

# SCIENTISTS AS PROPHETS

## A Rhetorical Genealogy

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## 7 RACHEL CARSON KAIROTIC PROPHET

In many ways 1963 was a banner year for American science. The budget for the historic Apollo moon missions was approved by Congress. J. Robert Oppenheimer was given the Fermi Medal for a lifetime of service in nuclear energy research. And in May, the PSAC issued a long-awaited report on pesticide use that endorsed most of the recommendations from a controversial book written by an independent biological researcher: *Silent Spring* (1962).

Although Carson and Oppenheimer shared the laurels bestowed by the new, progressive administration in 1963, and both were born and died (of cancer) within three years of each other, their biographies stand in otherwise sharp contrast. He was an upper-class Jew by birth, a publisher of groundbreaking physics, director of a national laboratory, adviser to presidents; she was a working class Protestant with a terminal master of science in biology who toiled for years writing reports for the US Fish & Wildlife Service (USFWS) before becoming a freelance writer. Notwithstanding these differences, Oppenheimer and Carson both leveraged prophetic ethos to push for more public dialogue on key scientific issues. Just as Oppenheimer exploited his privileged access to the invisible workings of the atomic world to bolster his ethos, Carson used her micro- and telescopic visions of ecosystems to dramatize her prophetic claims about human impacts on the environment. She galvanized political action via a rhetorical strategy that combined prophetic battle with apocalyptic visualizations of risk.

Rachel Carson was born on a farm in Springdale, Pennsylvania, in 1907. A precocious writer, she managed to secure a scholarship to the Pennsylvania College for Women. Initially, she loved writing and wanted to pursue a career in English literature, but she found herself mesmerized by the lectures of Mary Scott Skinker,

a charismatic biology professor. Carson's journals from this time reveal her searching for a vocation, a "vision splendid," in her words.<sup>1</sup> Torn between her loves for science and literature, she became anxious and depressed about her future career prospects: in the 1920s such prospects were dramatically limited for women.

In 1928 Carson had a sort of conversion experience reminiscent of Robert Boyle's. She was in her attic dorm room reading "Locksley Hall" by Tennyson for a class assignment. A violent storm rattled the windows in her room and lashed the panes with rain as Carson read the line, "For the mighty wind arises, roaring seaward, and I go." It suddenly came to her that her "destiny," her "vision splendid" lay in writing about the sea. It was the perfect way to combine her passions for science and literature.<sup>2</sup>

Carson graduated in 1929 and entered the marine biology program at Johns Hopkins University as one of only two women in a class of 70. By the time she got her MS in zoology in 1932, she had logged significant hours in the lab at Woods Hole Oceanographic Institute in Massachusetts and on field trips to places such as the Florida Everglades. She landed her first job as a technician for the USFWS, but when her supervisor noticed her writing skills, she was quickly promoted in that direction. By 1949, she was the editor in chief at the USFWS publications bureau. At the same time, she was working on her own essays, reflecting on her marine experiences and what she was learning about the budding science of ecology. She published some of these essays in the *Atlantic* and the *Baltimore Sun*, and Simon and Schuster offered her a book contract. *Under the Sea-Wind* was published in 1941, and Oxford University Press released *The Sea around Us* in 1951; it was serialized by the *New Yorker* and spent 86 weeks on the *New York Times* best-sellers list. After this success, Carson was able to retire from the USFWS and devote her career to writing popular works on ecology. These sold well enough for her to maintain her house in Maryland and take on a summer home on Southport Island in Maine.

Although she enjoyed a loyal following and accolades for her elegant rhetorical handling of ecology, it was pesticides that would make her a household name. She had become aware of the wide-ranging effects of pesticides during her work for the USFWS. She was troubled by the effects on fish and waterfowl of dichlorodiphenyltrichloroethane (DDT), with which wetlands were being carpet bombed to control mosquitoes. Then, in 1957 and 1958, several events converged that caused her to take up her pen against pesticides: a disastrous United States Department of Agriculture (USDA) attempt to eradicate fire ants in the South using dieldrin, a broadly toxic chlorinated hydrocarbon related to DDT that did stunning collateral damage to livestock and wildlife;

a high-profile lawsuit on Long Island prosecuted by conservation friends of Carson's against the state government after a DDT spraying campaign against gypsy moths illegally canvassed commercial dairy farms, killing livestock and sickening humans; and, a deluge of letters from fans complaining about related campaigns against the elm bark beetle and the mosquito. Carson initially wrote to E. B. White, the *New Yorker's* nature essayist at that time, to suggest he cover the Long Island trial. White demurred due to his schedule and offered her the story instead. That was how Carson embarked on the series of *New Yorker* essays that would be collected in *Silent Spring* in 1962.

The work on the book was difficult and tedious, in part because some academics and industry scientists were resistant to sharing information with an independent researcher,<sup>3</sup> in part because she was caring for her orphaned nephew at the time, and in part because she fell ill with a rapidly metastasizing breast cancer. Her contract had stipulated delivery of the manuscript by September 1960; she would not deliver it for two more years. But she drove herself to complete the book, working from bed with an assistant when she was too exhausted by chemotherapy to sit at her desk. When her friend Dorothy Freeman urged her to put her health first, Carson replied, "Knowing what I do, there would be no future peace for me if I kept silent. . . it is, in the deepest sense, a privilege as well as a duty to have the opportunity to speak out—to many thousands of people—on something so important."<sup>4</sup> Pesticides were for Carson a metonym standing in for the myriad invisible wounds humans were ignorantly inflicting on ecosystems. She felt a calling to wake Americans up to the effects of their unconscious choices.<sup>5</sup>

## Silent Spring

When her articles appeared in the *New Yorker* in six installments beginning in June 1962, they made an instant sensation. The *New Yorker* received more mail than it ever had for a single author; the majority of letters praised Carson for her "public service" in calling attention to the pesticide issue.<sup>6</sup> The forthcoming book was immediately preordered for the Book of the Month Club and was scheduled for additional print runs in anticipation of demand; they all sold out. Houghton Mifflin received an equally stunning volume of mail when the book came out in September, as did Carson herself, as did local newspapers. The letters were overwhelmingly supportive, coming roughly equally from men and women, with a slight edge for women in regional newspapers. Many letters came from concerned physicians.<sup>7</sup>

While my primary interest in this chapter is the federal reception of Carson's arguments in *Silent Spring*, in this case it is clear to historians that

the government only took up the issue of pesticides and called Carson to testify because of the enormous public response to her book.<sup>8</sup> Accordingly, how the government received Carson's prophetic ethos depends heavily on its constitution by popular media.

A great deal has been written about the rhetoric of *Silent Spring*, most of it aiming to find out how Carson's strategies managed to convince so many Americans to write their congresspeople, throw out their DDT, or otherwise take civic action. The problem with most of these analyses is that from our present-day perspective, they draw an explanatory line from the banning of DDT in 1972 back through the formation of the EPA in 1970 and the congressional hearings in 1963 to particular things Carson wrote. But if we look at public arguments about pesticides in 1962 and 1963 more closely, we find many more agents involved in the drama. Although the book undoubtedly had a huge civic impact, it was just one spasm in a crisis of awareness.<sup>9</sup> Carson herself was quick to admit that her book came at just the right time. The Great Cranberry Scare of 1959 had sensitized Americans to pesticide residues on their Thanksgiving tables. And just before *Silent Spring* came out, Murray Bookchin had published a book on pesticide risks called *Our Synthetic Environment* (he did so under the pseudonym Lewis Herber for fear of reprisals from the chemical industries).

In addition to these in-progress conversations about the risks of pesticides, Carson leveraged the growing public fear of nuclear fallout. People were horrified by news of the Lucky Dragon incident, in which fallout from an American H-bomb test in the South Pacific sickened the crew of a Japanese fishing boat. More terrifyingly for American mothers, doctors had recently discovered strontium-90, a radioactive by-product of atomic fission, in cow's milk and in all baby teeth tested. Carson's opening fable in *Silent Spring* depicted pesticides falling in a silent, white powder, both mimicking the Lucky Dragon fallout and evoking the whiteness and ubiquity of milk; elsewhere in the book, she made the comparison more explicit.<sup>10</sup>

Carson's book thus benefited, both deliberately and accidentally, from these fears swirling in the kairos surrounding its publication. However, the seed crystal that coalesced these arguments into an exigence for the government was the CBS Reports television program *The Silent Spring of Rachel Carson*, which aired on April 3, 1963. Given that many people who argued the merits of *Silent Spring* never read the book but instead responded to media presentations of its arguments,<sup>11</sup> we must take into consideration the broadcast segment of the *Silent Spring* drama. It is widely recognized that the outpouring of letters to federal agencies and legislators in the wake of the program goaded the PSAC into releasing its long overdue report on pesticides, for which Carson

was interviewed in January 1963; similarly, the public response prompted the Ribicoff congressional hearings on pesticide use, at which Carson also testified in June 1963.<sup>12</sup> We can use the television broadcast, therefore, as a central lens through which to examine Carson's prophetic ethos as articulated via her privileged vision of the ecosystem, her prophetic battle with representatives of American chemical industries, and her dramatizations of abstract risks.<sup>13</sup> Then, we will be in a better position to appreciate the federal reception of Carson's ethos.

### Speaking for the Silenced: Carson's Privileged Micro-/Telescopic Vision

When *Silent Spring* was first published, the CBS anchorman Eric Sevareid had published a response in the *Los Angeles Times* that both picked up on the apocalyptic connections between fallout and pesticides and gestured toward Carson's prophetic ethos: "It is quite wrong for us to assume that in atomic war lies the only danger of 'setting back civilization' a thousand years.... The new religion of the scientist-philosopher, like the old time religion, invokes the sanction of hell-fire and damnation—but with proof."<sup>14</sup> Sevareid went on to direct the influential CBS Reports program covering Carson's book. As became apparent, he was solidly on her side, although she was worried during the production that he would not cast her or her argument in a favorable light.<sup>15</sup>

Sevareid conducted the bulk of his interviews with Carson in her living room in Silver Springs. But key action sequences show her at her microscope or emerging from the Maine woods with a pair of binoculars around her neck. Images of her with these magnifying instruments are nearly ubiquitous in media coverage of her book and career. One such image in *Life* magazine, in which she is leading a group of Audubon Society members on a field trip near her home, captures everyone peering skyward through binoculars at some distant wonder. Carson herself jokingly referred to this photo as "the Second Coming."<sup>16</sup> But it was precisely her special ability to see and describe systems outside the limits of normal human vision that enabled her to engage Americans in consequential dialogue about the environment.

Carson synthesized microscopic and telescopic views to demonstrate the systemic damage wrought by pesticides. She began by arguing that the structure of the cosmos could be grasped via the study of microcosms. Chapter 13, "Through a Narrow Window," opened with a quote from a scholar of ocular pigmentation who justified his specialization by comparing it to a narrow window. True, the window would offer little perspective to the casual or distant

observer; however, "as one comes closer the view grows wider and wider, until finally through the same narrow window one is looking at the universe." Carson concluded:

So it is that only when we bring our focus to bear, first on the individual cells of the body, then on the minute structures within the cells, and finally on the ultimate reactions of molecules within these structures—only when we do this can we comprehend the most serious and far-reaching effects of the haphazard introduction of foreign chemicals into our internal environment.<sup>17</sup>

The beautiful engravings by Louis and Lois Darling of exploded cells and soil microbes that headed this and other chapters of *Silent Spring* reinforced Carson's devotion to the elegant order of invisible natural systems.<sup>18</sup>

The CBS program reinforced Carson's argument by devoting almost a third of its airtime to her reading the sections of *Silent Spring* in which she argued seemingly disparate life forms into configuration. Here is one of those sections:

We poison the caddis flies in a stream and the salmon runs dwindle and die. We poison the gnats in a lake, and the poison travels from link to link of the food chain, and soon the birds of the lake margins become its victims. We spray our elms and the following springs are silent of robin song, not because we sprayed the robins directly, but because the poison traveled step by step, through the now familiar elm leave-earthworm-robin cycle.<sup>19</sup>

The effects of DDT were "biomagnified" in their cascading effects on the whole ecosystem. Furthermore, they were invisible to everyone but scientists. During the CBS broadcast, Carson also read the following chilling sentence from chapter 11, "Beyond the Dream of the Borgias:" "In river or lake or reservoir, or for that matter in the glass of water served at your dinner table, are mingled chemicals that no responsible chemist would think of combining in his laboratory." Here she both brought the dinner table into focus as part of the "web of life" and demonstrated her privileged microscopic vision of the toxins being "served" there.

The "Fable for Tomorrow" opening the book was just such a synthesis of telescopic and microscopic vision. It amounted to a jeremiad on America's future should it refuse to change course. The fable described an idyllic small town "in the heart of America where all life seemed to live in harmony."<sup>20</sup>

Following a dusting with pesticides, however, spring brought no new wildflowers, no birds, no bees, just silence: "No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves."<sup>21</sup> The town was a projection of a dystopian future based on scientific intervention, just as surely as Bacon's *New Atlantis* projected a utopia on the same basis.

Carson's most impressive telescopic feat was combining the unheard voices of thousands of citizens, mostly women, and amplifying them into a resounding indictment of the collusion of industry, government, and academic scientists. Carson frequently mentioned the hundreds of letters she received from readers of her books reporting their hand tremors, dead pet cats, leukemia, and birdbaths full of dead robins.<sup>22</sup> She even publicly attributed her decision to write *Silent Spring* to one such letter she had received from Olga Huckins asking Carson where all the songbirds who normally visited her birdfeeder had gone and pleading with her "if something couldn't be done."<sup>23</sup> Carson clarified this prophetic vision of a suffering, marginalized people in a speech to the National Parks Association in October 1962:

I came to realize that scattered throughout the country were thousands of people who were concerned—who were trying, as individuals or as small groups, to do what they could, in the face of great odds. Now, simply because I happen to have brought together the basic facts—because I have written a book that seems to be serving as a rallying point for an awakened public—both the strength and the needs of these people are flowing to me in a vast and wonderful way.<sup>24</sup>

Just as the individual dishes of a radio telescope array combine their signals to produce a coherent vision of a dying star, Carson's dialogue with silenced and ignored American housewives, pensioners, and pediatricians enabled her to synthesize a vision of the whole damaged ecosystem—and of the dysfunctional political system. In *Silent Spring*, in the CBS program, and in her congressional testimony, she mounted an awe-inspiring prophetic micro-/telescopy that confronted the government with the coherent presence of the Other—both human and natural.

### False Prophets: Carson and the Agrichemical Industry

The basic structure of the CBS program proceeded like a classical debate. Carson's questions about pesticides were put to agricultural chemists and federal administrators, and in turn, Carson answered their charges.



Priscilla Coit Murphy reminds us that this is often the way that news media concentrate a diffuse *issue* like pesticide use into an *event*, the natural object of journalism.<sup>25</sup>

The result of this rhetorical reduction was a trial of ethos—Carson versus the chemists. According to the rules of media debates, there could be only one winner. That meant that in the CBS report and more generally in the industry response to *Silent Spring*, there emerged a contest reminiscent of that between Elijah and the prophets of Baal, with each side accusing the other of defrauding the public with false signs and wonders.

For her part, Carson accused agribusiness of feeding concerned citizens "little tranquilizing pills of half truth" and of flat-out concealing what they knew about pesticide risks to make money for their bosses.<sup>26</sup> After discussing cheaper and safer biological controls in the last chapter of *Silent Spring*, she charged: "These extraordinary capacities of life have been ignored by the practitioners of chemical control who have brought to their task no 'high-minded orientation,' no humility before the vast forces with which they tamper."<sup>27</sup> She accused the scientists who took industry money for pesticide research of "serv[ing] the Gods of profit and production".<sup>28</sup> how, then, could their vision of the future of the ecosystem be trusted? Speaking elliptically of the National Academies of Science National Research Council (NAS-NRC)—which had been tasked with reviewing pesticide use in the United States—Carson demanded: "We see scientific societies acknowledging as 'sustaining associates' a dozen or more giants of a related industry. When the scientific organization speaks, whose voice do we hear—that of science? Or of the sustaining industry? It might be a less serious situation if this voice were always clearly identified, but the public assumes it is hearing the voice of science."<sup>29</sup> She was figuring Establishment scientists as false prophets interested more in gain than the truth.

For their part, her detractors readily picked up on Carson's reverence for the holism of nature, accusing her of being a "priestess of nature,"<sup>30</sup> a medium for "worshippers of 'natural foods,'"<sup>31</sup> and of sporting a "mystical attachment to the 'balance of nature' myth."<sup>32</sup> They figured her as the prophet of a primitive and outmoded religion opposed to the enlightened progress of industrial science. Chemists turned polemicists such as Thomas H. Jukes from Cyanamid matched Carson's jeremiads in *Silent Spring* with parodies that exaggerated the consequences of forswearing environmental chemicals. In "A Town in Harmony," published in *Chemical Week*, Jukes conjured a stream laden with bacteria "flow[ing] through meadows where grazed cows beneath whose hairy flanks swarmed trillions of tuberculosis organisms, waiting for their milky ride that would take them to the lungs of the townspeople."<sup>33</sup>

Many of the industry attacks attributed Carson's marginal beliefs to her status as a woman. The gendering of the criticism of *Silent Spring* is striking, with critics attempting to negate Carson's authority by calling her a "spinster" who was "emotional," "hysterical," and "sentimental."<sup>34</sup> My personal favorite among these came in a letter to the *New Yorker* from "a gentleman from California" after the serialization of *Silent Spring* began. It was one of Carson's favorites, too; she read it to laughter in her National Parks Association speech in October 1962:

Miss Rachel Carson's reference to the selfishness of insecticide manufacturers probably reflects her Communist sympathies, like a lot of our writers these days. We can live without birds and animals, but, as the current market slump shows, we cannot live without business. As for insects, isn't it just like a woman to be scared to death of a few little bugs! As long as we have the H-bomb everything will be O.K. PS. She's probably a peace-nut too.<sup>35</sup>

Chuckle if you like (I know I did), but this commenter was sharp enough to recognize that Eisenhower's "scientific-technological elite" were increasingly America's Establishment, outside whose walls Carson cried out as a kairotic female prophet.

Carson's prophetic opponents pursued this line of argument by arguing she wasn't really a scientist—even though she had an MS and a decade of experience in a federal biological agency. Thomas Jukes, who seems to have taken on the project of discrediting Carson as a sort of personal crusade, wrote a series of acid letters to the PSAC as it was deliberating over its pesticide report. In one of these letters, Jukes reminded the committee of a poster in the office of the FDA Division of Pharmacology that joked that you could learn the science in "three easy lessons of five years each"; Jukes then sniped, "I don't believe that Miss Carson has taken these lessons."<sup>36</sup> As part of the quarter-million-dollar campaign that Jukes's company helped launch against *Silent Spring*, Dr. Cynthia Westcott, a botanist and gardening writer, was paid to give lectures discrediting the science in the book. Dr. Westcott invited Carson to debate in front of the media, but Carson refused to engage in such a direct prophetic competition.<sup>37</sup> Carson was quite ill by that time, and she and her publisher were determined to keep that fact secret. They did not want her to appear "interested" in her own right—that is, motivated to speak not by concern for others but by selfish bitterness over an affliction that could be attributed to pesticide exposure.<sup>38</sup> Her friends' zealotry in defending her image as an independent public servant reminds us that her ethos was one of the main stakes in the *Silent Spring* debates.

In the CBS program, the prophetic contest was exaggerated by Dr. Robert White-Stevens's selection to represent the agribusiness position. Lab-coated, bespectacled, and mustachioed, he sat behind a desk full of bubbling test tubes and inveighed in a quasi-British accent against the "groundless" claims of "Miss Carson." As he talked, the camera cut to images of belching smokestacks, swarms of insects, and starving Africans. While these images were supposed to support White-Stevens's arguments about the dystopia that would result if pesticides were banned—famine and plague, a "return to the dark ages"<sup>39</sup>—it was hard not to connect them with his Faustian persona. On the other hand, when the camera focused on Rachel Carson, it found a pretty middle-aged woman sitting calmly in her tastefully appointed living room, elegizing the beauties of nature in gentle cadence; or, it followed her as she wandered serenely through the Maine wilderness with those ever-present binoculars around her neck. The CBS crew intercut her readings of passages from her book with beautiful natural scenes.

This ethical contrast was not the subtle business of rhetorical analysis; it was readily apparent to the viewers of the program, who in general responded negatively to the "fiendish" stereotype of the mad scientist they inferred from Dr. White-Stevens's ethical performance.<sup>40</sup> In this battle between the cultic priest and the kairotic prophetess, it was quite clear who the CBS producers thought merited the public trust.

### Apocalypse: Carson's Construction of Uncertainty and Dystopia

It is striking how many times in the CBS program the interviewer goads a government scientist into saying "we don't know," "it's uncertain," "we can't say," or "we just don't have that information." As Kenny Walker and I have argued elsewhere, Carson stressed the uncertainty of scientists—in both the sense of their *ignorance* of pesticides' effects, and the *risks* of applying them—to negate her opponents' arguments about the effects of pesticides. Once the cultic prophets' authority was voided at the pivotal stasis of cause/effect—once it was clear that the "oracles were dumb," to steal a phrase from Bacon<sup>41</sup>—Carson then invited readers to step into the rhetorical gap she had created and to evaluate the risks of pesticides for themselves:

Q | We urgently need an end to these false assurances, to the sugar coating of unpalatable facts. It is the public that is being asked to assume the risks that the insect controllers calculate. The public must decide whether it wishes to continue on the present road, and it can do so only

when in full possession of the facts. In the words of Jean Rostand, "The obligation to endure gives us the right to know."<sup>42</sup>

But Carson did not leave readers unguided at the stasis of value. She supplied graphic descriptions of cases of pesticide poisoning: squirrels dying clawing at the ground in agony, babies reduced to human vegetables by exposure to endrin, male pheasants turning into females from DDT-related endocrine disruption, rivers choked with rotting fish. The "Fable for Tomorrow" that begins the book is full of such apocalyptic imagery, and by refusing to offer the reader scientific reassurance that these nightmares could not become realities, Carson instilled fear that she hoped would lead to political action.<sup>43</sup>

Carson's kairotic stance afforded her more leeway to make these value judgments and calls to action than she would have had trying to make the same arguments from inside the USFWS. She was writing as an independent researcher, which freed her from the powerfully normative censorship of the scientific Establishment. And she published in a nondisciplinary genre (the trade book) that provided ample space for her vivid examples, allegories, and moral conclusions.<sup>44</sup>

But while she was free to make prophetic claims in her book, she could not entirely escape the strictures of the is/ought model. Her critics, as discussed earlier, used her imagery, emotional language, value judgments, and calls to action as evidence that she was not, could not be, a true scientist. The criticism stung Carson and her editors; in press materials they took every opportunity they could to remind readers of her master's degree and her years of service with the USFWS.<sup>45</sup> But such criticisms were inevitable given the free use Carson made of the prophetic formulae of judgment. In the last chapter of *Silent Spring*, "The Open Road," she warned,

We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one 'less traveled by'—offers our last, our only chance of reach a destination that assures the preservation of our earth.<sup>46</sup>

As elegant as these expressions of uncertainty and apocalypse may have been, I do not want to overemphasize their rhetorical impact. They represent only two threads in the complex tapestry of *Silent Spring*. It is clear, however, that CBS took these threads as its narrative through-lines. First, producers goaded Carson's opponents over and over again into admitting they did not know

the ultimate effects of pesticides. Second, CBS brought the apocalyptic verbal images in Carson's book to visual life. The program is full of footage of planes engulfing fields in poisonous fog, children skipping along merrily behind a tanker truck that is spraying pesticides all over their suburban lawns, chemical plants belching black smoke. Then, there are the transgender pheasants eying the viewer with glassy stares, the choked rivers, the prone fish and birds.

The letter-writing campaign that followed the CBS program was immediate and monumental; the USDA and FDA were flabbergasted at the volume of mail they received calling for more federal oversight of pesticide use and abuse.<sup>47</sup> When the PSAC finally issued its report, strongly supportive of Carson and *Silent Spring*, CBS ran a follow-up called *The Verdict on Rachel Carson's Silent Spring*, which recut images from the first program with Severeid's commentary on Carson's victory. This reaction supported her ethos as a kairotic prophet calling down public judgment on the industrial scientific Establishment, and her vision of the future had won the day in the prophetic battle. It was in this spirit that she was received by the Ribicoff commission.

### The Federal Testimony: The PSAC

Carson testified in front of the PSAC in January 1963, before the CBS program aired but well after a judicious public relations campaign by Houghton Mifflin had placed preprints of the book in the hands of high-ranking federal officials.<sup>48</sup> As early as August 1962, when Kennedy was asked about *Silent Spring*, he replied that he had already tasked the PSAC with reviewing federal spraying programs. A federal Pesticide Review Board had been sitting before *Silent Spring*, but internal documents reveal that the PSAC determined to mount a wider review, not just of federal spraying programs but of pesticide risks in general, to answer the "enlarging and justifiable national concern" Carson's articles had sparked.<sup>49</sup>

Kennedy's announcement touched off the most intense of the anti-Carson campaigns by agribusiness, but lobbyists had already petitioned the USDA and FDA to refute the book. A few initial statements in that direction by government officials, however, were quickly quelled by Jerome Wiesner, Special Science Adviser to Kennedy, who instructed the agency heads to make only neutral statements about the benefits of public debate and the need for more research on pesticides until the PSAC could prepare its report.<sup>50</sup> The PSAC's internal records for the fall of 1962 contain many letters from agribusiness expressing concern about Carson's book and about what the panel's report would say.<sup>51</sup>

Unpublished drafts of the PSAC's report before and after it met with Carson document its sympathetic reception of Carson as a scientist-prophet. The pre-Carson drafts dealt with historical and technical claims about pesticides, which fell almost exclusively on the "is" side of the is/ought divide (the members of the PSAC were themselves scientists). The drafts after Carson's testimony, however, include much stronger statements about the effects of pesticides, statements that imply prophetic value judgments. This shift up-stasis is visible almost in the first sentences of the report. The before draft commences with a definitional claim: "Pesticides may be defined for our purposes as chemicals used for the control of insects, mites, plant diseases, weeds, nematodes and rodents." The authors go on to admit "Because these chemicals are designed to kill or upset metabolically some living organism, they are necessarily more or less toxic; it is this characteristic of toxicity and the associated inadvertent hazards to other forms of life, which has caused concern."<sup>52</sup> However, this admission is followed by three pages detailing the benefits of pesticides with no further mentions of their harmful effects. The after draft begins quite differently:

Since the beginning of recorded history, man's primary concern has been the struggle for survival and the improvement of his lot. As his numbers increased, so did his powers for collective domination of his environment. Essentially, all of these advances have brought with them a degree of risk which society has accepted as an inevitable part of the price of progress.<sup>53</sup>

Gone are the three pages of benefits of pesticides; they are replaced instead with a caveat: "The benefits of these substances are still most apparent, but we are beginning to question some of the less obvious effects and potential risks."<sup>54</sup> The introduction concludes, "The Panel was arrested by the need to understand more completely the properties of these chemicals, and to determine their long-term impact on biological systems including man,"<sup>55</sup> These topoi—incomplete understanding, long-term "impacts," biological "systems" that include humans—are totally absent in the before draft and are worded nearly identically to the articulations of them in *Silent Spring*.<sup>56</sup>

Two further edits suggest Carson's prophetic influence: on page 25 the after draft discusses biological controls of pests, a recommendation that had not appeared in the original *New Yorker* serialization but that Carson had appended to the book version and that was emphasized in the CBS program. The after draft also discusses on page 28 the formation of an agency to oversee the use of environmental chemicals, a key Carson

recommendation that would eventually be realized as the Environmental Protection Agency (EPA).

But most tellingly, a reference to Carson's prophetic ethos appears at the end of this and all drafts following Carson's testimony:

Writings in the public press as well as experiences of the Panel members indicate that until Miss Carson's book there was general unawareness of the information on pesticide toxicity already available. The Government should develop the means to present this information to the public in a way that will make it mindful of the dangers without destroying its confidence in the great value of pesticides when properly used.<sup>57</sup>

Here, the PSAC depicts Carson as enlightening the public when government has failed it. Interestingly, this reference drew criticism from the USDA when they reviewed the draft in May, but the PSAC kept it in; as a matter of fact, the only change it made to this passage was to remove the "great" in front of "value of pesticides."<sup>58</sup>

Whether all these edits were solely due to Carson's influence is beside the point; while I am interested in the reception of her specific arguments, I am much more concerned with the wider constitution of *Silent Spring* as a jeremiad against pesticide misuse. What seems certain is that as it participated in the kairos surrounding *Silent Spring*, the PSAC felt compelled to address questions of moral and political certainty regarding human interventions in nature; so doing, the committee participated in the constitution of Carson's prophetic ethos.

### The Federal Testimony: The Ribicoff Commission

Carson's testimony before the Ribicoff committee was a matter of public record, so here we can see the legislators responding to her ethos in real time (Figure 7). Carson was seated in the midst of a halo of microphones that mirrored Oppenheimer's "chalkboard halo" in so many photos: the mirror images dramatize once again the contrast between Carson's role as people's prophet and Oppenheimer's role as Establishment prophet.

Senator Ribicoff opened the session by greeting her, "You are the lady who started all this."<sup>59</sup> This was a rough quote of Abraham Lincoln's legendary greeting to Harriet Beecher Stowe, an allusion Eric Sevareid had also chosen to open the CBS program.<sup>60</sup> These Carson/Stowe references, repeated over and over again in the wider constitution of Carson's ethos, confirmed her reception as a prophet of political reform.



**FIGURE 7** Rachel Carson testifying before the Ribicoff committee in June 1963. The partial halo of microphones around her head mirrors Oppenheimer's chalkboard halo and positions her as a prophet of the people rather than of the scientific Establishment.

*Source:* Courtesy of the Associated Press.

Instead of giving the appearance of an interrogation, Ribicoff deferred to Carson again by finishing his exordium, "Please proceed as you see fit."<sup>61</sup> Her testimony opens with the same prophetic formulae that run through *Silent Spring*:

The contamination of the environment with harmful substances is one of the major problems of modern life. The world of air and water and soil supports not only the hundreds of thousands of species of animals and plants, it supports man himself. *In the past we have often chosen to ignore this fact. Now we are receiving sharp reminders that our heedless and destructive acts enter into the vast cycles of the earth and in time return to bring hazard to ourselves.*

This problem you have chosen to explore is one that must be solved in our time. I feel strongly that a beginning must be made on it now—in this session of Congress.<sup>62</sup> (my emphasis)

Carson went on to present the results of very new scientific studies on insect resistance to pesticides as well as new arguments about biological controls, confirming her scientific authority. She made a series of policy recommendations, during which she again channeled the voices of silenced Others into the inner sanctum of government: "The plight of the person affected by these poisons is pitiful. Many case histories have come to me in letters. As a rule these people can find no physician who understands their problem."<sup>63</sup> Later,



continuing on the thread of the confirmation of her kairotic ethos, Senator Ernest Gruening asked her

In this connection, the question that Senator Ribicoff has just asked, you probably saw a two-page spread in the recent issue of the *New Yorker* in which a lady comes into a shop with a lot of bug killers on the shelf and she says, "Don't sell me anything Rachel Carson wouldn't buy."

RIBICOFF: "Do you want to comment on that?"

CARSON: "No. I think I will let it speak for itself."<sup>64</sup>

The commissioners then invited her to make judgments and recommendations at the prophetic stases of value and action. Senator Gruening asked, "What would you think of creating a department of ecology that would have an overall supervision of these functions, or at least an agency of ecology in one of those departments that would try to coordinate these conflicting interests?" Carson replied, "Well, it certainly is a good objective. Whether it is feasible to do this I don't really know."<sup>65</sup>

Ribicoff later characterized Carson as a "true believer" and opined that no one in the chamber that day could doubt her integrity. He testified to her impact on the committee's verdict, "I have always known philosophically that one who believes is a majority because most people don't believe in anything, and here was a person who deeply believed in what she was saying."<sup>66</sup> The Ribicoff committee went on to recommend, as had the PSAC, the same essential policy changes that Carson had espoused—conservative use of pesticides and the formation of a federal agency dedicated to oversight of agricultural chemicals. Within a decade, part of Carson's vision for "the road less traveled" had become reality with the founding of the EPA and the banning of DDT.

We can see from both the public and the governmental reception of Carson's rhetoric that she was confirmed as a kairotic prophet dedicated to voicing the concerns of silenced citizens over and against the false prophets of the scientific Establishment. Her marginal status with respect to government science may have been a liability in her dealings with agribusiness, but it gave her the freedom to speak her conscience, and it distanced her from the accusations of disloyalty that plagued Oppenheimer's ethos as "high priest" of Establishment science. Carson also benefited from the publication of her strongly prophetic argument just as a progressive administration was coming to power.

### Conclusion: The Fractured Ethos of the Science Adviser

After studying the differences and similarities in Oppenheimer's and Carson's performances of prophetic ethos, we are in a better position to understand both their honors in 1963, and the ethical trials that preceded them. In the twentieth century, the progressive and is/ought models of scientific-prophetic ethos were both operational. In times of crisis, such as the Cold War and the strontium-90 scare, scientists were called upon to ascertain the future. But when they made these predictions, the articulation of negative effects and risks unavoidably invoked evaluation; these value judgments immediately opened scientists' disciplinary ethos to charges of bias and arrogance. If the science adviser dared to make outright recommendations for action, ethical censure generally intensified, resulting in a radically unstable ethos for the scientist-prophet.

We have also seen that kairotic and cultic nuances matter a great deal in the prophetic ethos of policy scientists. Kairotic prophets such as Carson could not command the resources or authority of cultic prophets such as Oppenheimer, but by the same token they were better insulated from charges of disloyalty to the new Establishment. These ethical positions were analog, not digital; many positions were and are possible on the spectrum from kairotic to cultic. But none of them buys the scientist ethical stability. Oppenheimer fused cultic and kairotic ethē in his atomic-policy advice and statements to popular media; but this ethical configuration proved radically unstable and melted down in the face of a political regime opposed to his political stance.

A major factor in the constitution of scientific-prophetic ethos that was revealed but not pursued in this chapter was the influence of media. Carson, and Oppenheimer in his kairotic phase, used mass media to bypass official Establishment channels and engage lay polities directly in dialogue. The next chapter explores this dynamic in the media campaigns of 1980s science popularizers Carl Sagan, Stephen Jay Gould, and Stephen Hawking.