument was a modern adaptation of the British economist and demographer Thomas Malthus's essay on population, which predicted an inevitable food supply crisis based on the world's multiplying population. Published anonymously in 1798, Malthus's *An Essay on the Principle of Population as It Affects the Future Improvement of Society* was widely read. The crux of the treatise was the difference in scale between population growth and growth of food production. Whereas population increased geometrically (1,2,4,8,16), Malthus pointed out that food production could only increase arithmetically (1,2,3,4,5). At some point, then, something had to give. More food production required not only more land, but also more efficient technologies—fertilizers and pesticides—in order to maximize yields. Agricultural land was stressed, and industrial output and productivity needed to increase continually. It was an impossible cycle. Modern-day Malthusians such as Ehrlich believed the post-World War II technological revolution was a response to population pressures. Pollution was the result of population growth. Malthus hypothesized that demographic strains on natural resources—of which food was far and away the most significant—was ultimately limited, and would be alleviated by what he called positive checks: famine, disease, or war, which would reduce population size to a more suitable equilibrium with resources.[57] In 1968, 170 years later, at a time when an American audience was never more eager to learn about the impending environmental crisis, Ehrlich presented arguably the loudest and most persuasive treatise on the ecological problems of human overpopulation.

In 1967, Ehrlich had given a speech at the Commonwealth Club in San Francisco, where David Brower of the Sierra Club heard him, and asked him to write a short book on the population explosion. *The Population Bomb* was published the following year, issued in paperback by Ballantine

and the Sierra Club, and sold 3 million copies over the next decade.[58] Having developed an objective appreciation of the problem of overpopulation in his research, Ehrlich traced his emotional discovery of the problem to a trip to Delhi, India, where he discovered the "*feel* of overpopulation."[59]

> The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, and screaming. People thrusting their hands through the taxi window, begging. People defecating and urinating. People clinging to buses. People herding animals. People, people, people, people. As we moved slowly through the mob, hand horn squawking, the dust, noise, heat, and cooking fires gave the scene a hellish aspect.[60]

To Ehrlich, the causes of environmental deterioration were symptoms of an obvious chain of ecological effects: "Too many cars, too many factories, too much detergent, too much pesticide, multiplying contrails, inadequate sewage treatment plants, too little water, too much carbon dioxide—all can be traced to *too many people.*"[61] According to Ehrlich, rises in pollution were a result of more people consuming more products and creating more waste. Population increases resulted in pollution increases. His solution was to control national and global populations: "We must have population control at home . . . by compulsion if voluntary methods fail. We must use our political power to push other countries into programs which combine agricultural development and population control."[62] Not addressing overpopulation could have serious consequences, Ehrlich warned in a quintessential jeremiad. "There are only two kinds of solutions to the population problem," he argued. "One is a 'birth rate solution,' in which we find ways to lower the birth rate. The other is a 'death rate solution,' in which ways to raise the death rate—war, famine, pestilence—*find us.*" Naturally the former solution was preferable, but its implementation presented logistical difficulties.[63] While Ehrlich traced the environmental crisis to too many people, he concluded by suggesting that overpopulation was both a catalyst and a symptom of environmental decline. "In the long view, the progressive deterioration of our environment may cause more death and misery than any conceivable food-population gap."[64]

By 1970, the National Wildlife Federation had adopted a resolution that supported restricting the American population to its current level, and the Sierra Club, which had published *The Population Bomb,* also supported numerous population control programs. Indeed, the reaction to Commoner's opposition to population control in the United States and Ehrlich's growing

popularity—he was a regular guest on Johnny Carson's Tonight Show—suggested that overpopulation concerns had won the day. While Commoner barnstormed the Northeast on Earth Day, Ehrlich spoke to 10,000 people gathered at Iowa State University. One Earth Day report even noted the number of population control balloons seen in New York City. As people celebrated Earth Day on the streets, balloons bobbed above the crowd, many of them beseeching families to "stop at two."[65]

Commoner had long kept up with concerns about the global human population crisis, and was well aware of its existence. But to Commoner, mandatory birth control enforcement as a means of reducing the global birthrate was neither pragmatic nor moral. And he was also fairly confident that such a program would not work. In June 1968, Commoner wrote an article titled "The Population Problem" for Planned Parenthood. Therein, Commoner drew connections between population control and social progress, noting that "improvement in living conditions is closely tied to an interest in limiting family size. People are more likely to want large families when living conditions are difficult, because it means that there will be more children available to work . . . and help support the family." Conversely, as living standards improve, "people are more willing to limit family size."[66] This basic principle—that social progress is a key determinant in reducing birthrates—was not Commoner's invention, but it has become the cornerstone of our understanding of the demographic transition, which suggested that death rates, and then birthrates, would decline in industrialized states as affluence increased and industrialism matured.

Commoner acknowledged that a significant portion of the world's population did not get enough to eat, but he also linked developing world population growth to the expansion of Western industrial capitalism. In his Earth Day talk at Brown University, he recognized that many countries in the world suffered from overpopulation, but noted that this was a result of "the exploitation of the human and natural resources of the underdeveloped world by the technologically advanced nations." Citing Nathan Keyfitz's demographic analysis of the effects of colonialism, Commoner argued that "the development of industrial capitalism in western nations in the period 1800–1950 resulted in the development of a one billion excess world population, largely in the tropics, as a result of exploitation of these areas for raw materials (with the resultant need for labor) during the period of colonialism."[67] But whereas improved living conditions—roads,

communications, engineering, agricultural and medical services—were important steps toward realizing the demographic transition in colonial regions, Commoner noted that the resultant wealth "did not remain in the colony." Moreover, the developed world's subsequent adoption of synthetic materials after World War II "replaced tropical raw materials with synthetic ones," resulting in a diminished market for the underdeveloped world's natural resources.[68] As Commoner the historian summarized, after decolonization the former colonial powers cut the developing world loose. The increased population in the developing world benefited from modern medicines and agricultural technologies such as insecticides, fertilizers, and machinery—further reducing the death rate—but lacked the markets to secure higher standards of living in the postcolonial period, thereby maintaining high birth rates and inhibiting the crucial second phase of the demographic transition. Rather than declining, human population exploded.

Commoner stated that the wealth derived from colonial exploitation assisted in completing the demographic transition in the colonizing nation, and not its colony. "Thus colonialism involves a kind of demographic parasitism," he argued, "The second population-balancing phase of the demographic transition in the advanced country is fed by the suppression of that same phase in the colony." To Commoner, this parasitism was responsible for the inequitable rate of development among the nations of the world. "As the wealth of the exploited nations were [*sic*] diverted to the more powerful ones," Commoner told the International Convocation on the World Population Crisis in 1974, "their power, and with it their capacity to exploit increased. The gap between the wealth of nations grew as the rich were fed by the poor."[69] And now the world felt itself gripped in a potentially devastating population crisis. Commoner concluded on Earth Day: "The population explosion is a cost of the western industrial society that we are so proud of."[70] The previous December, at an American Association for the Advancement of Science symposium titled "Is There an Optimum Level of Population?," Commoner had charged: "The population crisis is the huge hidden cost of the wealth accumulated in the advanced nations as a result of the Industrial Revolution. If the advanced nations are now confronted with the urgent need to pay this long-delayed debt, there is at least the moral consolation that it is their own."[71]

Because Commoner felt that the population crisis in the developing world was the result of colonial exploitation, he reacted vociferously to the neo-Malthusians' more draconian solutions to overpopulation. He rejected Ehrlich's suggestion that coercive birth control policies might need to be instituted, and he was particularly disgusted by the lifeboat ethics proposed by more radical neo-Malthusians such as Garrett Hardin. In articles in *Bioscience* and *Psychology Today,* Hardin had constructed a tenuous philosophical discussion on how the developed world might be justified in turning its back on the underdeveloped countries and their population problems as a means of ensuring their own survival. The Earth and its resources were like a lifeboat, and too many people threatened to sink it; in order to save the lifeboat, the developed world might sensibly refuse to help the underdeveloped populations unless they adopted drastic measures to reduce their numbers. In *The Closing Circle,* Commoner referred to Hardin's population positions as "faintly masked . . . barbarism."[72]

Commoner insisted that "the so-called 'lifeboat ethic' would compound the original evil of colonialism by forcing its victims to forego [*sic*] the humane course toward a balanced population—improvement of living standards—and to reduce their birthrate while still far short of that goal, or if they refuse, to abandon them to destruction."[73] Commoner's own solution to the population crisis was radically different. "If the root cause of world population crisis is poverty," he argued in 1974, "then to end it we should abolish poverty. And if poverty is the grossly unequal distribution of the world's wealth among the nations of the world, then to end poverty, and with it the population crisis, we need to redistribute that wealth, among nations and within them."[74] In effect, Commoner urged scholars, environmentalists, and policy makers to extend their examination of the population crisis beyond the scope of the ecological problems to which it contributed, in order to recognize that human population growth was—in his reading—a feature of a larger system of human oppression. To Commoner, the relationship between the subjugation of nature and the subjugation of increasing numbers of people was an essential facet of drawing ecological questions into the social limelight.

And it mattered how the public responded to the population crisis. In light of Earth Day's success and the momentum environmentalism enjoyed in the early 1970s, there were grounds for being optimistic that more

environmental progress would be realized. But to Commoner, the neo-Malthusian solution to population growth was not progress, but rather a big step in the opposite direction. On a panel with Ehrlich and his fellow neo-Malthusian Garrett Hardin at the December 1970 meeting of the American Association for the Advancement of Science, Commoner argued that "saying that none of our pollution problems can be solved without getting at population first is a copout of the worst kind."[75] Commoner's more extensive critique came the following year in *The Closing Circle,* where he stated that Ehrlich had succumbed to the temptation of finding a simplistic solution to a complicated problem. "Since the basic problems are themselves biological," he argued, "there is a temptation to short-circuit the complex web of economic, social, and political issues and to seek direct biological solutions."[76] Commoner was convinced, however, that such reductionist attempts would ultimately fail. "In the long run," he insisted, "effective social action must be based on an understanding of the origin of the problem which it intends to solve."[77] Because he was convinced that polluting technologies and the free market that produced them caused the environmental crisis, developing biological solutions—as advocated by Ehrlich—to social problems was misguided.

Commoner wrote *The Closing Circle* partly in response to his portrayal in the 2 February 1970 issue of *TIME,* in which he had been touted as the "Paul Revere of ecology," with "a classroom of millions."[78] As a result, Commoner had become a household name, and in response to the celebrity and authority that *TIME* afforded him, he wrote *The Closing Circle* to justify his standing. He took advantage of the opportunity to explain his own positions more carefully, and in so doing, mounted a harsh criticism of Ehrlich's neo-Malthusian argument.[79]

More significant than the "population explosion" to which Ehrlich alluded, Commoner claimed, was that the Earth had experienced a "civilization explosion."[80] The widely accepted occurrence of an environmental crisis, he wrote, "tells us that there is something seriously wrong with the way in which human beings have occupied their habitat, the earth."[81] Commoner argued that the environmental crisis emerged as a result of poor technological decisions coming out of World War II. The war led to "not only a great outburst of technological innovation, but also an equally large upsurge in environmental pollution."[82] Commoner believed that Ehrlich's biological interpretation of the causes of the environmental crisis failed to

appreciate the socially irresponsible uses of technology and the related overconsumption of material resources in the developed world, which, if left unchecked, would continue to present increased social and environmental problems. To Commoner, the pollution from ill-conceived technologies was the natural expression of the free economy, driven at all costs to increase productivity, output, and profit. In response to this conundrum, Ehrlich's population thesis had argued that the only way to limit output was to reduce population. To Commoner, this solution was "equivalent to attempting to save a leaking ship by lightening the load and forcing passengers overboard. One is constrained to ask if there isn't something radically wrong with the ship."[83] Suggesting that a better solution would be more public access to and control over industrial and environmental decisions, Commoner concluded that the rampant proliferation and dissemination of polluting technologies was directly related to the capitalist system. Capitalism promoted a growth-at-all-costs free enterprise system that excused environmental waste in the name of increased profit margins. In *The Closing Circle,* Commoner promoted more environmentally responsible commerce through incentives and penalties on polluting industries. At its most basic level, Commoner wanted to transform modern technology "to meet the inescapable demands of the ecosystem."[84] This strategy necessarily required radical changes in the capitalist system.

However, for all the fire that Commoner flung at Ehrlich, the neo-Malthusians, and free market capitalism, *The Closing Circle* was, first of all, a book about ecology and how ecology might help the public to make sense of the environmental crisis. In spite of its growing popularity through the 1960s, ecology had not yet developed a series of cohesive, simplifying generalizations—laws—as more traditional scientific disciplines such as physics had done. Commoner's introduction of an informal set of laws of ecology was arguably the centerpiece—certainly the best-remembered and most often repeated aspect—of *The Closing Circle*. Commoner posited that the laws of ecology could be reduced to four:

1. Everything is connected to everything else.
2. Everything must go somewhere.
3. Nature knows best.
4. There is no such thing as a free lunch.

Commoner's Four Laws of Ecology are a social and historical phenomenon embedded in the culture of crisis that pervaded the 1970s. They were not incontrovertible scientific fiats, but rather an articulate road map for Americans seeking to understand the environmental crisis. Rather than representing an infallible interpretation of the workings of complex ecosystems, Commoner's laws—blending popular, holistic interpretations of ecology with some biological truisms—served as a useful synthesis that was accessible to a lay audience and advanced Rachel Carson's contention that humans and nature constituted what the sociologist Ulrich Beck has called "a *solidarity of living things*."[85] Commoner's laws were not scientific in nature, but rather generalizations that applied most effectively to the foibles of unchecked technological progress.[86]

Much of the research in *The Closing Circle* was not new—chapters on nuclear fallout and Lake Erie were similar to material that had been worked into *Science and Survival*—but like *Silent Spring* and *The Population Bomb, The Closing Circle* vaulted its author into the public limelight. The celebrity status of the post-Earth Day ecologists on the front line of modern environmentalism helped keep the movement in the mainstream, but the public dissension in the ranks between Commoner and Ehrlich threatened to obfuscate the movement's overriding message. The pollution versus population dispute between Commoner and Ehrlich emerged as one of a series of antagonistic debates within modern environmentalism, illuminating the histories of environmental philosophy and politics as well as the continuing divisions within the contemporary movement. That public disagreement—outlined in *The Closing Circle*—would demonstrate that environmentalism represented less a set of policies than a movement that sought to redefine human values in order to address the existing environmental crisis, but it also illustrated the precarious balance between disparate priorities. The dispute stemmed from Commoner's distinctly humanist (and socialist) approach to the environmental crisis, whereas Ehrlich's interests lay predominantly in the naturalist (and more liberal) sphere. While Ehrlich interpreted the crisis as principally biological or ecological in nature, Commoner explained the environmental crisis as having social origins firmly rooted in the irresponsible exploitations of technology by capitalism and colonialism.

While Commoner and Ehrlich championed pollution and population, respectively, as explanations for the environmental crisis, still other

"jeremiads" pointed toward affluence, poverty, religion, and human nature, among others.[87] The diversity of interests within the modern environmental movement—from wilderness preservation to urban health policies—precluded the progress of a unified "environmental" agenda. Among these divisions, the humanist-naturalist split was the most fundamental, but it was also representative of the changing landscape of American environmentalism after World War II. Whereas the prewar conservation movement had been predominantly shaped and led by white elites, the new environmental leadership had acquired considerable momentum from a variety of minority groups. This phenomenon manifested itself not only in a broadening of the mainstream agenda from conservation to a wider sense of environmentalism, which incorporated more social concerns, but also in the new movement's leading philosophers. Indeed, by the first Earth Day, many of the most vocal, articulate, and charismatic leaders of the movement did not come from the Anglo middle class. Commoner and Ehrlich—both of Jewish, immigrant descent—were the most prominent examples of this trend, but lawyers from immigrant backgrounds, such as Ralph Nader (Lebanese) and Victor Yannacone (Italian) also represented a burgeoning of more radical concern and activity on environmental issues.[88] Their emergence in the conservation movement resulted in a significant shift in environmental priorities, from land use policies to public health. This trend allowed the prominence of Commoner's more humanist environmental politics and *TIME's* making Commoner its appointed leader of modern environmentalism in America.

But the new and more diverse environmental movement was hardly uniform, as the debate between Commoner and Ehrlich made clear. Born 29 May 1932, Ehrlich grew up with naturalist tendencies, catching butterflies and frogs near his Maplewood, New Jersey, home.[89] A mentor at the American Museum of Natural History in Manhattan encouraged him to do butterfly research, so he studied zoology at the University of Pennsylvania. After earning his B.S. in 1953, Ehrlich pursued graduate studies in biology at the University of Kansas, finishing his Ph.D. in 1957. He received a fellowship from the National Institutes of Health and continued his entomological research at the Chicago Academy of Sciences, eventually taking a position at Stanford in 1959. He was promoted to Bing Professor of Biology by 1967, the year before *The Population Bomb* was published. While still at college, Ehrlich had been influenced by one of the major trends in

the naturalist writing of the late 1940s, which warned of the imminent environmental crisis and the dangers posed therein by human population growth. At college, he read Osborn's *Our Plundered Planet* and Vogt's *Road to Survival,* both of which argued persuasively that overpopulation and the abuse of natural resources would lead to widespread famine and impoverishment.[90] Ehrlich was convinced that overpopulation represented the most significant threat to the environment. While overpopulation introduced an unmistakably human element into his environmental message, his concerns maintained a naturalist flavor. Aside from the social repercussions, too many people compromised the vitality of the Earth's ecosystems. Urban expansion reduced habitat for various plant and animal species.

Commoner and Ehrlich were the products of divergent politics, influences, and perspectives. The combination of Commoner's early fascination with nature and his immersion within the radical social activism in New York nurtured his more humanist and socialist solutions to resolving the environmental crisis. Similarly, Ehrlich's liberal and suburban upbringing influenced his penchant for naturalism.[91] Whereas Commoner's politics were overtly socialist, Ehrlich's were far more ambiguous. His population control policy suggestions appealed to such divergent political agendas as Chinese population policy, New Left opposition to consumerism, and conservative diatribes on Mexican immigration and high birthrates among minorities. Commoner criticized Ehrlich and others who advocated simple population control, because he felt they were missing the real cause of environmental decline. "The favorite statistic is that the U.S. contains 6 to 7 percent of the world population but consumes more than half the world's resources and is responsible for that fraction of the total environmental pollution," Commoner told his pre-Earth Day audience. "But this statistic hides another vital fact: that not everyone in the U.S. is so affluent. For that reason the simple test of the slogan 'Consume Less' as a basis for social action on the environment would be to tell it to the blacks in the ghetto. The message will not be very well received for there are many people in this country who consume less than is needed to sustain a decent life."[92] To Commoner, the overpopulation perspective blamed humanity's consumption and reproduction for the environmental crisis, but ignored the corporate interests that disproportionately plundered natural resources and spewed pollutants into the environment.

With characteristic panache, Commoner insisted that "pollution begins not in the family bedroom, but in the corporate board-room."[93]

Reading between the lines, Commoner interpreted in Ehrlich's message—likely more spitefully than accurately—a social Darwinist argument in favor of population control.[94] In 1803, Malthus had revised and significantly expanded his essay on population. This second essay has had a much larger impact on contemporary thought, largely because of Malthus's severe attack on the poor. Malthus saw that lower classes tended to reproduce far faster than the middle and upper classes, and argued that the poor ought not to be entitled to any kind of relief, claiming that any assistance would only result in their producing more offspring, meaning more poverty. In a strange reversal of traditional understandings, Malthus believed that poverty could be attributed to too much charity, rather than not enough. In so doing, he attacked England's Poor Laws; he opposed any notions that advocated egalitarianism on the grounds that excessive population growth among the poor would only dilute the middle classes of society. Several generations before the philosopher Herbert Spencer coined the phrase, Malthus was effectively referring to a socioeconomic "survival of the fittest." Certainly Ehrlich's population control colleague, Garrett Hardin, was not above such arguments, but sometimes Ehrlich's rhetoric came in line with these less savory arguments in favor of population control, especially when he talked about involuntary population control. Commoner particularly objected to Ehrlich's suggestion that coercion might be necessary in order to arrest the world's population growth because of its social implications, which "would condemn most of the people of the world to the material level of the barbarian, and the rest, the 'fortunate minorities,' to the moral level of the barbarian."[95] Ehrlich recognized this problem. "I agree with Commoner when he worries about the political implications of what I'm saying," he told Anne Chisholm. "I worry about them myself."[96]

Because of their divergent humanist-naturalist beliefs, Commoner and Ehrlich differed on whom they thought the environmental movement should be courting. Ehrlich's naturalism clearly catered to middle-class outdoors enthusiasts, who already comprised the majority of the movement. In contrast, Commoner's humanism was more attractive to the urban middle class and carried more weight or credibility among minorities and groups whom environmental politics had heretofore marginalized. Commoner raised the public's awareness of the relationship between living

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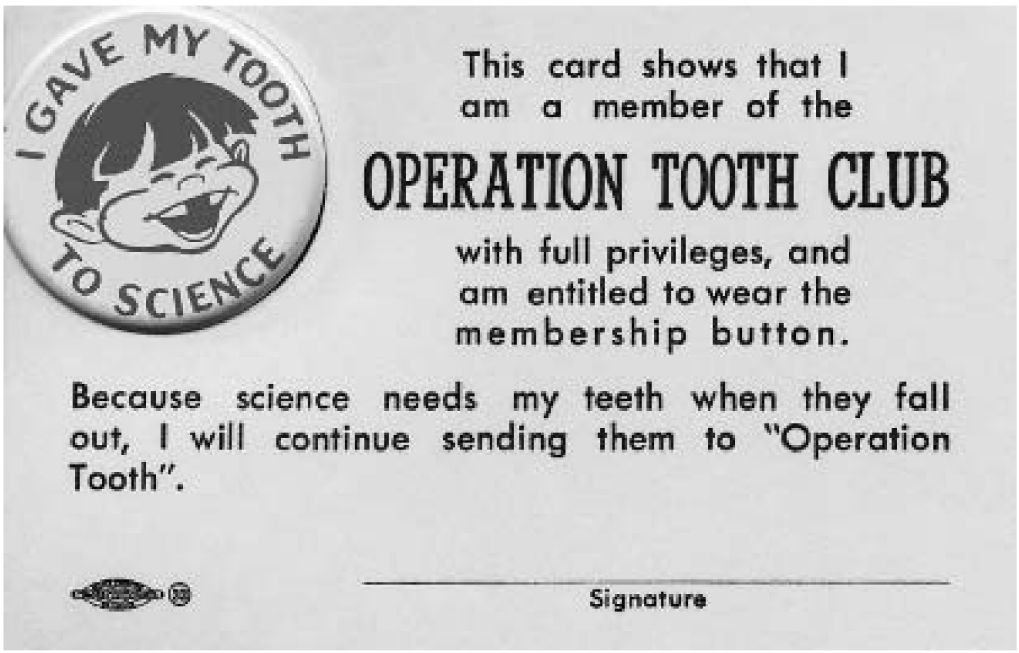
Top: Warren Weaver, ca. 1955. Courtesy of the Rockefeller Archive Center.
Bottom: Commoner with physiologist and former AAAS president Detlev Bronk at the council session of the AAAS annual meeting in Atlanta in December 1955, where they supported the antisegregation platform spearheaded by the anthropologist Margaret Mead (at left). Photo courtesy of Barry Commoner.

Commoner measuring the effect of light on the free radicals formed during photosynthesis in the alga *Chlorella* at Washington University in 1956. Behind him is Dr. Jack Townsend, a Washington University physicist and "electronics wizard," who built the electron spin resonance machine in the foreground. At the time, this spectrometer was unique in its ability to tolerate water, and paved the way for Commoner's innovative work on free radicals. Photo courtesy of Barry Commoner.



Top: Committee for Nuclear Information Baby Tooth Survey poster. Western Historical Manuscripts Collection, University of Missouri-St. Louis.
Bottom: Button and membership certificate for the Operation Tooth Club, sent to children who provided baby teeth for the Committee for Nuclear Information's Baby Tooth Survey. Western Historical Manuscript Collection, University of Missouri-St. Louis.

Top: Rachel Carson. Photo from the Brooks Studio; used by permission of the Rachel Carson Council, Inc.
Bottom: Commoner at a 1968 Las Vegas press conference on nuclear bomb tests; Atomic Energy Commission representatives at left, and the future editor of *Environment*, Sheldon Novick, at right. Photo courtesy of Barry Commoner.

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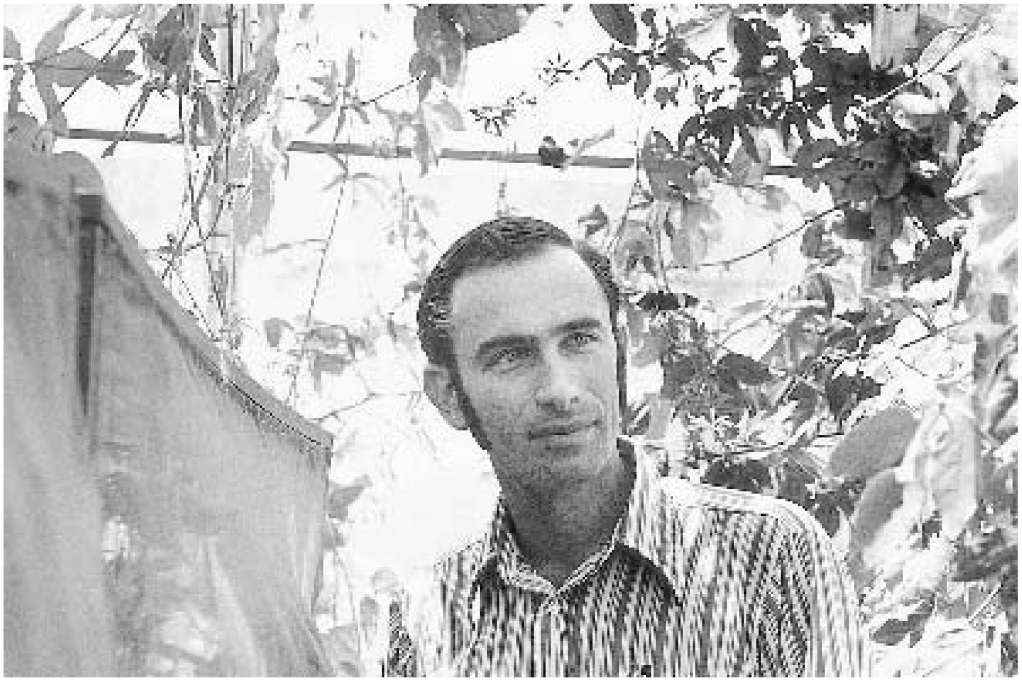
O*pposite, top:* Paul Ehrlich in his greenhouses at Stanford University, April 1972. Photo © Ilka Hartmann, 2006.

O*pposite, bottom:* Commoner at a conference on lead pollution in St. Louis, May 1971. Photo courtesy of Barry Commoner.



Top: Commoner at the 1970 Committee for Environmental Information annual meeting at the Ethical Culture Society in St. Louis. Behind him is the folk singer and environmental activist Pete Seeger. Western Historical Manuscript Collection, University of Missouri-St. Louis.
Bottom: Participants in a course on problems of environment and development given by Commoner and the staff of the Center for the Biology of Natural Systems at Washington University, under the sponsorship of the United Nations Environmental Program, for graduate students from developing countries, July 1976. Photo courtesy of Barry Commoner.

spaces and the environment. Whereas the mainstream conservation movement had previously concentrated its efforts on wildlife and wildland preservation, Commoner advocated a more social interpretation of the immediacy of the environmental crisis. While Ehrlich saw his population critique as an addition to the existing environmental paradigm, Commoner envisioned environmentalism as part of a more holistic social revolution. Commoner wanted the environmental movement to be socially progressive. He interpreted a healthy environment as a necessary condition for promoting a more egalitarian society.

At the time of its publication, *The Closing Circle* was arguably the most comprehensive work on the environmental crisis and its causes. While Commoner ultimately narrowed his critique to a single cause—the profit-first mentality of the capitalist economy seeking reductions in costs of production by making use of cheaper, but polluting, technologies—his exposé claimed to have established hypotheses and tested them. Commoner was the first to admit that even science was subjective, but *The Closing Circle*'s tone seemed more rational and, perhaps, less of a jeremiad, than works such as *The Population Bomb,* even if his conclusions insisted upon radical changes in environmental activities and political and economic systems. In presenting such overtly political and social statements, Commoner reinforced his long-standing faith in public participation and the role of scientific information. The environmental crisis represented more of a social than a scientific problem. Any solution to the crisis was most fundamentally political, so the scientific community's primary duty was to disseminate scientific knowledge to enable and empower the public so that it was sufficiently informed to make its own value judgments. It was a familiar refrain.

If Ehrlich approved of Commoner's environmental and social concern, he was critical of Commoner's conclusions, his science, and his dismissal of the dangers of overpopulation. Moreover, he became infuriated by the manner in which his views on *The Closing Circle* were publicized. In December 1971 Ehrlich and the physicist John P. Holdren wrote a very critical review of *The Closing Circle* for the *Bulletin of the Atomic Scientists,* which was to appear in the spring. In their review they called the book "inexplicably inconsistent and dangerously misleading."[97] The crux of their critique rested on Commoner's complete reduction of demographic factors

to an inconsequential aspect of the environmental crisis. Ehrlich and Holdren introduced a formula by which to measure the various factors of pollution. They argued that environmental impact (pollution) was the product of population, affluence, and technology; the number of people, the quantity of goods people consume, and the technologies people employ to produce the goods.[98] They presented the compact formula as

$$I = P \bullet A \bullet T$$

Essentially, this simple equation dictated that an increase in population *or* in consumption *or* in polluting technologies would result in an increase in environmental impact. According to Ehrlich and Holdren, the differences between Commoner and Ehrlich, therefore, depended upon the emphasis given to each of the three factors. Ehrlich and Holdren stressed population and affluence, while Commoner highlighted the significance of technology, arguing that population and affluence were intimately linked to technology. Using their formula, Ehrlich and Holdren argued that Commoner's adherence to technology as the only significant factor of the equation to the environmental crisis was problematic. "Obviously," they contended, "*the actual magnitude of the environmental deterioration engendered by an adverse change in technology depends strongly both on the initial levels of population and affluence.*"[99] Ehrlich and Holdren also accused Commoner of bad science, stating that "*examination of the basic mathematics alone, irrespective of the definitions and analysis behind the numbers Commoner presents, shows that the relationships are not what he claims.*"[100] They concluded by defending their population control position, alluding to Commoner's analogy of saving a leaking ship. "If a leaking ship were tied up to a dock," they posited, "and passengers were still swarming up the gangplank, a competent captain would keep any more from boarding *while* he manned the pumps and attempted to repair the leak."[101] But while Ehrlich calculated population and technology as independent variables in his equation—and one just had to assess the relative weight of each in the formula—Commoner contended that population and technology were not independent variables at all. Rather, they were dependent on forms of social organization and control that existed beyond the constraints of the IPAT formula.

Ehrlich and Holdren distributed drafts of their review widely among scientists, journalists, and environmentalists with an accompanying letter

that indicted Commoner and his ideas as being dangerous.[102] The *Bulletin* informed Commoner that it intended to publish the review, titled "One-Dimensional Ecology," in its April 1972 issue and invited him to submit a rejoinder. Commoner accepted the invitation, but insisted that his rebuttal appear in the same issue. Because Commoner could not meet the April deadline, *Bulletin* editor Richard S. Lewis delayed publication of "One-Dimensional Ecology" and Commoner's response until the May issue. In the interim, Commoner's own journal, *Environment,* "scooped" the *Bulletin* by printing the Ehrlich and Holdren review and Commoner's response in its April edition. Ehrlich and Holdren were outraged. In a published communication to the *Bulletin,* they wrote that they "were shocked to discover that Barry Commoner and *Environment* had pirated 'One-Dimensional Ecology' and published it without your knowledge or ours. We cannot imagine how Commoner could ethically have done this." They expressed indignation that *Environment* would publish an "uncorrected preprint . . . circulated with a letter stating that it was a 'preliminary copy,' that it was 'not for publication.'" To add insult to injury, *Environment* had removed Ehrlich and Holdren's title.[103]

Commoner clearly violated standard academic ethics in printing "One-Dimensional Ecology" in *Environment* without permission and prior to its publication in the *Bulletin.* And while he openly defended the decision to scoop the review as his duty—part of his involuntary responsibility—as a public citizen to spread information,[104] the larger rationale seemed to stem from his intent to defend his position more publicly after Ehrlich and Holdren had circulated their draft so widely. Publication of his rebuttal in the *Bulletin* would hardly have reached the same audience as the draft; because *Environment* had a larger audience, perhaps Commoner justified his decision as a means of self-defense. Indeed, the draft's copyright did appear to be in dispute. *Environment* editor Sheldon Novick wrote to *Environment*'s Science Advisory Board in defense of his decision to publish the review: "The Ehrlich-Holdren article had been published without a proper copyright notice, in a manner which placed it in the public domain, and which left me free to republish it if I wished."[105]

But if ego was privately at the heart of the bitterness—and in that department, both Commoner and Ehrlich were exceptionally well endowed—principle was the public rationale. Ehrlich began transcribing telephone communications with Lewis and *Environment* scientific director Kevin

Shea, and zealously solicited support from leading scientists and activists around the country as a means of enhancing and publicizing his position as the wronged and aggrieved party in the debate. In the meantime, by distributing his review of *The Closing Circle* so widely, he had very consciously launched a concerted attack on Commoner to which Commoner could not easily respond. His shock at Commoner's parry was, at best, contrived. For his part, in his complicity in the theft of Ehrlich and Holdren's paper, Commoner deliberately avoided the high road. And his confrontational manner only intensified the dispute. Just over a month later, at the United Nations Conference on the Human Environment in Stockholm, Commoner and many of his followers—students and international scientists who criticized family planning as a plot to reinforce the hegemony of the white and industrialized northern countries—crashed a population session and prevented Ehrlich from presenting his argument.[106]

In spite of the ugliness that pervaded their encounter, however, one is inclined to find something admirable in the disparate motivations—though not the methods—that brought both combatants to the fray. Both Commoner and Ehrlich recognized what was at stake in their dispute. Ehrlich very sincerely wanted to quell the public argument, fearing that any public disagreement between the two would "'split the environmental movement' and reduce the chances of effective action toward environmental improvement."[107] To Ehrlich, there seemed "little purpose in deluding the public about the need to grapple simultaneously with overpopulation, excessive affluence, and faulty technology," but to Commoner, silencing the debate was unconscionable and in violation of his commitment to public discourse and even the freedom to express dissent.[108] Population control would not resolve the environmental crisis; of this Commoner was sure. Making it a priority would impede real environmental improvement, especially if population growth was mitigated by several other social factors and not strictly a biological phenomenon. Moreover, Commoner was concerned that substantial attention to population questions would divert attention from what he considered to be the more pressing environmental issues: polluting technology and a capitalist means of production that endorsed growing world poverty and a concentration of wealth.

And while Commoner handled the situation poorly—and even tried to silence Ehrlich in Stockholm—he did genuinely believe in the importance of public discourse and the value of disagreement. A false conformity, he

argued, would do an even greater disservice to the environmental agenda; there was a big difference between discourse and compromise. Commoner defended *Environment*'s decision to print "One-Dimensional Ecology" for a broader audience by insisting that "if there is in fact a real and important difference between my views of the origins of the environmental crisis and Ehrlich's, then *both of us are obliged to express them openly;* otherwise the mechanism by which science generates the truth—open discussion—is thwarted and our obligations, as scientists, to inform the public, evaded."[109] There is little question that he could have absorbed criticism more diplomatically and that his posturing inevitably hurt his position more than it helped, but Commoner was a hardened political warrior and was reluctant to compromise or cede any ground. What had long been one of his heroic characteristics became, in this instance, a blinding weakness.

Commoner did not jump over the line with both feet, but criticisms from outsiders suggested that he did come rather close to finding himself on the wrong side of the divide between critical intellectual and ideologue. On the wrong side of that separation, Donald Worster has argued, social critics "become prisoners of ideology rather than masters of it."[110] Indeed, Commoner and Ehrlich both suffered publicly and professionally as a result of their protracted dispute. Letters to both the *Bulletin* and *Environment* indicated that audiences—professional and popular alike—were tiring of the debate. "Perhaps I am the only reader who feels this way," one letter began, "but I think that Ehrlich and Commoner deserve each other, and should spare the rest of us their tedious controversies."[111] An appeal for peace between Commoner and Ehrlich, and a renewed alliance between their humanist and naturalist positions in their combined efforts to protect the environment, came from a rather unlikely source. In a letter to the editor of *Environment* in June 1972, the folksinger Pete Seeger offered a proverbial olive branch. In response to "Dispute," published a couple of months earlier, Seeger began by applauding both Ehrlich and Commoner, appreciating the interchange but hoping that it would not turn vindictive. "Commoner has convinced me," he wrote, "that technology and our private profit politics and society must be radically changed and quickly. But I'm still working hard for Zero Population Growth, because . . . it's a big world problem." Seeger rejected the false dichotomy presented in the humanist-naturalist debate and insisted that he was on both sides. "The world is the

concern of everyone," he added. Seeger's interest in linking and promoting population and pollution control globally was that such a movement would serve as "one of the world's greatest educational drives." Seeger saw the need for limits, but they did not need to come singularly from one place. While he appreciated the critical significance of a more egalitarian society, he also confessed that he wanted his descendants "to have room to walk on a lonely beach, or climb a wilderness mountain, or yodel and make noise occasionally for the fun of it. . . . The less crowded this earth will be, the better for them."[112]

Seeger was right to address the manufactured division between humanists and naturalists. His comments in *Environment* demonstrated that the chasm between naturalist and humanist interests was largely conceptual, and that, from an activist standpoint, both were relatively compatible. After all, Rachel Carson's seminal work, *Silent Spring,* which warned against the dangers of DDT, contained both humanist and naturalist messages, and in this respect, *Silent Spring*'s significance in the history of American environmentalism can hardly be understated.[113] Carson lamented DDT's assault on birds and nature, but she also wrote vigorously on the dangers it presented to humans, effectively balancing the impact of both social and biological factors. But this is not to say that the Commoner-Ehrlich debate was moot. Carson had the luxury of writing when environmentalism had not yet effectively broken into the mainstream. As in many other social movements, harmony prevailed within the environmental movement, as the philosopher Andrew Feenberg has noted, "precisely in proportion to the burden of exclusion carried by those brave enough to join."[114] Environmentalists discriminated between their priorities only after they had entered the mainstream. The Commoner-Ehrlich debate, therefore, was historically significant because it marked the first serious fracture within the movement since the energy instilled in it by *Silent Spring* and Earth Day. Commoner's and Ehrlich's disparate opinions rested on the relative significance they afforded to biological and social factors, but also on their interpretations of science's role in establishing a cure. For Commoner, every feature of the environmental crisis was the symptom of social problems relating to capitalism; scientists could search for a panacea, but the ultimate decisions belonged to the public. For Ehrlich, population growth was the product of biological processes that had gone out of control; scientists needed to use their authority to lead attempts to reduce its growth.

Back when the Committee for Nuclear Information was engaging the Atomic Energy Commission in the debate over aboveground nuclear weapons testing, Commoner was particularly concerned about the impact that debate might have on the public and especially on its trust in science. While he was adamant that citizens not entrust experts with all the decision-making powers, he maintained considerable faith in science done properly. During the often ugly struggle against nuclear weapons, Commoner was conscious that his attack on the eminent scientists of the Atomic Energy Commission might confuse and thereby alienate the public from that crucial topic, and he worked very carefully to ensure that the public was both adequately involved and informed. For Commoner, the dangers of the post-World War II technological revolution signified not just the need to reengage scientists in a dialogue, but now also to include the public. It was no longer possible to argue privately within the scientific community over issues that had more social implications than scientific ones. Commoner firmly believed that scientists needed to be a good deal more open in their disagreements and disabuse citizens of their belief that they could leave these problems to the experts. "Citizens are sometimes disturbed by a disagreement among scientists," claimed an editorial in the May 1962 issue of the Greater St. Louis Citizens' Committee for Nuclear Information's bulletin, *Nuclear Information,* on just that issue. "They look toward science as a means of getting at objective truth." But disagreement, the editorial continued, was a healthy part of the scientific process: "open publication and criticism is the way in which science gradually improves its knowledge and in time develops a body of information which is accepted by all scientists."[115] The editorial, titled "When Scientists Disagree," sought to allay public concerns about the growing levels of conflict and confrontation among scientists with respect to issues pertaining to nuclear fallout. By 1962, the Committee for Nuclear Information's battle against the Atomic Energy Commission for control over nuclear information was at its height. The committee interpreted public scientific debate as a valuable "process which can guide laymen in their effort to find and understand the best scientific information available."[116] Prompted by increasing government secrecy on atomic issues, the mounting disagreement within the scientific community about the potential hazards of nuclear testing struck a chord with the public, which escalated its concern over the Atomic Energy Commission's authority on questions of atomic responsibility.

One of the interesting features of the Commoner-Ehrlich debate was the manner in which they treated their respective positions as vital to the success of the public information movement. In a sense, Commoner and Ehrlich were engaged in a kind of ecological brinksmanship, in which neither could back down without his position being deemed the less consequential. Further, the politico-scientists were effective at learning and conforming to press standards of newsworthiness. And controversy is a necessary component. So was the power of the sound bite. Commoner and Ehrlich were both dynamic, charismatic, and distinguished scientists. And both had learned how to effectively communicate to all kinds of audiences. Ironically, then, the Commoner-Ehrlich debate showcased two politico-scientists at the height of their powers. Just before the fall. In the end, the media got in the way. In scrambling to present stories on this delicious controversy between two of the most prominent ecologists, the media simplified their arguments to the extent that they no longer really represented their respective positions. Ehrlich never suggested that population was the sole explanation for the environmental crisis and that minorities or particular religious groups should be further marginalized by mainstream population concerns, and Commoner never implied that the Earth could hold an infinite number of humans and their growing consumption. But media oversimplification was the devil's bargain of the politico-scientists' entry into the mainstream. Their arguments were far more nuanced and complicated, but in using the media to convey their message, they had, to an extent, been hoist with their own petard. Ultimately the debate contributed to an increased distrust of scientists and their warnings. Commoner would appreciate the irony: after two decades of attacking establishment science and insisting that the public should not trust specialists when it came to social and moral judgments, he found himself a victim of his own advice.

5

Biological Capital

We must not delude ourselves with an idea that the past is recoverable. We are chained and pinioned in our moment. . . . What we recover from the past is an image of ourselves, and very likely our search sets out to find nothing other than just that.

—Bernard DeVoto

If Commoner won the battle, he lost the war. Over the three decades since the Commoner-Ehrlich debate, a wide variety of scholars has come to support Commoner's position that social factors are the best indicators of population growth, and that increased affluence and higher levels of education—especially among women—are the most effective methods of reducing high birthrates. But for all that, Commoner very clearly lost the war. After Earth Day, after the protracted dispute over population, the mainstream environmental movement turned away from the radical social critique—presented by 1960s luminaries such as Commoner, Herbert Marcuse, and Rachel Carson—in favor of a more politically centrist path that tended to separate environmental decline and other pressing social issues. To a degree, this made sense as a means of bolstering the environmental message without diluting it and, arguably, made it more digestible to more people in the middle—or mainstream—strata of society. But to Commoner, it suggested the failure of a social movement that, in 1970, seemed poised to incite significant social change. The result was stratification and marked division between disparate social movements that Commoner had spent the 1960s trying to unite. As a result of losing the war, Commoner's message was relegated to a marginal place in the environmental discourse just at the moment that its prescience seemed almost incontrovertible.