

The Rachel Carson Letters and the Making of *Silent Spring*

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Abstract

Environment, conservation, green, and kindred movements look back to Rachel Carson's 1962 book *Silent Spring* as a milestone. The impact of the book, including on government, industry, and civil society, was immediate and substantial, and has been extensively described; however, the provenance of the book has been less thoroughly examined. Using Carson's personal correspondence, this paper reveals that the primary source for Carson's book was the extensive evidence and contacts compiled by two biodynamic farmers, Marjorie Spock and Mary T. Richards, of Long Island, New York. Their evidence was compiled for a suite of legal actions (1957–1960) against the U.S. Government and that contested the aerial spraying of dichlorodiphenyltrichloroethane (DDT). During Rudolf Steiner's lifetime, Spock and Richards both studied at Steiner's Goetheanum, the headquarters of Anthroposophy, located in Dornach, Switzerland. Spock and Richards were prominent U.S. anthroposophists, and established a biodynamic farm under the tutelage of the leading biodynamics exponent of the time, Dr. Ehrenfried Pfeiffer. When their property was under threat from a government program of DDT spraying, they brought their case, eventually lost it, in the process spent US\$100,000, and compiled the evidence that they then shared with Carson, who used it, and their extensive contacts and the trial transcripts, as the primary input for *Silent Spring*. Carson attributed to Spock, Richards, and Pfeiffer, no credit whatsoever in her book. As a consequence, the organics movement has not received the recognition, that is its due, as the primary impulse for *Silent Spring*, and it is, itself, unaware of this provenance.

Keywords

Marjorie Spock, Mary Richards, Ehrenfried Pfeiffer, Long Island, New York, DDT, gypsy moth, organic farming, biodynamic agriculture.

Introduction

Most books are first editions because most books never develop the traction to warrant a reprint (Gekoski, 2011). This was not, however, the fate of Rachel Carson's book, *Silent Spring*. Published in the United States in 1962, Carson's book ignited a national, and eventually, an international furor and debate. *Silent Spring* attracted fans and infuriated foes. It was a critique, especially of dichlorodiphenyltrichloroethane (DDT), and, more generally, of our relationship with the natural world. Writing in *Science*, one author lamented that "the plague of Rachel Carson's *Silent Spring* continues to infest the minds of scientists" (Marvin, 1967, p. 14). Now, half a century after it first appeared, *Silent Spring* is still in print and continues to engage and recruit fresh advocates and detractors.

There are numerous biographies of Rachel Carson (1907–1964; for example, Brooks, 1972; Lear, 1997; Levine, 2008; Lytle, 2007), and the story of how *Silent Spring* has changed the world is well documented (e.g., Graham, 1970; MacGillivray, 2004). By the time she wrote *Silent Spring*, Carson was already the 'best-selling' author of several 'feel

good' nature books, including *The Sea Around Us* (1950) and *The Edge of The Sea* (1955). Publicly, Carson was a vibrant professional writer, while privately her health was deteriorating into a precarious state and she was terminally ill with cancer. *Silent Spring* was to be her testament and her legacy and she cared about it passionately. The book received immediate acclaim and approbation.

U.S. Congressman and lawyer, Jamie Whitten, took a reactive stance. He was the Chairman of the U.S. House of Representatives' Appropriations Subcommittee for Agriculture, and for him *Silent Spring* was highlighting the dangers of a public backlash against pesticides. As an antidote to Carson, he pursued an increased advocacy for pesticides:

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As a result of such involvement in pesticide questions I became aware that there was a sizeable movement at work aimed at severely curtailing or even eliminating the use of pesticides . . . This made me afraid that an aroused public opinion might stop the use of materials that I had become convinced are absolutely essential to our health and prosperity. And so I began to speak out in defense of the role of pesticides. (Whitten, 1966, p. vi)

The U.S. Environmental Protection Agency (EPA) was founded in December 1970, largely in response to *Silent Spring*. On June 14, 1972, the EPA cancelled all Federal registrations of DDT products, and from December 31, 1972, the usage of DDT was banned in the United States (EPA, 1972). Other jurisdictions followed suit. After three decades of public endorsement of DDT, in August 1972, the “Australian Agricultural Council recommended that all existing registrations for DDT should be reviewed as a matter of urgency, with the view to withdrawing all uses for which acceptable substitutes exist” (Harrison, 1997). It had taken a decade, and Rachel Carson did not live to see it, but her message was bearing fruit on an international scale.

Antagonists quickly linked *Silent Spring* with the organics cause, and organics advocates welcomed the book; however, Carson made no mention of the organics movement in her text, in its extensive reference list nor publicly elsewhere. The book was a milestone for the diffusion of the organics meme and the advancement of the organics movement. It was published at a time when the organics movement was at a low ebb, and *Silent Spring* gave the movement fresh momentum (Clunies-Ross, 1990; Gross, 2008; Peters, 1979; Reed, 2003). The injection of *Silent Spring* into the organics narrative has been treated as an external input, as though it was a kind of ‘manna from heaven’ for the organics movement. Despite a mountain of subsequent scholarship, much of which has focused on the impact of the book rather than on its provenance, the organics movement has not received the recognition that is its due as the primary input to *Silent Spring*.

Carson’s biographer Linda Lear (1997, p. 332) acknowledged Marjorie Spock as Carson’s “chief clipping service,” but as the present account will show, there is more to the story than Lear’s cryptic statement that Spock “had studied organic agriculture in Switzerland” and “was committed to it” (p. 319).

The present account reveals, from an analysis of Carson’s private correspondence, the untold story of the organics provenance of *Silent Spring*, and the role of two remarkable New York women, Marjorie (Hiddy) Spock (1904–2008) and Mary T. (Polly) Richards (1908–1990). As young women they had trained with Rudolf Steiner (1861–1925), the founder of biodynamic agriculture, at the Goetheanum in Switzerland (Barnes, 2005). After their return to the United States, the pair were under the personal tutelage of Dr. Ehrenfried Pfeiffer (1899–1961), the then chief advocate of biodynamics, in their biodynamic farming and gardening enterprises, and they

collaborated as the leading U.S. authors and translators of anthroposophic and biodynamics literature. For *Silent Spring*, they were Carson’s key informants as they shared the fruits of an antipesticide action against the U.S. government in which they had expended US\$100,000 and assembled expert witnesses and thousands of pages of testimony and scientific research material, all of which was readily shared with Carson as the foundation of her book.

The Long Island Spray Trial, 1957–1960

Marjorie Spock and Mary T. Richards, two biodynamic farmers of Long Island, New York, sought an injunction to stop the U.S. Federal Government from aerial spraying their property with DDT, and, having failed to stop the spraying, sued for damages. For *The New York Times*, the story was front page news from the outset (Schmeck, 1957). The 1958 trial ran over 22 days, arrayed 50 expert witnesses, and generated more than 2,000 pages of testimony (Boston Herald, 1964). There were, in total, four legal actions initiated by Spock and Richards, running from 1957 to 1960, which I refer to collectively as the ‘Long Island Spray Trial’ (Table 1). According to Bonine (2007), “This may well be the first modern environmental case brought by citizens” (p. 467).

Reflecting on the impediments to mounting such a case, Spock (1960a) wrote, “Unfortunately these suits are prohibitively expensive in both time and money (ours cost close to \$100,000), and lawyers usually refuse them as prejudicial to their future and because ‘you can’t win against the government’” (p. 252).

Three million hectares of northeast United States had been aerially sprayed with DDT in a campaign to eradicate an insect, the gypsy moth. “Aircraft pilots were paid according to the number of gallons sprayed,” so there was little or no incentive for restraint, and nor “from spraying the same areas more than once” (Spear, 2005, p. 257). Spock and Richards were about to be impacted by

one case that borders on the surreal, the New York state and federal departments, citing an implausible threat from the gypsy moth to New York City and environs, announced plans to spray densely populated Nassau County, Long Island, with DDT in fuel oil. (Spear, 2005, p. 257)

A group of Long Island residents, 6 initially, and swelling to 13, took action against the state (*Murphy v. Benson*, 1957, 1959a). The “prime movers” of the group were the biodynamic farmers and gardeners, Marjorie Spock and Mary T. Richards (Brooks, 1972, p. viii). The group included organic gardener and past president of the National Audubon Society, Richard Murphy, who is listed as the lead appellant, together with “other organic gardeners and a chiropractor” (Sellers, 1999, p. 43). From the United Kingdom, the Soil Association sent a US\$100 check to Spock in support of the campaign (Spock, 1960b, p. 249).

Table 1. Timeline of the Long Island Spray Trial and Associated Events.

Year	Action	Outcome
May 24, 1957	Application by six plaintiffs for an injunction to stop the U.S. government from aerial spraying Long Island with DDT, aiming to eradicate the gypsy moth (District Court).	Injunction denied. Long Island sprayed with a mixture of DDT and kerosene oil.
January, 1958	Ehrenfried Pfeiffer: Entire edition of <i>Bio-Dynamics</i> devoted to his account: "Do we really know what we are doing? DDT spray programs—their value and dangers."	Supplied to Carson by Spock the following month.
February, 1958	Carson contacts Marjorie Spock.	Spock and Richards supply Carson with Pfeiffer's paper, share their contacts, and files of references, and this data flow continues for the next 4 years.
June 23, 1958	Trial lasting 22 days; 50 witnesses; additional plaintiffs (District Court).	Dismissed. No damages proven.
April 21, 1959	Appeal (Court of Appeals: argued: April 21; decided October 1).	Original decision upheld.
March 28, 1960	Appeal (Supreme Court). Petition for writ of certiorari, i.e., review.	Denied. Dissenting opinion by Justice William Douglas.
November 30, 1961	Dr. Ehrenfried Pfeiffer died, New York state.	
June 16, 23, and 30, 1962	<i>Silent Spring</i> serialized in the New Yorker.	Attacks in <i>Chemical Week</i> , <i>Science</i> , and <i>Time Magazine</i> .
September 27, 1962	<i>Silent Spring</i> published by Houghton Mifflin.	Acclaim and success.

Note. DDT = dichlorodiphenyltrichloroethane.

The initial application for an injunction to halt the spray program failed. In retrospect we can see that what then happened to the land of Spock and Richards was a precursor of what happened soon after in Vietnam with a massive aerial chemical warfare operation authorized by President Kennedy starting in 1961 (Neilands, 1971). The U.S. government's chemical wars against the gypsy moth in the United States, and the Viet Cong in Vietnam, were contemporaneous wars. They ultimately both failed in their primary objectives, but at the time of the Long Island Spray Trial, both defeats were in the future, and neither was foreseen by the advocates of those wars.

Marjorie Spock kept supporters informed of legal developments: "From the summer of 1957 to 1960 when the case reached the Supreme Court, Marjorie wrote a report to interested and influential friends of each day's progress in and out of court" (Fay, 2008, p. 7). Carson was one recipient of these intelligence reports (Fay, 2008; Lear, 1997).

A voluminous amount of material was generated for, and by, the court actions as the case was escalated from an application for an injunction in 1957 (injunction denied), a District Court trial in 1958 (complaint dismissed), an action brought to the Court of Appeals in 1959 (dismissal decision upheld; no success to the plaintiffs), and eventually an uplift to the Supreme Court in 1960 (appeal denied; no joy for the appellants; *Murphy v. Benson*, 1957, 1958, 1959b; *Murphy v. Butler*, 1960).

In the process of these 4 years of legal challenge to the U.S. Federal Government's authority to spray private

property, Spock and Richards built up an arsenal of research material, as well as contacts and expert witnesses.

Two New York Biodynamic Farmers

The petition to the U.S. Court of Appeals stated that

Misses Richards and Spock . . . moved to Long Island for the sole purpose of being able there to produce food free of chemicals . . . it is a *legitimate* use to make of one's own property and it is "frustrated" by the spraying of DDT . . . The Misses Spock and Richards went to very substantial expense *solely* for the purpose of their "organic" cultivation. (*Murphy v. Benson*, 1959a, p. 7)

Spock and Richards had both studied at the Goetheanum, Dornach, Switzerland, the headquarters of the Anthroposophic Movement. According to Henry Barnes (2005), the chronicler of Rudolf Steiner's work in North America, Spock's life "encompasses the history of Anthroposophy" in America (p. 112). Spock had traveled to Dornach as an 18-year-old, in October 1922. She returned to the United States in December 1924 (Barnes, 2005). This adventure proved to be the beginning of a lifetime passion and dedication to anthroposophy, and particularly to eurythmy, Waldorf education, and biodynamics.

Spock's first visit to Dornach was a time of momentous and far reaching events for anthroposophy. On New Year's Eve 1922/1923, she witnessed the first Goetheanum burn to

the ground, with Rudolf Steiner (1861-1925), Ehrenfried Pfeiffer (1899-1961), and George Adams (1894-1963; translator into English of Steiner's Agriculture Course; Barnes, 2005; Steffen, 1923; Whicher, 1977). It was the destruction of 10 years of work. The following Christmas, Spock was at the founding of the Anthroposophical Society at Dornach Switzerland, at the "Christmas Gathering" 1923 (Barnes, 2005; Spock, 1978; Steiner, 1924a).

Rudolf Steiner set an intensive work schedule of traveling and lecturing. Marjorie Spock often traveled from Dornach, with the Steiner entourage, on those lecture tours. She learnt German. She attended Steiner's courses in speech, tone eurythmy, and dramatic art (Barnes, 2005). She attended the Torquay Summer School in August 1924. This event was to be Steiner's 10th and final lecture tour to England (Barnes, 2005; Steiner, 1924b; Villeneuve, 2004). It appears that colleague Mary Richards presented a reading from Steiner's Mystery Plays in London immediately after Steiner's Oxford Conference of 1922 (Paull, 2011c; Villeneuve, 2004).

During Spock's first visit to the Goetheanum, Steiner presented his Agriculture Course at Koberwitz in June 1924 (Steiner, 1924c). Steiner ran this program in parallel with a program on spiritual science at nearby Breslau (Steiner, 1924c). Steiner states that during these events there were performances by "Eurythmy artists from the Goetheanum" (Steiner, 1924c, p. 10). The Koberwitz Agriculture Course was the birthing event for (the yet to be named) biodynamic agriculture (Paull, 2011a).

In December 1924, just 6 months after the Koberwitz course, Spock departed Dornach (Barnes, 2005). Rudolf Steiner had by this time fallen ill and was confined to his studio, and from September 28, 1924, Steiner gave no further lectures; he died on March 30, 1925 (Collison, 1925; Koepf, 1991).

Spock subsequently returned to Europe and studied at the Eurythmy School in Stuttgart, Germany, from 1927 to 1930. On returning to the United States, she taught at the Rudolf Steiner School in New York. From June 1937 to the end of 1938, she again spent time at Dornach (Barnes, 2005). Spock had departed Europe before the outbreak of World War II (WWII), and on her return to the United States, she enrolled at Columbia University. She graduated with a BA, and proceeded to an MA, writing a thesis on Waldorf education. Spock taught at the Waldorf Demonstration School of Adelphi College and was a lecturer at the Teacher Training School of Adelphi College (now the Waldorf School of Garden City and Adelphi University, respectively; Sunday Herald, 1957; Waldorf School, 2007).

Spock spent her summers at the biodynamic Threefold Farm, Spring Valley, New York, "teaching eurythmy and learning biodynamic gardening" (Barnes, 2005, p. 120). The Threefold Farm was the first biodynamic farm in the United States, and the venue for the early anthroposophy conferences (Gregg, 1976a). The Biodynamic Association's annual conferences were held there from 1948 to 1980, and

it is still home to a vibrant biodynamic community, to the Pfeiffer Centre, and to the Threefold Educational Centre (Day, 2008).

Marjorie Spock and Mary Richards cultivated two acres of land on Long Island, New York, which they managed on biodynamic principles. Describing themselves as "two eurythmists" (Spock & Richards, 1956), and having spent time in Dornach, they were deeply committed to anthroposophy and its practical manifestations, including eurythmy (dancing), Waldorf education, and biodynamic farming. On their "farm," they planted "over thirty different vegetables" and they had "fourteen kinds of fruit and berries" (Spock & Richards, 1956, p. 14).

In this enterprise, these two biodynamic farmers and gardeners had been guided by the world's leading exponent of biodynamic agriculture, Dr. Ehrenfried Pfeiffer, author of *Bio-Dynamic Farming and Gardening* (1938) that was simultaneously published in at least five languages (Paull, 2011b). Of Pfeiffer, they reported, "He would insist at every visit on the minutest inspection of the various beds of vegetables, of the soil in depth, of the compost piles and of the fruit trees" (Spock & Richards, 1962a, p. 23).

As biodynamic farmers and as anthroposophists, they had sought out the world's two greatest experts in these domains, Steiner and Pfeiffer. Spock and Richards had a deep philosophical grounding to oppose mass dousing of their own land, in particular, and Long Island in general, from aerial spraying with DDT. In addition to these embedded macro reasons, the pair also had a very specific micro reason for pursuing their own biodynamic farming and for producing chemical-free food, which included vegetables, fruit, eggs, and dairy (Spock & Richards, 1956), and for resisting the proposed U.S. Department of Agriculture (USDA) prophylactic DDT spraying program.

Mary Richards had a sensitivity to food impurities that was, on occasion, incapacitating (Barnes, 2005). It has been suggested that Richards was an early case of the debilitating condition, now described as Multiple Chemical Sensitivity (MCS; Sellers, 1999). As a consequence of this condition, from the mid-1950s, Spock and Richards had been sending samples of their foods for analysis to the New York-based Laboratory of Industrial Hygiene for testing for DDT and other pesticide residues (Sellers, 1999). They now sought to avoid the repercussions of having their land, trees, and crops doused with DDT.

When the DDT spraying over their property occurred in 1957, Spock and Richards regarded their food supply as "ruined," their animals as "contaminated," and their soil as "totally compromised" (Barnes, 2005, p. 123). They had covered some of their crop with plastic sheeting, but they found that the DDT and fuel oil mixture that was sprayed dissolved the plastic and thereby contaminated their crops, despite their precautions (Barnes, 2005).

Spock authored or translated more than 20 books, some jointly with Mary Richards, all of them on anthroposophy

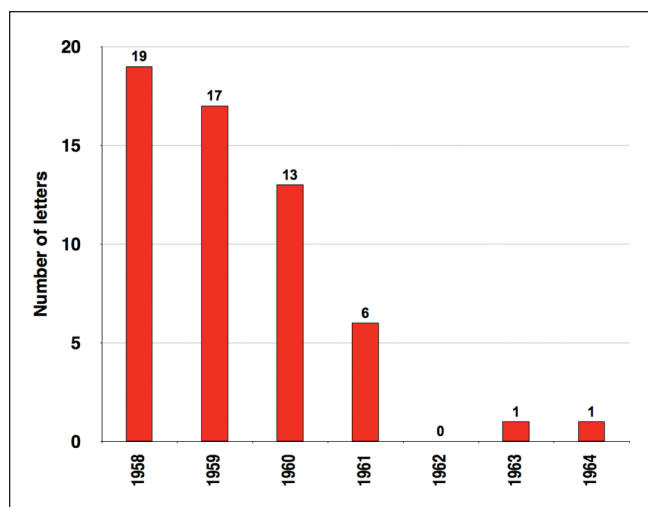


Figure 1. Annual tallies of letters from Carson to Spock and Richards.

and/or biodynamics. Spock authored at least 7 books in her own right, including *Eurythmy* (1980), *Teaching as a Lively Art* (1985), and *In Celebration of the Human Heart* (1982). She translated at least 5 books of Rudolf Steiner, including *Awakening to Community* (Steiner, 1974); *Chance, Providence and Necessity* (Steiner, 1988); and *A Psychology of Body, Soul & Spirit* (Steiner, 1999). She translated at least a further 7 books by other biodynamic or anthroposophic authors, including *Rudolf Steiner on his Book the Philosophy of Freedom* (Palmer, 1975), *What is Bio-Dynamic Agriculture* (Koepf, 1976), and *Water: The Element of Life* (Schwenk & Schwenk, 1989). Together with Mary Richards, she jointly translated at least two books: *The Nature of Substance* (Hauschka, 1966) and *Nutrition: A Holistic Approach* (Hauschka, 1967).

Spock's father, Benjamin Spock, was a lawyer, so perhaps seeing a legal remedy for a perceived government wrong was neither as foreign nor as daunting to Spock as it may have been to many, and Richards was in a position to personally put up the not inconsiderable funds.

Bearing Witness

Rachel Carson wrote to Spock and Richards early in February 1958 at the time when they were preparing evidence for the trial. This initial request resulted in the flow of a wealth of material and contacts to Carson for the next 4 years during which time *Silent Spring* was written. The salutation in the letters was initially "Dear Mrs Spock"; it quickly shifted to "Dear Miss Spock," and then to the familiar "Dear Marjorie," by October 1958, and occasionally to "Dear Marjorie and Polly" (e.g., December 1958, April 1960, and February 1961).

At least 57 letters have survived from Carson to Spock and Richards (Figure 1). In this total I include 3 letters from

intermediaries: 1 letter from Maria Carson, Rachel's mother (November 1958); 1 letter from Roger Christie, Rachel's nephew (November 1958); and the final letter dated March 24, 1964 from "JVD" stating that Carson was ill (she died on April 14, 1964). Marjorie Spock sent the collection of letters to Marie Rodell (1912-1975), Carson's literary agent, and then literary executor, expressing the view that "all pertinent material should be available, not kept in private hands" (Spock, 1966, p. 1). The letters were subsequently deposited in the Beinecke Rare Book and Manuscript Library, Yale Collection of American Literature, of Yale University. There is a continuity of narrative and events that suggests that the sequence of correspondence from February 1958 to October 1961 is complete, or nearly so. Spock and Richards were highly organized with their extensive documentation management and they were aware of the historical significance of the letters, commenting that "interest in Rachel Carson seems certain to increase" (Spock, 1966, p. 2), and this adds a further reason to accept that the sequence of correspondence is complete, or nearly so.

An early letter, dated March 14, 1958, sees Carson expressing her thanks: "I am most grateful for all the material you have sent me," and her delight at the quality and quantity: "I am delighted there is so much sound material" (Carson, 1958e). Later that month she writes, "Many thanks for . . . the very excellent Pfeiffer paper . . . With its many references it is a gold mine of information" (Carson, 1958f). In the same letter, Carson states that "you have been so enormously helpful to me, and apparently are so familiar with a vast amount of material" (Carson, 1958f).

The author of the "gold mine" paper was Dr. Ehrenfried Pfeiffer, who was, at the time, the chief proponent and exponent of biodynamic agriculture. He subsequently appeared as an expert witness in the Long Island Spray Trial (Spock & Richards, 1962b). When he was challenged by a defense attorney as to what fee he was receiving, he responded that no fee was involved; and when further challenged as to why he was there, his response was "because I am interested in the future of the human race" (p. 25).

An entire edition of the U.S. periodical *Bio-Dynamics* was devoted to Pfeiffer's (1958) account, "Do we really know what we are doing? DDT spray programs—Their value and dangers," which raised a multitude of health, food, and ecological issues concerning DDT aerial spraying. It is a 40-page account that cites 105 scientific references. It was a pioneering meta-analysis of the DDT issue and it is easy to see why this publication of the Bio-Dynamic Farming and Gardening Association was described by Carson (1958f) as a "gold mine."

Many of the references and authors cited by Pfeiffer later reappeared in Carson's reference list. Of one of his references (viz., Rudd & Genelly, 1956), Pfeiffer (1958) commented, "This is one of the most comprehensive reports, with almost 1000 references" (p. 39). It reappeared in Carson's references. In her exchanges with Spock, Carson

makes multiple references to Pfeiffer and to his correspondence (e.g., Carson, 1958f, 1959a, 1959b, 1960e, 1960f, 1960h, 1961f). With Spock and Richards as intermediaries, Pfeiffer was queried by Carson about sources, references, and his own tests and experiments, although he received no acknowledgment in *Silent Spring*.

Carson wrote regularly plying Spock with a variety of queries, questions, requests for addresses of contacts and for copies of articles. Carson frequently expresses her thanks for new material, for example, in August writing: "Your good letter and enclosures have just arrived—all excellent, helpful, and stimulating. I feel guilty about the mass of your material I have here" (Carson, 1958c, p. 1). During that 1st year of collaboration, in a September letter to Spock, Carson declared, "you are my chief clipping service, and I do appreciate all you do" (Carson, 1958d).

The letters to Spock and Richards also track Carson's deteriorating health during the researching and writing of *Silent Spring*. The descriptions of Carson's ill health are generally vague, especially at the beginning of the correspondence. Spock, her mother, and Richards met with Carson, her mother, and her nephew, in Maine early in September 1958. After that meeting Carson wrote, "I left Maine with a sore throat and when we reached home at the end of the second day of driving I promptly collapsed into bed with flu or something" and she described herself as "still not very energetic" (Carson, 1958b, p. 2).

Rachel's mother, Maria, wrote to Spock that "Rachel has had several sick spells of different kinds" (M. Carson, 1958, p. 1). Maria herself died 5 weeks after writing this letter. Carson informed Spock and Richards, in a four-page handwritten letter, of her mother's death. She described her mother and perhaps herself:

Her love of life and all living things was her outstanding quality, of which everyone speaks. More than anyone else I know, she embodied Albert Schweitzer's "reverence for life." And while gentle and compassionate, she could fight fiercely against anything she believed wrong, as in our present Crusade! Knowing how she felt about that will help me to return to it soon, and to carry it through to completion. (Carson, 1958a, pp. 3-4)

Spock states, of Carson, that "she found she was mortally ill a year or so after she began work on 'Silent Spring'" (Spock, 1966, p. 1). In January 1960, Carson thanked Spock for "the wealth of material" that had just arrived from her (Carson, 1960b, p. 1); however, she added that "healthwise, our report is not too good. I've had flu (or something) for 10 days, and yesterday had to return to my bed . . . Just before the virus attacked me, I'd learned I have a duodenal ulcer!" (Carson, 1960b, p. 1) Later she writes that "I'm still laid low with flu but recovering" (Carson, 1960c). Three months later, in April 1960, she confided in a letter, "Dear Marjorie and Polly . . . My hospital adventure turned into

another set-back of some magnitude, wrecking my tight work schedule for the spring . . . Viruses . . . delayed my operation . . . There were two tumors in the left breast . . . suspicious enough to require a radical mastectomy" (Carson, 1960a, pp. 2-3). Carson however remained upbeat, as well as private: "I think there need be no apprehension for the future. I am giving details to special friends like you—not to others" (Carson, 1960a, p. 4).

Carson and Spock corresponded on testing food for residues (Carson, 1960d). Carson wrote to Spock that "all you tell me of the food situation is most interesting" (Carson, 1961d, p. 1). Carson thanked Spock for sending her butter and meat, and related that her young nephew, Roger (who was in the care of Carson) had remarked that "this hamburger is very good because it hasn't been sprayed" (Carson, 1961e, pp. 2-3). Carson wrote to Spock and Richards of the advice to "make an effort to eliminate chemical residues from my food intake insofar as possible. I know of no local suppliers of such food. Can you suggest how I can find out?" (Carson, 1961b, pp. 2-3).

Letters from Carson generally thanked Spock and Richards for their research materials and/or raised queries, but she continued to relate her personal circumstances. Early in February 1961 she wrote that

I seem always to write of illness and disaster but unfortunately my luck has not changed. Rather severe flu after Thanksgiving and then a persistent intestinal virus early in January apparently lowered my resistance and prepared for the real trouble—a staphylococcus infection that settled in my knees and ankles so that my legs are, and have been for 3 weeks, quite useless. (Carson, 1961b, p. 1)

She laments, "if only I could walk!" (Carson, 1961b, p. 2). Ten days later she reported that "I can still manage only one or two steps" (Carson, 1961d). A month later she could report, "Improvement continues, so I can now get about part of the time without my walker" (Carson, 1961c). By April 1961 she told of "my still limited energy" and reported that

I feel cheated out of full enjoyment of this slowly unfolding Spring, I am so much better that I have much to be thankful for. Wheel chair and walker are behind me and although at times I do walk stiffly, I do walk limited distances and can even manage short distances by car . . . I'm still having cortisone injections . . . I can't adequately thank you for all your generosity. (Carson, 1961a, pp. 3-4)

By October 1961, Carson could finally report, of the upcoming book, that "the end is somewhere in sight." She acknowledged the latest installment of material, "the excellent clippings" and "the photocopy of the Lancet article . . . I had seen references to it but had not seen the complete article" (Carson, 1961g).

In the years 1958 to 1961, Carson's correspondence reveals that she was in continuing receipt of information

from Spock and Richards, beginning from the initial request for information in February 1958, through the multiple volumes of trial transcripts that were loaned, and contacts and research articles and reports that included some translated from the German by Spock and Richards. The correspondence is a parallel record of Carson's precarious state of health during the research and writing of *Silent Spring*, and of her reliance on Spock and Richards as research collaborators throughout.

Silent Witness

Despite the regular correspondence between Carson and Spock and Richards, and queries and multiple clarifications sought from Pfeiffer, none of the three received any credit or acknowledgment in *Silent Spring*. If oversight, ignorance, and/or ungratefulness are dismissed as reasons for this absence, and it does seem reasonable to dismiss them, then how can the omission be accounted for? Carson was writing an evidence-based account of an issue that she was passionate about. Given the deteriorating state of her health, she could have foreseen that *Silent Spring* would have to stand on its own merits, without any further defense from her, that this was her single chance, and that time was not on her side for her personally responding to negative critiques or producing some future follow-up book. *Silent Spring* was to be her testament, her legacy, and her farewell statement. She was bedridden and wheel chair bound during some of the writing of *Silent Spring*. Her health continued to deteriorate after the launch of *Silent Spring* with its serialization in *The New Yorker* beginning in the June 16, 1962, issue, and then the book publication on September 27, 1962, until her death on April 14, 1964.

From her correspondence with Spock and Richards, it is clear that Carson was concerned strategically with how to craft her message to achieve a breakthrough into public consciousness. She wrote,

It is a great problem to know how to penetrate the barrier of public indifference and unwillingness to look at unpleasant facts that might have to be dealt with if one recognized their existence. I have no idea whether I shall be able to do so or not, but knowing what I do, I have no choice but to set it down . . . I guess my own principal reliance is in marshalling all the facts and letting them largely speak for themselves. (Carson, 1960i, p. 1)

There were at least two strategic and evidence-based reasons for Carson to expunge her benefactors Spock, Richards, and Pfeiffer, together with their philosophies of biodynamic and organic agriculture, from her book. First, there was the experience of previous authors who had tackled the same or related issues and who had tried and failed to gain traction. Second, there was the trial transcripts that clearly revealed that an organics association could be used as a reason for discounting the witness.

In the decade before *Silent Spring*, at least four professionally written 'poison books' appeared, tackling the issue of pesticides and food. None of them had an impact approaching that of Carson's book, and all of them had an identifiable organics provenance.

U.S. chemist, Leonard Wickenden (1955), published *Our Daily Poison*. He had previously published books on organic gardening (Wickenden, 1949, 1954) and was identified as an organic gardener on the dust jacket of *Our Daily Poison*. Award winning New York journalist, William Longgood (1960), published *The Poisons in Your Food*. He had previously written of the USDA's DDT spraying program in an organics journal (Longgood, 1957). Carson commented in a letter to Spock, "It is too bad that Mr. Longgood is having such rough going with his book, although I suppose not surprising. His reporting of the trial would automatically make him a target of the New York State Department of Agriculture" (Carson, 1960g, p. 1).

London-based doctor, Franklin Bicknell (1960) published *Chemicals in Food and in Farm Produce: Their Harmful Effects*. The rear of the dust jacket carried an advertisement for other Faber organics titles. The U.S. anarchist, Murray Bookchin (1962), only months before *Silent Spring* appeared, published *Our Synthetic Environment* under the pseudonym 'Lewis Herber.' He had previously declared that the difference between organic farming and chemical farming was "a basic antagonism in outlooks toward natural phenomena" (Herber, 1952, p. 215).

The experiences of Wickenden, Longgood, Bicknell, and Bookchin/Heber were not definitive, but Carson was a savvy author, and writing was her sole source of income, so she was aware, perhaps more than most, that she did not want their experience to be her experience. She was also thoroughly aware of Pfeiffer's (1958) well-argued and extensively referenced account of DDT and the environment, which occupied a complete issue of the journal *Bio-Dynamics* but which appears to have 'preached to the converted' rather than igniting any controversy or generating any national debate.

Having been provided with the trial transcripts by Spock, Carson would have been well aware that the presiding judge, in the Long Island Spray Trial, Judge Bruchhausen, was discounting evidence based on the "leanings" of the witnesses. In his opinion he argued,

the fact that some are so strongly in favor of organic farming, without the use of chemicals, or emphasize their preference for biological control that their judgements may be influenced by their leanings. Under these circumstances, it is appropriate that the experts' testimony be scrutinized. (*Murphy v. Benson*, 1958, p. 3)

A medical specialist's testimony was disregarded by Judge Bruchhausen on the basis that "Dr. Knight . . . his testimony consists largely of generalities and is not helpful. In

fact he states that the subject is rather new and that absolute proof is lacking. He conducts an organic farm" (*Murphy v. Benson*, 1958, p. 3).

However, the testimony of a pro-DDT witness was highly regarded by the Judge:

Doctor Hayes is Chief of Toxology [*sic*] of the United States Public Health Service . . . and is a member of the expert panel on Insecticides of the World Health Organization . . . He and his associates have experimented with DDT on human beings and animals, feeding them DDT with daily doses for periods of a year or more . . . I am strongly impressed with this witness. (*Murphy v. Benson*, 1958, p. 4)

Of two witnesses who had conducted research sponsored by chemical companies, the Judge declared, "Both witnesses impressed the Court as credible witnesses" (*Murphy v. Benson*, 1958, p. 4).

The clear message from the trial was that being in the employ of a chemical company was not an impediment to credibility but that being associated with the organics cause was. The judge in arguing *ad hominem* rather than *ad rem* was inadvertently alerting Carson to be wary of admitted associations. In deciding against the appellants, Bruchhausen was implicitly making the case to Carson to suppress its biodynamic provenance. And suppress it she did.

There was, nevertheless, a feeling that Carson's book carried a smuggled message. A chemical industry editorial identified "an undercurrent of antipathy running throughout her work" (Chemical Week, 1962, p. 5). One critic speculated that Carson's writing "probably reflects her Communist sympathies" and pointed out that "we can live without birds and animals, but, as the current market slump shows, we cannot live without business" (H. Davidson, 1962, quoted in Lear, 1997, p. 409). The first respondent in the Long Island spray case, Ezra Taft Benson, the then Secretary of Agriculture, is quoted as wondering "Why a spinster with no children was so concerned about genetics?" and affirming that she was "probably a Communist" (Lear, 1997, p. 429).

While these critics were surely quite off the mark, they did intuit that *Silent Spring*, although couched in scientific terms, and laden with scientific references, was a vehicle for carrying something that Harrison and Benson, for example, were identifying as subversive—though without them quite fingering it.

An editorial in *Chemical Week* sensed the legal provenance of Carson's book as they railed

Her technique in developing this theme is more reminiscent of a lawyer preparing a brief, however, than a scientist conducting an investigation . . . the industry is facing a hostile and to some extent uninformed prosecuting attorney. Her facts are correct, her conclusions less certain, and her innuendoes misleading. (Chemical Week, 1962, p. 5)

Chemical & Engineering News published the view that "it is certainly hoped that they [FDA and USDA] will not decide that they must defend their position" (Gordon, 1962, p. 4).

Carson had witnessed in the transcripts of the Long Island Spray Trial how the evidence of witnesses associated with organics was discounted or disregarded because of their association. She was familiar with Pfeiffer's (1958) well-documented paper in *Bio-Dynamics*, and other pre-Carson warnings and questionings about DDT in particular, and pesticides in general. She knew that they had largely failed to hit their mark, on either the public consciousness or public policy. The conclusion is that Carson silenced the witnesses to let the message be heard.

As far as any evidence of association with the organics sector was concerned, Carson was a 'cleanskin'—There was no such link in the public domain. The close friendship of Spock and Richards with Carson had been forged in private and in pursuit of what Carson (1958a) described as "our present Crusade" (p. 23). *Silent Spring* was a joint effort and their common cause, and Carson wrote their evidence into, but their names out of, the script entirely. Their "common cause" was the construction of *Silent Spring* and this was the consuming passion of Carson in the final years of her life. There is no evidence revealed in the correspondence to indicate that Carson shared or explored the interest of Spock and Richards in either anthroposophy or the writings of Rudolf Steiner.

Discussion and Conclusion

Just why Carson's book gained so much traction is a matter of speculation. There is a constellation of potential reasons. Carson was already a best-selling author (e.g., *The Sea Around Us*, 1950) with a proven talent for writing. Her new book addressed (mostly) a single pesticide (DDT) and (mostly) a single biological class (birds); *Silent Spring* began with a simple, but powerful, parable—a journalist in a hurry could read the parable and skip the rest; the book had a lyrical title, in contrast to, for example, Bicknell's, Wickenden's, Longgood's, and Pfeiffer's declarative titles. Carson's book was serialized (and abridged) in *The New Yorker* before appearing as a book, giving it high visibility and taking it to a broad and influential audience. The selection by book clubs (e.g., Readers Union) guaranteed a broad and diverse distribution and readership. And the book piggy-backed on a ground-breaking court case that had aroused and alerted powerful U.S. government agencies and chemical corporations who were primed to rebuff any assault on their domain.

Carson had carefully crafted her message to exclude any reference or citation to organics or biodynamics, yet it had been fuelled, shaped, and informed by biodynamic and organic farmers and gardeners, and it carried their agenda just as had Pfeiffer's (1958) account before it. While

excluding any reference or acknowledgment to Spock, Richards, or Pfeiffer, commenting, of the Spray Trial, merely that it had been initiated by “Long Island citizens” (Carson, 1962, p. 159).

For whatever reason or confluence of reasons, Carson’s book succeeded, where others had failed, as a driver of major awareness and change. And, in succeeding, her book succeeded spectacularly, gaining the serious recognition that had eluded authors who had earlier ventured into the dark side of pesticides, food, and the environment.

Writing in the periodical *Organic Gardening and Farming*, Robert Rodale (1962) described *Silent Spring* as a “masterpiece” (p. 17) while he reminded readers that “much of the evidence presented . . . we have reported to readers of *Organic Gardening and Farming* in the past” (p. 18). Carson’s facts were not new; it was the traction of those facts that was new. The executive editor of *Organic Gardening and Farming*, Jerome Olds (1962), wrote of *Silent Spring* that “it’s as if a lid that kept down criticism and resentment against poison sprays had been suddenly blown off” (p. 14).

Globally, the organics sector was given a timely and welcome boost by *Silent Spring*. In the decade following its publication, for example, the circulation of Jerome Rodale’s *Organic Gardening and Farming* rose from 300,000 subscribers in 1962 to 750,000 in 1972 (Gross, 2008; J. I. Rodale, 1962).

Ehrenfried Pfeiffer did not live to see the *Silent Spring* phenomenon that sprang from his “gold mine” of references and the trial in which he had been an expert witness. He was treated for TB, and complications therefrom, and he died on November 30, 1961. Pfeiffer had worked with Rudolf Steiner at the Goetheanum in Dornach, Switzerland, from 1920 until Steiner’s death in 1925. From Steiner’s Agriculture Course of 1924, Pfeiffer (1938) had developed the theory and practice of biodynamic agriculture into a publishable form as *Bio-Dynamic Farming and Gardening* (Paull, 2011b), he had brought biodynamics to the United States, and he had witnessed biodynamics become a worldwide enterprise.

Spock and Richards, after all legal recourses had been exhausted in 1960, purchased a 142-acre farm near Chester, New York, and made the move, 80 km from New York City and adjacent to Ehrenfried Pfeiffer’s own farm (Gregg, 1976b; Spock & Richards, 1962b). They subsequently purchased a farm at Maine (Spock, 1972). Biodynamic farming practices continued at the new farms (Spock, 1968, 1972). Mary Richards died in 1990; Marjorie Spock died in 2008 at the age of 104.

Rachel Carson had “a radical mastectomy” on April 4, 1960, and opted to keep her precarious state of health secret from most (Carson, 1960a, p. 3). She had further surgery and radiation treatment in the few subsequent years remaining to her. During some of that period, she was bedridden and unable to walk. She entered the Cleveland Clinic on March 13, 1964, for an operation relating to her cancer. She died there on April 14, 1964. She was aged 56 years. Her book

was listed as one of the “25 greatest science books of all time” (Discover, 2006) and for five decades, it has remained continuously in print.

The success of *Silent Spring* is a testament to, firstly, the thoroughness of Spock and Richards in garnering the evidence and, secondly, to Carson crafting that evidence into a parable and a powerful text. While the thrust of the book was attacked, the facts were not disputed. Carson dissociated, from her public persona and the book itself, the close working and personal relationship that she had developed with the biodynamic farmers Spock and Richards, and the influence of Pfeiffer on them all, and she thereby successfully side-stepped a potential mode of attack from the powerful lobby groups that did indeed attack, albeit counterproductively.

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