Changing Nature: Union Discourse and the Fermi Atomic Power Plant

Jacquelyn Southern
Trinity College

Abstract

The first known grassroots protest against nuclear power was organized by industrial unions: the United Auto Workers, the International Union of Electrical Workers, and the United Papermakers and Paperworkers. In *Power Reactor*, a landmark case begun in 1956 and pursued all the way to the Supreme Court (where it was lost in 1961), these unions tried to prevent construction of the Enrico Fermi Atomic Power Plant, a fast breeder reactor, outside Detroit. However, their action has been interpreted as not truly environmental at all, but rather as merely a smokescreen for their opposition to commercially developed atomic power; at that time they were identified with support for public power, which was under assault by the Republican party. Attending to union discourses of nature reveals the case to have marked a pioneering turn from a conservation to environmental discourse of nature.

The first known grassroots protest against nuclear power was organized not by citizen environmentalists but by industrial unions: the United Auto Workers (UAW), the International Union of Electrical Workers (IUE), and the United Papermakers and Paperworkers.[1] Beginning in 1956, they tried to stop construction of the Enrico Fermi Atomic Power Plant (now called Fermi I), sited at Lagoona Beach on Lake Erie some thirty miles outside Detroit to the north and Toledo to the south. Though dissident scientists and prominent citizens had begun to speak out against the radiation hazards of fallout, there was no organized protest against nuclear reactors until these unions identified Fermi I as an accident waiting to happen and challenged the decision of the Atomic Energy Commission (AEC) to license it in a metropolitan area.[2] Despite the pioneering importance of their action, it is little remembered today, in part because, owing to doubt as to the unions' motives, their protest is not always deemed environmental. In this essay I attempt to address that misunderstanding by showing that it is based on misrecognition of the discourses of nature in which union actions were framed—at first amounting to wholesale support of atomic power, then shifting to public condemnation of its reckless development. I also hope to recover a groundbreaking environmental protest, one whose effects were felt far beyond the labor movement and that rehearsed and foreshadowed the environmentalism of the 1960s.

To summarize the case briefly, Fermi I was a novel reactor in the still novel civilian atomic power industry. After Republican-sponsored amendment of the Atomic Energy Act in 1954, utilities were allowed to acquire nuclear fuel through the Atomic Energy Commission (AEC) and provide nuclear-generated

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electricity through reactors they built and owned themselves. In addition, the AEC announced a new Power Reactor Demonstration Program for innovative reactors that, hooked up to power grids, would test both their commercial and practical viability. Fermi I, slated to be among the first reactors licensed under the program, was an experimental fast breeder reactor and the first large reactor of its type, one that was highly volatile but considered uniquely desirable by government and industry specialists because it was designed to produce both electricity and plutonium. The Fermi prototype was licensed to the Power Reactor Development Corporation (PRDC), an arm of Detroit Edison. When the AEC granted the construction permit, it simply ignored the recommendations of a scientists' committee that advised that the reactor not be built. The unions intervened by successfully petitioning the AEC to hold its first public hearing.[3]

In this process, the union legal team was led by Benjamin Sigal, general counsel of the IUE, with technical guidance from Leo Goodman, a UAW unionist reassigned to the AFL-CIO. Over the course of protracted hearings, the unions overcame many handicaps that shielded AEC decision making from public view, getting essential technical and administrative information declassified and exposing not only the hazards of the Fermi I reactor—including the fast breeder reactor's enhanced potential to explode and release radiation over the Great Lakes and a heavily populated region—but pervasive AEC and corporate disregard for safety and siting. The AEC was required by statute to consider public health and safety when granting licenses, but the unions believed that its boosterism had taken priority. As Sigal said before the congressional Joint Committee on Atomic Energy (JCAE), "One is almost driven to the conclusion that AEC does not consider that it has any responsibilities with regard to the selection of a site for a privately owned atomic power reactor." Indeed, the AEC concluded the hearings by ruling in 1959 that the plans for Fermi I were "satisfactory" and again gave it the go-ahead, dismissing concerns about the metropolitan site: "Although the data … are not yet complete or conclusive, the record gives reasonable assurance that safe operation of the reactor will be as likely in that location as in any other location."[4] The unions then sued the AEC in district court to stop construction, and in 1960 the court held for them: "We think it clear from the Congressional concern for safety that Congress intended no reactor should, without compelling reasons, be located where it will expose so large a population to the possibility of a nuclear disaster." When PRDC, with the help of the U.S. Department of Justice, appealed that decision to the Supreme Court, Sigal again argued the unions' case, still hopeful that construction could be stopped. "Let's face it," he told *Science*, "the thing that made the lower court throw out the AEC's finding and the thing that's going to make the Supreme Court go the same way is that anyone would have to be crazy to build a reactor like that near a big city." However, the landmark case known as *Power Reactor* ended in defeat when the court—excepting the vigorous minority opinion of Justices William Douglas and Hugo Black—found the unions' safety objections moot, ruling in 1961 that

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the AEC had acted well within its decision-making prerogatives under administrative law.[5]

Though plagued by technical problems, Fermi I was pushed into operation. As if to prove the unions' point, after producing only fifty-two hours of electricity it suffered a partial, and harrowing, core meltdown in 1966—something that, in the AEC hearings, nuclear physicist Hans Bethe had testified could never happen. Brought online again, it released two hundred pounds of radioactive gas in a sodium explosion in 1970. When the Nuclear Regulatory Commission (NRC) refused to continue the operating license, Fermi I began shutdown in 1972, followed by decommissioning in 1975. Later, during the accident at Three Mile Island in 1979, NRC officials sent for reports on Fermi I's meltdown to help them understand what was happening in Harrisburg. Today the still troubled Fermi I stands on the shore of Lake Erie as an international icon of nuclear failure to those opposed to nuclear power and, somewhat incredibly, a symbol of success to others. Near its ruined shell, a new reactor—Fermi II — was built; plans for Fermi III have been proposed and opposed for years. As Charles Perrow writes, "the industry, instead of worrying about the disaster potential, only draws strength from the fact that [the meltdown] was not worse." During the 2008 presidential campaign, John McCain chose the contentious Fermi site to announce his plan to build forty-five new nuclear plants by 2030 and another fifty-five after that.[6]

Why are the unions' years of protest not better known? One key reason is lack of agreement on their meaning. To contemporaries, the unions' actions were outrageous or inspiring, depending on their point of view. Harvey Wasserman, a founder of the Clamshell Alliance and long-time activist, credited the unions with having expanded the ferment of the 1950s beyond issues of nuclear testing and fallout into the completely new arena of civilian atomic power. Sheldon Novick, former editor of *Scientist and Citizen* (later *Environment*), recalled their opposition as "the most spectacular of all battles" over nuclear power plants. Following the meltdown, both the accident and the union actions were the subject of investigative reporter John Fuller's *We Almost Lost Detroit*, which was widely read in the emerging antinuclear movement.[7]

By contrast, contemporary Republicans, the AEC, and others accused the unions of bad faith—of only pretending to oppose the reactor on safety grounds when, in reality, their agenda was to prevent privatization of atomic power. Much of the press echoed that skepticism. For instance, Raymond Moley, a former New Dealer gone over to the Right, was a *Newsweek* columnist who hounded UAW President Walter Reuther, making him an outsized symbolic threat to the benefit of Republican electoral campaigns. "It is to be taken for granted, of course, that [Reuther's] union is not a real labor organization but a political instrument thrusting itself into every national and international concern. And it is equally clear that he is for socialized power." Obviously, Reuther was dissembling: "The outcries about the great peril to the city of Detroit and its environs were utterly uncalled for because the company was

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determined and compelled to make the project safe." Similarly, *Business Week* wrote, "Their ostensible position is that they own property nearby and fear the design is not yet proved safe. But the philosophic reason is more important: The unions want public construction of power reactors."[8]

That critique has had unexpectedly long legs, leading some to argue that, first antinuclear challenge or not, *Power Reactor* fails the test of being truly environmental as it was fundamentally insincere. Thus, for Spencer Weart, the unions blocked the plant not out of safety concerns, but simply in order to obstruct the Eisenhower administration in its pursuit of privatized atomic power. For Daniel Ford, the unions' protest served only as a means of embarrassing and attempting to unseat Republicans.[9]

Though organized labor was at that time a proponent of public atomic power, Reuther told reporters "that 'nothing could be more tragic' than to get a dispute over safety standards involved in such an ideological discussion."[10] From 1956 to 1961, the union petitions to the AEC, formal hearing, and lawsuits tried to stop construction of a risky, experimental reactor—not to replace the utility with a public power authority. Still the charge remains. With the motives and meaning of their action heavily contested, and union statements given little credence, the honor of being first to challenge nuclear power has not guaranteed the UAW, IUE, and Paperworkers a place in environmental history.

In this essay I hope to clarify meanings of their actions. What did atomic power represent to union leaders? Why did they care whether it was owned publicly or privately? With all the possible sites of conflict, how did Fermi I in particular come to provoke such determined union opposition? Most importantly, how did unionists make connections between atomic energy and nature?

To address these questions, I attempt to reconstruct the discourses of nature through which the Fermi protest was framed. Such discourses are neither transparent nor reducible to social locations, though they certainly have material effects. For instance, workers' health has had many meanings over time that can be traced to a changeable discursive nexus of relationships between nature and classed, raced, and gendered bodies. These relationships are forged in interpretive, albeit internally differentiated, communities of many actors, such as workers, unions, physicians, environmentalists, and others. Within a fluid, dialogical field, meanings are shaped, refined, challenged, and changed by those who participate in and enact the discourse.[11]

Here I begin from the contingency of the atom itself—which was in the postwar period named a "peaceful atom" and, I argue, identified as a new natural resource. How to manage and control it was debated publicly by competing "discourse coalitions," in Maarten Hajer's terms, that framed arguments about managing the atom.[12] Although most conservation and environmental history places unions outside the mainstreams of the nature-oriented movements, the documentary evidence suggests that union leaders were actively engaged with them and shared their distinctive imaginaries of nature. Thus, while Republican, AEC, and industry voices supported privatization, labor

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and its allies urged public atomic power; within a conservationist discourse, this meant developing the atom within the public domain where it could best serve the common good. With Fermi I, that ontology was disrupted by the revelation that the reactor planned for a metropolitan site was potentially explosive. Unionists put aside the conservation imaginary of natural resources through which they had promoted atomic power and turned toward an emerging environmental imaginary of humans enmeshed in threatened biophysical systems.

Nature and the Atom

In the 1950s "the atom" was widely imagined through the topos of nature—cast as either an explosive force or controlled energy. On one side of an ontological binary, the atom bomb threatened destruction of life on earth; on the other, the peaceful atom played a transcendent role as a new species of natural resource with transmutative potential. This distinction facilitated union and other support for the development of reactors.

As Gabrielle Hecht argues, "nuclearity"—or, drawing on the work of Ian Hacking, the historical ontology of the nuclear—involves a consequential construction whose effects are felt in law, policy, bodies, and elsewhere. Nuclear ontologies are unstable, vary in different places, and are open to multiple interpretations. "*Nuclearity is not the same at all moments in time*: its materialization and distribution in the 1940s and the 1990s differed markedly."[13] Although Hecht probes classifications of the nuclear and the nonnuclear to understand how workplace exposure to radiation becomes invisible to government oversight, her concept of nuclearity can be extended to illuminate classifications of the natural and nonnatural. The now familiar view—in which nuclear power seems to lie firmly outside nature and threaten its integrity—is an ontology that, as explored by John Wills, did not become prominent until the 1970s as a result of the antinuclear movement.[14] Nonetheless, from the dropping of the first bomb, the relationship of the atom to nature was questioned, affecting ways in which atomic technologies were appraised and their future uses imagined.

As Peter Hales has shown, government and media figures at first identified the bomb itself as a force of nature—a "mythic embedding of the Atomic Bomb in the grandeur of Nature, as the manifestation of God's will"—in an influential construction that was then followed by mass media circulation of a redemptive poetics of the atomic sublime.[15] Such celebratory imagery provoked strong reaction from critical intellectuals for whom the desired alternative to the growing atomic arsenal became the development of atomic power for peaceful uses—like the olive branch held out by President Dwight D. Eisenhower in his effective 1953 "Atoms for Peace" speech. Whereas the bomb struck many people as apocalyptic, the "peaceful atom" represented human progress or, as Spencer Weart has it, the bomb was the bad atom while the peaceful atom was the good. The atom bomb was rendered an uncanny object of fear, an alchemical

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force, or golem—a hybrid of nature and the supernatural that combined elemental forces with miraculous and deadly violations of the natural order. By contrast, the peaceful atom represented a "harnessed" force whose uncanny properties were rendered benign. Popular atomic utopias portrayed atomic energy as the open sesame to a clean new world enjoying limitless power, where the economy could grow infinitely without costs to society or nature. As Paul Boyer writes, "This magnification of the atom's hypothetical peacetime benefit as a way of avoiding the reality of the atomic threat was encouraged by the 'either/or' structure of many post-Hiroshima pronouncements: either civilization would vanish in a cataclysmic holocaust, or the atomic future would be unimaginably bright." In the 1950s, opposition to the atom bomb and the even more powerful hydrogen (or thermonuclear) bomb did not, by and large, extend to peaceful uses of atomic power.[16]

In this postwar ontology, the "peaceful atom" was welcomed as the newest addition to the world's established natural resources. Indeed, it was a precocious master resource endowed with near magical properties, ranging from supplanting fossil fuels to transmuting matter. Since well before the war, atomic utopias had promised a pristine new world—done with dirty technologies like coal and capable of averting what seemed an otherwise inevitable decline of civilization due to the exhaustion of natural resources. "A race which could transmute matter would have little need to earn its bread by the sweat of its brow," predicted scientist Frederick Soddy in 1908.[17] The atom was the "modern counterpart of the Philosophers' Stone," a journalist reported from the 1955 International Conference on Peaceful Uses of Atomic Energy, held in Geneva and attended by union delegates. Among them were Leo Goodman and Benjamin Sigal, who were soon to become central to *Power Reactor*.[18]

A vital aspect of this uncanny natural resource was its reproductive force. Unlike fossil fuels, the atom could live on indefinitely, endlessly feeding processes of production and consumption while making more of itself at the same time. The reactor's issue—plutonium—was good for bombs, and took its name from the god of death and the underworld. Nonetheless, the startup of the first reactor, under Enrico Fermi's direction in wartime Chicago, was described through the metaphor of birth, as was the chain reaction that "reproduced" in successive "generations," each fission representing a "marriage."[19] Such imagery, countering death and the uncanny with fecundity, also characterized civilian reactors. The dual-purpose reactor—the design chosen for Fermi I—produced both electricity and large quantities of plutonium, hence was termed a "breeder reactor." In a typical contrast of bad and good atoms, journalist John Gunther described the 1954 tests in the Marshall Islands as releasing "apocalyptic monsters," but praised the peaceful atom: "The AEC … fertilized private enterprise in all sorts of fields."[20]

Thus, the atom figured as a dangerous natural resource having vast potential, paradoxically, for either destroying the land and society or changing them for the better, and as the peaceful atom it was celebrated by preservationists and conservationists. For instance, park and playground professionals

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entertained the notion that atomic energy had ushered in an era of superabundance and leisure. In the historic struggle to save Dinosaur National Monument from being flooded for the Colorado River Storage Project, the Sierra Club advocated building atomic power plants in place of dams, suggesting that, thankfully, hydropower had become obsolete in the atomic age. The atom also answered nicely to longstanding concern over resource scarcity. Resources for the Future, the conservation think tank founded in 1952, awarded one of its first major grants for exploration of "productive uses of nuclear energy." Its president, Reuben Gustavson, wrote in 1955 that "man has in the nucleus of the atom an almost inexhaustible source of energy, which he will be able to control and make available at prices that will decrease with advances in technology."[21]

Unionists, too, embraced the peaceful atom. The *IUD Digest* (published by the AFL-CIO's Industrial Union Department) stated that, instead of diminishing resources and population pressure, "A new civilization is dawning for man. This will be a world in which the rocks will be sources of fuel. It will be a world in which there will be no shortages of minerals, food, or metals." Rather, it reported, scientists at the California Institute of Technology had released a report projecting a leading role for atomic power in a future "when the world's petroleum is exhausted, when all our iron ore is gone, and when atomic fuel is the sole source of man's energy." Just months before the Fermi controversy, UAW President Walter Reuther wrote, "The supply of liquid and gaseous fuels is exhaustible. The ultimate supply of atomic energy would appear to be almost inexhaustible. Every unit of oil or gas that can be replaced by atomic energy in the generation of electricity is, from a national point of view, money in the bank."[22]

Private and Public Atomic Power

Under the Atomic Energy Act of 1946 (the McMahon Act), atomic materials and technology were owned and controlled by the government. In the 1950s, debate over development of atomic energy was entirely dominated by the question of whether private utilities should be allowed to build reactors that would produce and distribute electricity for profit. The alternative was to build and operate them under public power agencies like the Tennessee Valley Authority (TVA). Although this debate concerned a new technology, it played out as part of a larger conflict over New Deal programs related to conservation.[23]

Often this controversy is deemed purely economic, concerning a contested industrial model for delivering energy to Americans. As Wyatt Wells describes, "Since the 1930s, public power had been a defining political issue. The introduction of electricity changed lives. Refrigerators, washing machines, and air-conditioning altered eating habits, eased housework, and tempered hot climates. Electricity made possible assembly lines and new industries like aluminum and electrochemicals." Public policy was aimed at encouraging the rising electrical

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demand and supply considered essential to economic growth although, to complicate matters, energy already was plentiful in the 1950s. The United States was, as David Nye puts it, "the most highly powered society in the world." Hence, much of the rationale offered for adding costly atomic power to the mix had to do with addressing future resource scarcity; building atomic power plants for tomorrow's cities and industry was justified as ensuring continued human progress.[24]

Given the terms of debate, the question of private versus public atomic power could hardly be purely economic. Public power was the *sine qua non* of the conservation movement, and the nuclearity described by "the peaceful atom"—as a natural resource awaiting human use, with the unique potential to solve the problem of resource scarcity—was readily absorbed in conservationist discourse. The atom also became a prize target for those who wanted to undo public power.

That these connections are not clear to us today is at least partly due to certain biases of conservation history, including ways in which social concerns and union participation have been rendered almost invisible. Samuel Hays was influential in arguing that Progressive-era conservation was not genuinely a people's movement, but instead was a top-down movement of elites who valued modern management and expert authority over democratic politics. When planners and scientists were forced to turn to the public for political support, he wrote, they attracted middle-class urbanites whose prowilderness, antiurban biases compounded a lack of connection with workers and the labor movement. Similarly, Robert Gottlieb framed an influential environmental-justice narrative in which workers and unions led their own alternative movement. Rather than aligning themselves with the middle-class conservation movement centered on wilderness and natural resources, he argued, they gravitated to the radical and Progressive margins to pursue issues of industrial health, community housing, urban playgrounds and open space, clean air, sanitary water, recreational parks, and similar efforts to improve workers' conditions in factories, fields, and cities. Into the postwar period, he wrote, working-class environmentalists remained "separate and distinctive groups, defining issues and constituencies from a different starting point than their conservationist and protectionist counterparts."[25]

This model of radically separate movements does not hold up in the Fermi controversy, where union advocacy of public atomic power fell squarely within the mainstream, utilitarian conservationist paradigm concerned with natural resources. As Clayton Koppes discusses, the conservation movement was shaped by Progressives and the New Deal to value not only efficiency, but equity. For conservationists, private utilities had not only plundered natural resources—underusing those they could not exploit for profit and destroying others, like essential watersheds, with abandon—but, as part and parcel of their unscrupulous practices, they had cheated consumers. By contrast, public power both managed rivers and watersheds scientifically and sold power cheaply to urban consumers, small farmers, and local businesses, providing an

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alternative and corrective to utilities and trusts. As Koppes says, "Public ownership and control was essential to prevent further monopolization of resources and to provide a basis for attacking existing concentrations of resource holdings." Further, as Phyllis Komarek de Luna writes, support for public power was an ethical stance based on "the liberal belief that the natural resources of the country must be developed for the greatest good of the greatest number. … Consonant with this view was the conviction that the government must ensure that electric power be developed and transmitted for the general welfare of the people." It was precisely that stance that unions adopted toward public power, not from marginalized positions but at the heart of organized labor. Indeed, public power was championed by no less than Samuel Gompers, founding president of the American Federation of Labor and a director of the National Conservation Association (founded by Gifford Pinchot and Theodore Roosevelt).[26]

Unions' proficiency at mainstream, progressive conservation in the postwar period is evidenced across the field of public discourse. There they participated in an ensemble of relationships, or what Maarten Hajer calls a "discourse coalition," in which shared conservationist story lines can be recognized.[27] On one side was a discourse coalition of Republicans, the AEC, and industry (especially private utilities), which advocated private atomic power. On the other side was a discourse coalition of unions, conservationists, public power advocates, public utilities, and New Deal Democrats who pressed for public atomic power.[28] The former discourse legitimated dismantling conservationist law and programs, while the latter promoted public atomic power development as good conservationist policy. These opposing discourses can be reconstructed inductively and synthetically from a variety of published sources, including newspapers and magazines, law and policy journals, government hearings, and memoirs, as well as archival materials, such as union memos. Often the evidence is hidden in plain sight, as in Leo Goodman's title as secretary of the AFL-CIO Staff Subcommittee on Atomic Energy and Natural Resources.

Private power In the postwar period, Republican leaders sought to overturn much of the conservation law, policy, and infrastructure put in place by Progressives and the New Deal. They especially attempted to undermine or reverse all that had put the "public" in public domain, public lands, and public power. As environmental journalist Philip Shabecoff recalls, "Eisenhower's Secretary of the Interior, a former Chevrolet dealer from Oregon, Douglas McKay, attempted to block public power projects and turn energy resources over to private companies … So assiduous was McKay in seeking to get rid of federal property that he was dubbed 'Giveaway McKay.'"[29]

In particular, the administration, Republican-controlled Congress, and private utilities made no secret of their distaste for the TVA. Despite its wartime service to the Manhattan Project, and despite the leadership of its former head David Lilienthal as first chair of the AEC, Eisenhower famously decried the TVA (in what the *IUD Digest* called "a scare technique") as

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"creeping socialism." From the Progressive era to the Eisenhower years, private utilities had not reconciled themselves to government competition. Facing imminent development of the peaceful atom, Republicans sought, above all, to revise the McMahon Act so as to avoid creating an "atomic TVA" and successfully amended the law in 1954 to support reactor development by private utilities. The first licenses were issued without incident in 1955.[30]

Although the rhetoric of private power celebrated free enterprise and condemned public power as the main brake on atomic innovation and investment, members of this discourse coalition were very much aware that atomic power was not commercially viable. Still, the AEC was keen on handing off electricity-generating reactors to the private sector. Among the companies that sought to own such reactors, Rebecca Lowen suggests that the overwhelming motive was to preempt public power from gaining a foothold in the field. In recognition of the high costs and limited returns, then, the revised McMahon Act offered substantial, direct government incentives to private capital to design and build reactors. Among them, the Power Reactor Demonstration Program ("the euphonious name given the subsidy program," said the *Wall Street Journal*) encouraged private utilities to apply for the chance to design, build, and own reactors, licensed by the AEC and hooked up to their own power grids, that would test new reactor designs. Even with subsidies, few companies applied to this program.[31]

The most enthusiastic applicant was undoubtedly PRDC, a creation of Detroit Edison and, like it, headed by Walker Cisler. Detroit Edison was the selfsame utility that would sell the electricity produced by Fermi I in metropolitan Detroit, while PRDC was its financial arm. Cisler was one of the most vocal industry heads pressing for a power reactor program, and, though he repeatedly emphasized Detroit Edison's belief in free enterprise, he was a tireless lobbyist for government subsidies and concessions. So was the Atomic Industrial Forum, the leading atomic trade group, which he also founded and headed. The contract PRDC signed with the AEC included such incentives as free atomic fuel for seven years and AEC responsibility for dealing with the atomic waste. Detroit Edison also secured permission from the Michigan Public Service Commission to treat its research and development contributions to PRDC as operating expenses, hence as part of its rate base, meaning that consumers would underwrite the company's participation in the demonstration program. PRDC, representing an interstate consortium of utilities and corporations, successfully lobbied to circumvent Securities and Exchange Commission oversight, which should have been required under the Public Utility Holding Company Act; aimed at breaking up "power trusts," that act had been a major conservationist achievement of progressive Republicans, especially George Norris and Alvah Borah, in what proved to be their last hurrah during the Second New Deal. Moreover, PRDC and other companies found the AEC surprisingly amenable to a metropolitan location for the reactor, which solved the sticking point of high transmission costs from remote sites. Last but not least, given the expense and difficulty of obtaining insurance against reactor accidents,

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PRDC joined in lobbying for taxpayers to underwrite that cost (resulting in the notorious Price-Anderson Nuclear Industries Indemnity Act of 1957). Even with generous concessions, Detroit Edison's original partner, Dow Chemical, withdrew early on when the AEC refused to commit to buying the plutonium the breeder reactor would produce.[32]

Public power For this discourse coalition, protection of public resources and the public domain constituted what Henry Caulfield termed the "dominant policy paradigm of the conservation movement." For them, "the atom" was embedded in a progressive conservationist imaginary of nature in which a commonwealth of natural resources, when husbanded under public stewardship, supported a general prosperity that benefited "the people." Hence, struggles over control of the atom evoked memories of the early trust-busting struggles against private utilities accused of squandering natural resources while failing to deliver electric power equitably. For instance, economist Walter Adams wrote that the revised Atomic Energy Act could well "restore the vast utility empires which the Public Utility Holding Company Act of 1935 was intended to dissolve." Objecting to the Shippingport deal for the first commercial reactor to generate electricity, Eric Peterson of the International Association of Machinists contrasted it with the regional development goals of public power, for which Eisenhower's public/private "partnership" seemed a mean substitute. "How shabby this perverted cooperation appears in contrast with the principles underlying the Tennessee Valley Authority," he wrote. "Is TVA the last surviving work of a vanished race of statesmen who placed the commonweal above partisan policies and economic favoritism? Are the resources of the nation to be parceled out as virtual gifts to private interests, from here on?"[33]

Describing labor's causes, the AFL-CIO legislative department clearly echoed the classic conservation narrative of "the people against the interests" in declaring,

> Since the Administration of President Theodore Roosevelt, the national government has pursued a policy of protecting our national resources from big business exploitation and preserving them for all the people. The Eisenhower Administration, early in its term, began to change this policy, substituting the "giveaway" programs to turn natural resources over to private business.[34]

As Richard Boyer and Herbert Morais summed up, "In an effort to undo what President Eisenhower called the 'creeping socialism' of the New Deal, offshore oil, government-owned synthetic rubber plants, public lands, public power and atomic installations were handed over to the glories of private profit." Throughout the Truman and Eisenhower years, labor defended public power and opposed the "giveaways" of a long list of natural resources. A 1956 article in the *IUD Digest* reported a litany of battles over "the people's resources" from corporate leases in national forests and wildlife refuges to budget cuts at public power authorities. Led by Andrew Biemiller, the

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AFL-CIO legislative department testified often in Congress against attempts to undermine public power. In 1956, its roster included the campaign for the Gore-Holifield bill, which sought to include the government in building demonstration power reactors; that bill, also the subject of a legislative luncheon sponsored by the Oil, Chemical, and Atomic Workers, was defeated but had been hard fought and widely publicized through the AFL-CIO program "As We See It," then broadcast over the ABC radio network.[35] Also in 1956, as the only labor appointee to the Advisory Panel on the Peaceful Uses of Atomic Energy (the McKinney panel), Walter Reuther wrote a minority opinion in favor of public development of atomic power.[36]

That the atom should be developed through public power authorities had become an article of faith. Indeed, Anthony Wayne Smith—an attorney who had been secretary to Gifford Pinchot during his second term as governor of Pennsylvania, but who had been with the Congress of Industrial Organizations (CIO) since 1937—had helped draft the Atomic Energy Act of 1946. As Republicans moved to amend it, CIO spokesmen appeared before Congress to testify against "turning atomic energy over to the big monopolistic corporations." Benjamin Sigal, counsel for the IUE and later lead counsel on *Power Reactor*, represented the CIO in testimony before the Joint Committee on Atomic Energy (JCAE), where he charged that the proposed "multibillion dollar give-away of atomic know-how" would "dwarf the combined value of all previous and other proposed give-aways of our country's national resources." AFL unions objected as well. In 1953, for example, Plumbers President Peter Schoemann contended in the union journal that, in turning over atomic installations to commercial interests, the administration was trying "to steal from the American people what is rightfully theirs."[37]

The law and policy debates of the 1950s began with the atom as a precious natural resource but also articulated the atom's place in the classificatory scheme of nature more precisely. Atomic power was likened to water power because, according to former TVA and AEC counsel Herbert Marks, such a parallel was facilitated by Progressive and New Deal conservation law. Fuels like coal, oil, and gas were generally developed by private corporations and merely regulated by government, but water, under the commerce clause of the Constitution, lent itself to government management of rivers such as building dams, holding a proprietary interest in dams' falling water, and having the right to deliver the power it generated to markets, including preferentially to public power groups. The laws supporting public power helped make the atom analogous to water.

> The analogy between nuclear energy and water power … suggests itself because the atomic enterprise began as a federal monopoly … And, by reason of its title to all fissionable materials, the Government had, and still has, a proprietary interest in nuclear fuel which can be likened to its proprietary interest in the falling water of navigable streams. Moreover, by reason of the enormous financial investment of the Government in atomic energy, it has been possible to argue that

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> nuclear energy should be considered a resource which belongs to all the people and which, like water power, should be publicly developed, or very strictly regulated.[38]

Hence Clyde Ellis, executive director of the National Rural Electric Cooperative Association, added to a history of battles over water rights: "We are now in the genesis of another struggle over a new kind of public resource—atomic energy for peaceful uses, brought about only because the Federal government has created and the taxpayers have paid for this vast new resource."[39]

Other similarities also led to associating atoms with water. Narratives of alchemical atomic utopias bore a strong family resemblance to New Deal narratives of the massive transformations public hydropower aimed to achieve, from "improving" nature to spreading abundance, especially on the TVA model. Much like the atomic promise, dams and hydropower were the subjects of heroic and often utopian narratives in which, working for the common good, the government harnessed nature's power to transform deserts, spread civilization, sustain agriculture, light the cities, and overcome both poverty and primitive toil.[40]

Guided by the sense that they were fighting the good fight, then, unions joined in pressuring Congress and the AEC for public atomic power. As Herbert Marks wrote, the resulting changes to law and policy reflected "the fact that public power groups are sufficiently strong politically to preserve their position, even in an administration that cannot be characterized as friendly to them." A reluctant AEC was forced to license reactors under authorities as different as the TVA, Consumers Public Power District of Nebraska, and the Rural Cooperative Power Association of Elk River, Minnesota.[41]

The Nuclear Uncanny

The off note in the conflict over public and private power was provided by the atom itself. The binary of bomb/peaceful atom was troubled by dangers, though the AEC concealed the radiation hazards of both the bomb and bomb testing as fully as it could. Still, concern increased dramatically when, in 1952, the United States began tests of the hydrogen bomb, as did the Soviet Union soon after. As fallout spread globally, scientists, physicians, and citizens around the world organized to document radiation exposures and demand an end to testing.[42]

As tales of death from fallout emerged, rumors and tales underpinned by the uncanny began to circulate among ordinary people. "Whether true or false," observes Spencer Weart, "the stories taken as a group made symbolic sense … to say that nuclear energy violated the order of nature. This idea was bound up with one of the strongest of primitive themes: contamination." A different discourse of contamination arose among dissident scientists and physicians who publicized the dangers of fallout as a "pollutant" that could be scientifically identified, measured, and mapped. For them, fallout violated the integrity of natural systems and the human body, and they charged that

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atomic tests would lead to increased incidence of cancer, genetic mutations, and long-term contamination of the land, water, and food chain on which life depended. "Contamination, poison, impurity, pollution, obscenity—more and more people were applying such words to fallout."[43]

In response to public outcry, the AEC simply denied that fallout was unnatural, informing people living near test sites that it posed no danger to them while classifying data that showed otherwise. As citizens and dissident scientists challenged such bald denials of fallout's deadly impact, the AEC shifted focus to thresholds of exposure, putting fallout on a continuum with natural levels of background radiation and attempting to normalize it by naturalizing it. Work related to bombs and fallout was given names taken from nature, such as Project Sunshine for studying global fallout, measured in "sunshine units." In October 1956 Walter Reuther joined dissident scientists, religious leaders, Eleanor Roosevelt, and others as a prominent signatory to a full-page ad in the *New York Times* summarizing the health, environmental, and geographic impacts of fallout and cautioning that the AEC's standard for a "permissible dose" was unacceptably high. "All exposure to radiation is dangerous to present and future generations," it warned, because radiation was not only carcinogenic to those exposed but posed a genetic risk to future generations.[44]

Against this backdrop, the ontology of good and bad atoms became all the more heavily freighted. In an aggressive public relations campaign, the AEC maintained that the peaceful atom differed in kind from the bomb and tried to dissociate it from the latter's destructive force and contamination. The bomb consisted of an uncontrolled chain reaction whereas, officials said, a reactor consisted of a controlled chain reaction. Reactors did not explode like bombs, they told the public; they were contained structures with atomic energy safely confined inside them. Still, it didn't take much imagination to picture atomic plants as dangerous places. Pat Frank's 1946 novel *Mr. Adam* envisioned an explosive accident at an atomic plant releasing enough radiation to render a large area uninhabitable. A 1956 report on fallout, by the National Academy of Sciences, pointed out that atomic reactors were a greater threat than bombs as, through routine operation, they could produce more than enough strontium-90 to contaminate the whole earth. As operating experience led to accidental meltdown and leaks at EBR-I (the AEC's experimental breeder reactor) and at Chalk River in Canada, officials were at pains to explain that these were not "a true nuclear explosion like that of an atom bomb." One scientist commented, "The trouble with atomic energy is that its first product was a bomb." To preempt such connections between reactors and bombs, utilities also conducted public relations campaigns to convince the public, as one reporter put it, that "nuclear power plants are only shirttail relatives of atomic bombs." Among them, PRDC worked to prepare public opinion for its proposed Fermi reactor, meeting with civic groups and holding training sessions for power companies expected to conduct public relations campaigns of their own.[45]

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Union Petitions and the Environmental Turn

PRDC's application for a construction permit was still under review when, during June 1956 congressional hearings on the Gore-Holifield bill, AEC Chairman Lewis Strauss let slip that groundbreaking ceremonies had already been scheduled for August. The next day AEC Commissioner Thomas Murray, the last Truman appointee to the group of five commissioners, went before Congress to reveal the existence of a scientific report recommending against approval of the Fermi reactor. The report had been prepared by the Advisory Committee on Reactor Safeguards (ACRS), a group of outside experts responsible for reviewing the safety of designs submitted to the Power Reactor Demonstration Program. Murray read their conclusions into the record:

> The Committee believes that there is insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard. … The Committee … commends the willingness of the Power Reactor Development Company to risk its capital and prestige in the development of this reactor concept. But the Committee does not feel that the steps to be taken should be so bold as to risk the health and safety of the public.

Murray confided to Senator Clinton Anderson (D-NM) that he feared Strauss and the other commissioners were going to grant the permit, anyway. In his capacity as chair of the JCAE, Anderson pressured the AEC to release the ACRS's full letter documenting its safety concerns, upon which he was legally able to publicize the contents.[46]

The plant's "explosive" potential was, in fact, the issue. Among the reactor designs submitted under the AEC program, most involved water-cooled reactors. The PRDC application had the only sodium-cooled design, and the breeder reactor was much less stable than other types. It had a tendency to reach a "prompt-critical" stage of rapid fission that could result in a near instantaneous runaway chain reaction capable of breaching the containment structure; in addition, the sodium used as a coolant was potentially explosive. These scenarios were not just theoretical. EBR-I, the small prototype designed by Argonne National Laboratory and built at the National Reactor Testing Station in Arco, Idaho, had suffered a partial meltdown in 1955 during an experimental run, and though the containment vessel was not breached, operation went awry in just two seconds. To add to these worries, the Fermi plant was designed to be very much larger and more powerful than EBR-I. Its technical problems were only compounded by its proposed metropolitan location; whereas EBR-I had been a small plant sited far from cities, the Fermi plant, if breached, would put Detroit and Toledo at risk (as well as Windsor, Ontario). The ACRS concluded that the fast breeder reactor needed more study before full-scale construction.[47]

Nonetheless, as predicted by Murray, the AEC granted PRDC a construction permit, outraging Senator Anderson and Congressman Chet Holifield

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(D-CA), also of the JCAE. Holifield told reporters "that there was great danger of 'meltdown' … that would release radioactive elements into the atmosphere, rivers and lakes." Both men urged the UAW, headquartered in Detroit, to invoke a hitherto unused provision in the Atomic Energy Act for a public hearing. Meanwhile, at the groundbreaking ceremony outside Monroe, Michigan, near Detroit, Lewis Strauss vilified critics: "This opposition is part of the pattern of the attack which is being directed against the free enterprise development of nuclear power in this country." People who expressed doubts about atomic power were widely dismissed as prone to ignorant fears, and Strauss pulled no punches in ridiculing and archaizing his congressional and union critics. He compared their objections to the comical fears of those who, in 1882, had not wanted Thomas Edison's generating station in New York City. "There were a few pessimists who cried out that he would burn down the city, or perhaps electrocute its inhabitants. They said such a dangerous device should not be permitted inside city limits," Strauss told the crowd.[48]

That month, officers of the UAW, IUE, and Paperworkers—all of whom had members in the affected area—met in Holifield's office to discuss intervening against the permit. Later in August, a strategy meeting was held in Washington to review technical and legal questions. It included Leo Goodman, secretary of the AFL-CIO Staff Subcommittee on Atomic Energy and Natural Resources, which reported to the Economic Policy Committee chaired by Reuther. From his unique position, Goodman was compiling information on accidents at atomic facilities as well as gathering and translating technical information on atomic power and radiation for unionists who weren't as knowledgeable about it. In a brief self-description, he noted his own immersion in the public power community, stating that he had "extensive contact with representatives of REA's, municipal and other public forms of utility ownership, farm and cooperative organizations which coordinate through such bodies as the Electric Consumers Information Committee." On the day of the groundbreaking, he circulated a critical informational packet of JCAE press releases and telegrams through the ECIC, of which he was an executive committee member. Also at the meeting were Donald Montgomery, the head of the UAW's Washington office; Benjamin Sigal, attorney for the IUE; and Harold P. Green, a former AEC attorney who had the all-essential security clearance needed to see the still classified information on the Fermi plant. James Grahl, a nuclear physicist with the American Public Power Association, was there to lay out technical issues that needed to be raised. At the end of August, the UAW, IUE, and Paperworkers filed separate petitions with the AEC, requesting that it stop construction of the Fermi I reactor.[49]

Because the union petitions were prepared by a common legal team, headed by Sigal and including Green as well as UAW attorneys Harold Cranefield and Lowell Goerlich, they were largely identical except for the officers and memberships they represented. The UAW petition stated that it represented over 300,000 members in Detroit, Toledo, and Monroe alone, with many others in the "area which would be subjected to the impact of an

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atomic catastrophe." An explosion or other incident would affect union members, their families, and the union itself: "It would imperil and destroy [their] health and lives." In addition, "it would contaminate the water supply of the city of Monroe and would imperil the usability of said city as a port on Lake Erie." Given the location of the plant, the petition argued, the permit should have been rejected.

> Intervenors further state that construction of a fast neutron-breeder reactor, "the most hazardous of all reactors," with its inherent characteristics of instability and hazard, at a site near metropolitan population centers, before such a reactor has been constructed, tested, and experimentally proven in less populated areas, is inimical to the health and safety of the public, and that the AEC violated [its statutory obligation] … to protect the health and safety of the public.

The petition requested a public hearing, suspension of PRDC's permit pending outcome of that hearing, and the voiding of the permit altogether until the reactor could be built "without undue risk to the health and safety of the public." In a press statement, Reuther charged the AEC with betraying the public confidence by issuing a construction permit for an "unproved and hazardous" reactor.[50]

With this step, the UAW, IUE, and Paperworkers broke with conservation, setting aside the ontology of "the peaceful atom" and the related goal of public atomic power. In their place the unions changed the conversation, making an environmental turn and engaging with a still emerging environmentalist imaginary. This new discourse of nature described a "web of life" constituted by biophysical systems and material flows through both natural and man-made materials, including human beings who were now inside nature instead of outside it as spectators or consumers. It identified an "environment" that was not pristine and self-regulating but had been changed and continued to change with human industry and human impacts. Lawrence Buell concisely compares the natures referenced by the nature-oriented movements:

> [T]he modern nature that toxic discourse recognizes as the physical environment humans actually inhabit is *not* a holistic spiritual or biotic economy but a network or networks within which, on the one hand, humans are biotically imbricated (like it or not) and, on the other hand, nature figures as modified (like it or not) by techne. This view is neither preservationist, given its recognition of the impact of human powers and the legitimacy of human needs, nor conservationist, since its goal is not resource management so much as effective symbiosis with the physical environment.[51]

The environmental imaginary arose partly with early concern about fallout. Fallout proved exemplary, Ralph Lutts writes, of:

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> … a kind of pollution that was invisible to the senses; could be transported great distances, perhaps globally; could accumulate over time in body tissues; could produce chronic, as well as acute, poisoning; and could result in cancer, birth defects, and genetic mutations that may not become evident until years or decades after exposure.[52]

Thus, in announcing union intervention against Fermi I's permit, the *IUD Digest* began with a list of known accidents at atomic installations. "Before atomic energy can be used commercially, there must be assurance of full safety," it explained, as atomic accidents were of a new sort, affecting innocent parties far removed from them in space and time. "Atomic radiation is dangerous—so much so, in fact, that the recent International Congress of Human Genetics declared: 'The damage produced by radiation on the hereditary material of man is real and should be taken seriously in both the peaceful and military uses of nuclear energy.'"[53]

But nowhere was the environmental argument for union intervention stated more eloquently than in a memo to Reuther by Donald Montgomery. Pointing out that both worker and public health and safety were jeopardized by unwilling radiation exposure, he argued that it was time to resist the heedless practices of not only the military, but also the atomic industry.

> Health and inheritance hazards arising in AEC installations and in power reactor installations, and the hazards arising from the testing of atomic and thermonuclear weapons, are recognized, are dramatic, and are receiving constant attention, even if not enough.
>
> But for those workers in plants where radioactive processes are employed the hazard is very great and it receives almost no attention. I have not found even a mention of it in the National Academy of Sciences recent report, for instance.

Such workers were sentenced without their knowledge or consent to disease, genetic injury, or death, slated to occur silently, long after exposure. "While the genetic injury that is involved is far, far more serious for the human race than any of the worst diseases or plagues ever known, we can know this only through the reasonings of scientists from experiments on plant and animal life. The same is true of life shortening." Montgomery urged that "a crusade to wake people up and stop this manslaughter and mangling is imperative. There won't be any crusade unless some one leads it. I don't know of any outfit that can or might lead it except UAW. Since nothing less than the lives of workers and the future of the human race is involved, I naturally hope UAW will work at it."[54]

Conclusion

AEC Chairman Lewis Strauss could ridicule critics all he liked. Walter Reuther was undeterred and, after the groundbreaking ceremony for Fermi I, warned

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publicly that the plant had the potential to explode and "might convert itself into a small-scale atomic bomb." To that the local Republican congressman from Monroe, George Meader, made the formulaic rejoinder that he suspected the unions of being part of a "conspiracy" against capital. "[T]heir record in public life, and their political philosophy, lend substance to the suspicion that their goal is to stop, before it gets started, development by private capital of peacetime uses of atomic energy, and to reserve this new field of natural resources to the government as a socialistic monopoly."[55]

For too long, this red herring has diverted attention from the unions' achievements, while the dominant historical models have made it difficult to reconstitute union meanings. Labor has been radically separated from both "middle-class" conservation and "mainstream," "middle-class" environmentalism, with misleading results. Samuel Hays was influential in proposing that environmentalism arose *de novo*; unlike the old class politics of conservation, he argued, environmentalism emerged from a new middle class of urban consumers. Alternatively, in Robert Gottlieb's frame, working-class environmentalism has been a constant of modern capitalism, where it pursues its own health and livelihood interests. Both these models rely on a familiar, and narrowly delimited, paradigm of identity politics that obscures the complex cultural politics of unions as knowledge producers. As Arturo Escobar says of protest against the nature made by capitalist modernity, "subalternatization does not exhaust the subject positions of oppressed groups," who "in emphasizing their own life projects … affirm an ontological project."[56]

In the play of meaning around the Fermi reactor, the union protest challenges historical narratives in which, as Martin Melosi puts it, unions are relegated to "a cast of subordinate players sniping along [the] fringes."[57] It opens a window on unrecognized associations, shared goals, and common meanings across movements. It reveals significant historical change within the labor movement as it identified new problems and formed responses to them and suggests continuities between conservation and environmentalism that have not been appreciated, especially as bridged by unions. It also identifies union leaders as important voices in changing the historical ontology of nuclear power.

In the postwar United States, some unionists—often those most immersed in conservation—began to move toward environmentalism. As summed up by Hans Huth, "Conservation as generally understood means the husbanding of natural resources; that is, the developing of these resources in accord with the best public interest, restoring to productivity those that have been depleted and guarding them against further depletion." Despite yeoman efforts to achieve the greatest good for the greatest number, conservation clearly was too often a developmentalist and managerial politics that conflated "natural resources" with "economic resources" and that dispossessed people whose livelihoods depended on direct access to land and water.[58] By the late 1940s and 1950s, as Rosemary Feurer has shown with the proposed Missouri Valley Authority, some unionists were questioning the received wisdoms of what had become conservationist dogma as they resisted the statist, inequitable processes

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of planning, administration, and dislocation that characterized public power projects. The same Anthony Wayne Smith who had helped craft the McMahon Act also was executive secretary of the CIO Committee on Regional Development and Conservation; in that capacity he threw his support behind the Sierra Club's historic effort to save Dinosaur National Monument from damming, personally taking union leaders to the site to show them what would be lost, as part of a campaign now credited with galvanizing a complacent conservation movement. In 1958 he left organized labor to head the National Parks and Conservation Association, which he soon shook up with an environmentalist agenda.[59] As has been well documented, the United Steelworkers, too, were environmental leaders in the 1950s, with groundbreaking work on air and water pollution and lobbying for new kinds of environmental protection.[60]

Concurrent with the Fermi dispute, Leo Goodman was lobbying for worker protection while compiling his own record of workplace radiation accidents, injuries, and illness and death—research that required assailing the wall of secrecy maintained by those so aptly described by Kate Brown as the government, industry, and scientific experts "who staged a powerfully convincing performance of an open society." After 1959 he had the distinction of being barred from appearing before the JCAE, as his testimony on behalf of uranium miners had angered Chet Holifield. Described by *Nucleonics Week* as "an elfish little man who usually has a smile on his face and one thought on his mind: to torment the US Atomic Energy Commission," Goodman was plain spoken; when the AEC finally issued revised worker-protection standards in 1961, he said that the National Council on Radiation Protection's recommendations displayed "low morality" and called on the AEC "to establish more effective controls than the sheer wisdom of a philosophy of risk." Goodman mentored other unionists—notably Tony Mazzocchi of the Oil, Chemical, and Atomic Workers, who considered him "the father of the anti-nuclear movement"—in pressuring Congress and brought nuclear workers and widows to Washington to tell their stories directly.[61]

Certainly, environmentalism emerged from many vectors—from the sciences to the suburbs[62]—but in the 1950s industrial unionists already counted among its most important cultural producers. With Fermi, the intervention against PRDC's license was not a cynical ploy to defend a well-worn position, but rather, marked a profound and strategic shift away from union engagements with conservationist politics toward what we now understand as environmentalism. Influenced by a historical ontology of "the peaceful atom" as a new natural resource, unions had initially sought to pull "the atom" into a conservationist development model drawn from hydroelectric policy; like land and water, it figured as a part of nature to be dominated, managed, and exploited by and for society. Unions participated in a discourse coalition of progressive conservation that, in opposition to those seeking privatization, aimed to keep the atom securely under public power authorities charged with protection of the commonwealth of natural resources—the national patrimony that is an object of public stewardship and that, properly managed and developed, supports public prosperity.

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Yet the atom also remained an uncanny natural resource with dangerous properties, and, with Fermi I, those properties came to the fore. The fast breeder reactor was known to be unstable and suspected of being potentially explosive. The unions who petitioned for hearings put aside the conservation imaginary of natural resources through which they had promoted atomic power and turned toward an environmental imaginary of humans enmeshed in threatened biophysical systems. The peaceful atom was exposed as not so different from bombs after all and, at least with Fermi I, union officers came to believe that worker and public health and safety trumped its benefits. The issue in Detroit was no longer how to develop the atom as a fruitful part of nature; instead, the goal became to protect nature and human life from the release of deadly radiation.

Through the efforts of the UAW, IUE, and Paperworkers, the AEC was forced to conduct public hearings and declassify information it had labeled secret. These unions were first both to recognize and act on the understanding that with atomic power, despite assurances of safety, workers and the public were being unwittingly subjected by government and industry to life-threatening environmental risks. Against a backdrop of ongoing reactor accidents—most vividly at Windscale in 1957, which spewed fallout over the British isles—Goodman wrote Reuther, "This accident alone proves the soundness of our position regarding the Monroe reactor." The unions' five-year-long struggle put such hazards in the public eye. Begun in 1956, it predated formation of the principal citizens' groups opposed to fallout and nuclear testing, including SANE in 1957, the Greater St. Louis Committee on Nuclear Information in 1958, and Women Strike for Peace in 1961. It also predated all organized protests against nuclear reactors, including at Bodega Bay in 1962 and Queens, New York, in 1963.[63]

Some fifty years later, it is time to acknowledge that the UAW, IUE, and Paperworkers were leaders in creating a new and powerful politics. They helped to change the conversation from nature as a cornucopia of resources for human domination and use to a new model of an interconnected society and biophysical environment threatened by human recklessness and technological hubris. The struggle to stop Fermi I proved an inspiring precursor to the environmentalism of the 1960s. Though the unions ultimately lost before the Supreme Court, Harvey Wasserman writes, they had succeeded in making their point to those who could hear it. "Justices Hugo Black and William O. Douglas issued a minority opinion full of portent. Allowing an unproven technology to go ahead with such force, they said, was 'a light-hearted approach to the most awesome, the most deadly, the most dangerous process that man has ever conceived.'"[64]

NOTES

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Graham. I also appreciate the close reading and suggestions of two anonymous reviewers. Above all, many thanks are due my husband, Christopher Couch.

2. Roger E. Kasperson, Gerald Berk, David Pijawka, Alan B. Sharaf, and James Wood, "Public Opposition to Nuclear Energy: Retrospect and Prospect," *Science, Technology, and Human Values* 5 (1980): 12.

3. The most extensive account of the legal controversy can be found in George T. Mazuzan and J. Samuel Walker, *Controlling the Atom: The Beginnings of Nuclear Regulation, 1946–1962* (Berkeley and Los Angeles, 1984), chaps. 5–7.

4. Benjamin C. Sigal, "Statement before Joint Committee on Atomic Energy," June 27, 1957 (UAW President's Office: Walter P. Reuther Collection [hereafter WPR], box 575, folder 4, Archives of Labor and Urban Affairs, Walter P. Reuther Library, Wayne State University, Detroit, Michigan); Atomic Energy Commission, *Atomic Energy Commission Reports*, vol. 1, *Opinions and Decisions of the Atomic Energy Commission with Selected Orders, October 8, 1956, to December 31, 1961* (Washington, DC, 1962), 149; "Atom Permit Upheld," *New York Times*, May 27, 1959, 10.

5. "Science in the Courts: The Supreme Court is Asked to Decide on the Inherent Dangers of Nuclear Reactors," *Science*, May 5, 1961, 1410. The district court case is *International Union of Electrical, Radio and Machine Workers, AFL-CIO; United Automobile, Aircraft and Agricultural Implement Workers of America; and United Papermakers and Paperworkers* v. *United States of America and Atomic Energy Commission*, 280 F.2d 645 (1960). The Supreme Court case is found at *Power Reactor Development Co.* v. *International Union of Electrical, Radio and Machine Workers, AFL-CIO et al.*, 367 U.S. 396 (1961).

6. Mike Gray and Ira Rosen, *The Warning: Accident at Three Mile Island* (Chicago, 1982), 182; Susan Cutter, "Technological Failures and Toxic Monuments," in *Geographical Snapshots of North America: Commemorating the 27th Congress of the International Geographical Union and Assembly*, ed. Donald G. Janelle (New York, 1992), 117–121; "Fermi I Nuclear Reactor an Engineering and Financial Disaster," *Examiner.com,* June 12, 2011, http://www.examiner.com/article/fermi-i-nuclear-reactor-an-engineering-and-financial-disaster; Charles Perrow, *Normal Accidents: Living with High-Risk Technologies* (Princeton, 1999), 50; Kate Sheppard, "Fermi Stance," *Grist*, August 5, 2008, http://gristmill.grist.org/2008/8/5/105447/6616?source=weekly.

7. Harvey Wasserman and Norman Solomon with Robert Alvarez and Eleanor Walters, *Killing Our Own: The Disaster of America's Experience with Atomic Radiation* (New York, 1982), 208–209; Sheldon Novick, *The Careless Atom* (Boston, 1969), 60; John G. Fuller, *We Almost Lost Detroit* (New York, 1976). Howard Kohn describes the impact of Fuller's book in *Who Killed Karen Silkwood?* (New York, 1981).

8. Kurt Schuparra, "Freedom vs. Tyranny: The 1958 California Election and the Origins of the State's Conservative Movement," *Pacific Historical Review* 63 (November 1994), 537–60; Raymond Moley, "Lagoona Controversy," *Newsweek*, November 11, 1957, 128; "Investigating Atom Power," *Business Week*, January 12, 1957, 28.

9. Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge, 1988), 296; Daniel Ford, *Meltdown: The Revised and Updated Edition of The Cult of the Atom* (New York, 1986), 75.

10. Damon Stetson, "Battle Impends on Atomic Plant," *New York Times*, November 13, 1956, 44.

11. For studies of the production of interrelated discourses of nature, embodiment, and workers' health, see Giovanna Di Chiro, "'Living Is for Everyone': Border Crossings for Community, Environment, and Health," *Osiris*, 2d ser., 19 (2004): 112–29; Douglas C. Sackman, "Nature's Workshop: The Work Environment and Workers' Bodies in California's Citrus Industry," *Environmental History* 5 (2000): 27–53; and Linda Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge* (Berkeley and Los Angeles, 2006). A profoundly important study of workplace radiation and workers' health is Gabrielle Hecht's *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, 2012).

12. Gavin Kendall and Gary Wickham, *Using Foucault's Methods* (Thousand Oaks, CA, 1999); Maarten A. Hajer, *The Politics of Environmental Discourse: Modernization and the Policy Process* (Oxford, 1995).

13. Hecht, *Being Nuclear*, 15; emphasis in original. For a close study of the changing historical ontologies of workers' health, see Christopher C. Sellers, *Hazards of the Job: From Industrial Disease to Environmental Health Science* (Chapel Hill, NC, 1997).

14. John Wills, *Conservation Fallout: Nuclear Protest at Diablo Canyon* (Reno, NV, 2006).

15. Peter B. Hales, "The Atomic Sublime," *American Studies* 32 (Spring 1991): 13.

https://doi.org/10.1017/S014754791300046X Published online by Cambridge University Press

16. Weart, *Nuclear Fear*, chaps. 8–9; Paul S. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*, with a new preface (Chapel Hill, NC, 1994), 125; Allan M. Winkler, *Life under a Cloud: American Anxiety about the Atom* (New York, 1993), chap. 6.

17. Weart, *Nuclear Fear*, chap. 1; Boyer, *By the Bomb's Early Light*, 5, 197; Stephen Hilgartner, Richard C. Bell, and Rory O'Connor, *Nukespeak: The Selling of Nuclear Technology in America* (New York, 1983), chap. 2.

18. "The Philosophers' Stone," *Time*, August 15, 1955 (http://www.time.com/time/magazine/article/0,9171,807508,00.html); "U. N. Atom Unit Urged," *New York Times*, August 3, 1955, 8.

19. Weart, *Nuclear Fear*, 85–87.

20. John Gunther and Bernard Quint, *Days to Remember: America, 1945–1955* (New York, 1956), 188–189.

21. Boyer, *By the Bomb's Early Light*, 153; Mark W. T. Harvey, *A Symbol of Wilderness: Echo Park and the American Conservation Movement* (Albuquerque, NM, 1994), esp. chap. 8; Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, DC, 1993), 40.

22. "New World A'Coming?" *IUD Digest* 1 (1956), 6; Walter P. Reuther, "Atoms for Peace," in *Walter P. Reuther: Selected Papers*, ed. Henry M. Christian (New York, 1961), 115.

23. For a lively inside account of the TVA in the context of relentless opposition to the New Deal and public power, see former TVA Director Frank E. Smith's *The Politics of Conservation* (New York, 1966). For a study of the forces antagonistic to the principle of public power, see Thomas K. McCraw, *TVA and the Power Fight, 1933–1939* (Philadelphia, PA, 1971), and on efforts to undermine public power after World War Two, see Phyllis Komarek de Luna, *Public versus Private Power during the Truman Administration: A Study of Fair Deal Liberalism* (New York, 1997). The best-known public/private debacle in atomic power is analyzed by Aaron Wildavsky in *Dixon-Yates: A Study in Power Politics* (New Haven, CT, 1962).

24. Wyatt Wells, "Public Power in the Eisenhower Administration," *Journal of Policy History* 20 (2008): 227; David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, 1998), 202.

25. Samuel Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890–1920*, with a new preface (New York, 1975), esp. chap. 7; Gottlieb, *Forcing the Spring*, 46.

26. Clayton R. Koppes, "Efficiency/Equity/Esthetics: Towards a Reinterpretation of American Conservation," *Environmental Review* 11 (1987): 127–146; de Luna, *Public versus Private Power*, 1; Samuel Gompers, "The Attitude of Organized Labor," *Annals of the American Academy of Political and Social Science* 118 (1925): 67; J. Leonard Bates, "Fulfilling American Democracy: The Conservation Movement, 1907 to 1921," *Mississippi Valley Historical Review* 44 (1957): 36.

27. Hajer, *The Politics of Environmental Discourse*, 65.

28. I refer to "New Deal Democrats" to foreground their commitments to conservation, public power, and the Keynesian state. Without claiming that they comprised a stable bloc, this terminology helps to distinguish them from the racist Dixiecrats who often opposed organized labor on principle and from other labor-Democrat coalitions shaped by local, sectoral concerns that I have not explored. In coal states, for example, the United Mine Workers, Republicans, and Democrats worked together to defeat Tennessean Albert Gore and Californian Chet Holifield's bill for public atomic power because of its competition with coal. Similarly, some southern Republicans and Democrats in mining areas supported the TVA only on the narrow basis of its heavy consumption of coal. Richard Oestreicher, "The Rules of the Game: Class Politics in Twentieth-Century America," in *Organized Labor and American Politics, 1894–1994*, ed. Kevin Boyle (Albany, 1998), 19–50; Douglass Cater, "The Peaceful Atom: An Admiral Adrift," *The Reporter* (New York), October 18, 1956, 27; Clinton P. Anderson with Milton Viorst, *Outsider in the Senate: Senator Clinton Anderson's Memoirs* (New York, 1970), 190. Though he was head of the JCAE, Anderson is mainly remembered as a conservationist; see Richard Allen Baker, *Conservation Politics: The Senate Career of Clinton P. Anderson* (Albuquerque, NM, 1982).

29. Philip Shabecoff, *A Fierce Green Fire: The American Environmental Movement* (New York, 1993), 91.

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30. Schuparra, "Freedom vs. Tyranny"; Blanche Wiesen Cook, *The Declassified Eisenhower: A Divided Legacy of Peace and Political Warfare* (New York, 1984); "Call It Socialism," *IUD Digest* 2 (1957), 60–67.

31. James A. Lane, "Economic Technology of Nuclear Power," *Annals of the American Academy of Political and Social Science* 290 (1953), 35–44; Oscar M. Ruebhausen and Robert B. von Mehren, "The Atomic Energy Act and the Private Production of Atomic Power," *Harvard Law Review* 66 (1953): 1450–96; Rebecca S. Lowen, "Entering the Atomic Power Race: Science, Industry, and Government," *Political Science Quarterly* 102 (1987): 459–79; Ray Cromley, "AEC Plans to Boost Spending on Nuclear Power Plants, 'Engines,'" *Wall Street Journal*, February 17, 1955, 1.

32. John Gorham Palfrey, "Atomic Energy: A New Experiment in Government-Industry Relations," *Columbia Law Review* 56 (1956): 375; "A Job for Free Enterprise," *Time*, July 20, 1953 (http://www.time.com/time/magazine/article/0,9171,889847,00.html); "Comparison," *New Republic*, December 28, 1953, 4; Lowell E. Sachnoff, "Extraordinary Obsolescence, Rate-Making and the Atomic Reactor," *University of Chicago Law Review* 25 (Winter 1958), 288 n. 65, 292; Walter Adams, "Atomic Energy: The Congressional Abandonment of Competition," *Columbia Law Review* 55 (1955): 166; "Atomic Giant," *Business Week*, March 19, 1955, 29; Gene Smith, "'35 Law a Threat to Atomic Power," *New York Times*, May 6, 1956, 1; "S.E.C. Waiver Asked on Atomic Project," *New York Times*, December 5, 1956, 67; Ronald L. Feinman, *Twilight of Progressivism: The Western Republican Senators and the New Deal* (Baltimore, MD, 1981), 95; "Cisler Urges U.S. Help on A-Plant Problems," *Detroit News*, February 17, 1956, 1; Morgan Thomas, "Democratic Control of Atomic Power Development," *Law and Contemporary Problems* 21 (1956): 51.

33. Henry P. Caulfield, "The Conservation and Environmental Movements: An Historical Analysis," in *Environmental Politics and Policy: Theories and Evidence*, ed. James P. Lester (Durham, NC, 1989), 25; Adams, "Atomic Energy," 173; Eric Peterson, "Miracle of Democratic Partnership," *IUD Digest* 3 (1958): 48–49.

34. *Labor Looks At The 84th Congress: An AFL-CIO Legislative Report* (Washington, DC, 1956), 23.

35. Richard O. Boyer and Herbert M. Morais, *Labor's Untold Story* (New York, 1955), 373; "Giving It Away," *IUD Digest* (July, 1956): 35–37; *Labor Looks At The 84th Congress*, 23–27, 34; "Fast Atom Power Action a 'Must,'" *AFL-CIO News*, July 14, 1956; "Atomic Numbers Game," *IUD Digest* 2 (1957): 91–98.

36. "Text of the Conclusions and Recommendations for Peaceful Uses of Atomic Energy," *New York Times*, February 1, 1956, 18; "Peaceful Atom's Impact," *Science News Letter*, February 11, 1956, 84; Reuther, "Atoms for Peace," 104–28; James A. Wechsler, "Labor's Bright Young Man," *Harper's*, March 1948, 270.

37. Bruce Lambert, "Anthony Wayne Smith, 86, Environment Leader and Labor Lawyer," *New York Times*, March 7, 1992; "Billion Dollar Give-Away On Atomic Energy Rapped," *CIO News*, July 27, 1953; "NAM Urges Easing of Curbs on Private Atom Work; CIO Opposed," *Wall Street Journal*, May 20, 1954, 2; Art Preis, *Labor's Giant Step*, 2nd ed. (New York, 1972), 475.

38. Herbert S. Marks, "Public Power and Atomic Power Development," *Law and Contemporary Problems* 21 (1956): 137–138; cf. William O. Douglas, *An Almanac of Liberty* (Garden City, NY, 1954), 169.

39. Clyde Ellis, Introduction to *The Conservation Fight: From Theodore Roosevelt to the Tennessee Valley Authority*, by Judson King (Washington, DC, 1959), viii.

40. Richard N. L. Andrews, "Recovering FDR's Environmental Legacy," in *FDR and the Environment*, ed. Henry L. Henderson and David B. Woolner (New York, 2005), 226; William G. Robbins, "Narrative Form and Great River Myths: The Power of Columbia River Stories," *Environmental History Review* 17 (1993): 1–22; Wesley Arden Dick, "When Dams Weren't Damned: The Public Power Crusade and Visions of the Good Life in the Pacific Northwest in the 1930s," *Environmental Review* 13 (1989): 113–53.

41. Marks, "*Public Power*," 132–36, 146.

42. Boyer, *By the Bomb's Early Light*, 352–53; Weart, *Nuclear Fear*, chaps. 10–11; Richard L. Miller, *Under the Cloud: The Decades of Nuclear Testing* (New York, 1986). For a study that contextualizes the fallout controversies against contemporary secrecy and complacency toward growing emissions, waste, and contamination from reactors used to produce plutonium, see

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Kate Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (New York, 2013).

43. Weart, *Nuclear Fear*, 187–88, 214; Scott Frickel, *Chemical Consequences: Environmental Mutagens, Scientist Activism, and the Rise of Genetic Toxicology* (New Brunswick, NJ, 2004), 49.

44. "Hydrogen Bombs! Something for You to Think About—To Do Something About!" *New York Times*, October 31, 1956, 20. Reuther was then an officer of the United World Federalists, a peace group that was named a subversive organization. When SANE was founded in 1957 to oppose atom bomb testing, he became an officer of it. Many of the first SANE activists were people who moved over from UWF (Lawrence Wittner, *Rebels against War: The American Peace Movement, 1933–1983* [Philadelphia, 1984], 244–245).

45. Pat Frank, *Mr. Adam* (Philadelphia, 1946); Boyer, *By the Bomb's Early Light*, 116; Donald Worster, *Nature's Economy: A History of Ecological Ideas*, 2nd ed. (New York, 1994), 346; "Atom's Biggest Worry—Getting Itself Insured," *Business Week*, March 31, 1956, 122; "Progress Report Given On Nuclear Reactor Project in Michigan," *Wall Street Journal*, June 29, 1956, 15; Gene Smith, "Utilities Combat Fears over Atom," *New York Times*, August 26, 1956, F1. On collusion by the AEC and Cisler's Atomic Industrial Forum in suppressing expert studies of safety hazards in the 1960s, see David Burnham, "A.E.C. Files Show Effort to Conceal Safety Perils," *New York Times*, November 10, 1974, 1. Discussing sodium-cooled fast breeder reactors like Fermi I, dissident nuclear physicist George Weil later criticized obfuscations of their potential to explode. Such reactors, he wrote, "are subject to 'superprompt critical conditions,' and, as the AEC well knows, this technical terminology translated into layman's language is an 'atomic bomb'" (quoted in Ralph Nader and John Abbotts, *The Menace of Atomic Energy*, rev. ed. [New York, 1977], 187).

46. Mazuzan and Walker, *Controlling the Atom*, 134–40; Anderson, *Outsider in the Senate*, 159–60; "AEC Unit Questions Safety of a Reactor, Sen. Anderson Asserts," *Wall Street Journal*, July 16, 1956, 8.

47. Ford, *Meltdown*, 55; Mazuzan and Walker, *Controlling the Atom*, 125–33.

48. "Michigan Reactor Controversy," *Science*, August 24, 1956, 358; Cater, "The Peaceful Atom"; Charles E. Egan, "A. E. C. Approves a Nuclear Plant," *New York Times*, August 5, 1956.

49. Mazuzan and Walker, *Controlling the Atom*, 147–49; Memo from Leo Goodman to Walter P. Reuther, "Radiation Casualty Memo #2—Re: M. W. Kellogg Co. (Subsidiary of the Pullman Co.)," August 14, 1957 (WPR, box 575, folder 5); Memo from Leo Goodman to John E. Horne, "Biographical Data and—A Program," August 3, 1956 (WPR, box 574, folder 3); Memo to ECIC Representatives, "Detroit Edison Reactor," August 8, 1956 (WPR, box 574, folder 12).

50. "Petition for Intervention and Request for Formal Hearing," Before the United States Atomic Energy Commission in re License Application of Power Reactor Development Company, AEC Docket No. F-16, August 31, 1956 (WPR, box 574, folder 13); "Reuther Assails A. E. C.," *New York Times*, August 30, 1956, 49.

51. Lawrence Buell, "Toxic Discourse," *Critical Inquiry* 24 (1998): 657.

52. Ralph Lutts, "Chemical Fallout: *Silent Spring*, Radioactive Fallout, and the Environmental Movement," in *And No Birds Sing: Rhetorical Analysis of Rachel Carson's Silent Spring*, ed. Craig Waddell (Carbondale, IL, 2000), 19; see also William Souder, *On a Farther Shore: The Life and Legacy of Rachel Carson, Author of Silent Spring* (New York, 2012), chaps. 9–10.

53. "Without Public Hazard?" *IUD Digest* 1 (1956): 77.

54. Memo from Donald Montgomery to Walter P. Reuther, "Leo Goodman and Atomic Energy Program," August 22, 1956 (WPR, folder 3, box 574). Montgomery did not live to see the suit to its conclusion, as he died in 1957; for his career, see Kevin Boyle, *The UAW and the Heyday of American Liberalism, 1945–1968* (Ithaca, NY, 1995).

55. "Monroe in No Peril, AEC Assures Meader," *Detroit News*, September 2, 1956.

56. Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985* (New York, 1987); Robert Gottlieb, *Environmentalism Unbound: Exploring New Pathways for Change* (Cambridge, 2002), chap. 2; Arturo Escobar, *Territories of Difference: Place, Movements, Life, Redes* (Durham, NC, 2008), 305. Elsewhere I have discussed the problematic class analytics and teleological narratives that position workers and the middle class as antagonists or competitors: "Blue Collar, White Collar: Deconstructing Classification,"

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in *Class and Its Others*, ed. J. K. Gibson-Graham, Stephen A. Resnick, and Richard D. Wolff (Minneapolis, MN, 2000), 191–224.

57. Martin V. Melosi, *Effluent America: Cities, Industry, Energy, and the Environment* (Pittsburgh, PA, 2001), 253.

58. Hans Huth, *Nature and the American: Three Centuries of Changing Attitudes* (Berkeley and Los Angeles, CA, 1957), 194; Worster, *Nature's Economy*, pt. 4; Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York, 1995); Karl Jacoby, *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley and Los Angeles, CA, 2001); Vandana Shiva, "Resources," in *The Development Dictionary: A Guide to Knowledge as Power*, ed. Wolfgang Sachs (London, 1992), 206–18.

59. Rosemary Feurer, *Radical Unionism in the Midwest, 1900–1950* (Urbana, IL, 2006), chap. 5; Anthony Wayne Smith, "Labor Looks at Conservation and Development," *Annals of the American Academy of Political and Social Science* 281 (May 1952), 193; John C. Miles, *Guardians of the Parks: The National Parks and Conservation Association* (Washington, DC, 1995).

60. Scott Dewey, "Working for the Environment: Organized Labor and the Origins of Environmentalism in the United States, 1948–1970," *Environmental History* 3 (1998): 45–63; Lynne Page Snyder, "'The Death-Dealing Smog Over Donora, Pennsylvania': Industrial Air Pollution, Public Health Policy, and the Politics of Expertise, 1948–1949," *Environmental History Review* 18 (1994): 117–39.

61. Brown, *Plutopia*, 230; Nader and Abbotts, *The Menace of Atomic Energy*, 272; *Nucleonics Week*, quoted in J. Samuel Walker, *Containing the Atom: Nuclear Regulation in a Changing Environment, 1963–1971* (Berkeley and Los Angeles, CA, 1992), 393; Mazuzan and Walker, *Controlling the Atom*, 343; Les Leopold, *The Man Who Hated Work and Loved Labor: The Life and Times of Tony Mazzocchi* (White River Junction, VT, 2007), 211–12; Raye Ringholz, *Uranium Frenzy: Saga of the Nuclear West* (Logan, UT, 2002), chap. 18.

62. For example, see Worster, *Nature's Economy*, chap. 16; Joel Hagen, *An Entangled Bank: The Origins of Ecosystem Ecology* (New Brunswick, NJ, 1992); Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (New York, 2001); Christopher Sellers, *Crabgrass Crucible: Suburban Nature and the Rise of Environmentalism in Twentieth-Century America* (Chapel Hill, NC, 2012).

63. Leo Goodman to Walter P. Reuther, "Atomic Power Reactor Accident," October 25, 1957 (WPR, box 575, folder 6); Walker, *Containing the Atom*, chaps. 4–5.

64. Wasserman, *Killing Our Own*, 209. In a nice continuity of old and new, in 1989 Wasserman was named the recipient of the Citizens Energy Council's Leo Goodman Award for Safe Energy Activism.

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