Rachel Carson: Proving the Competency of Femininity

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Abstract: In September of 1962, Rachel Carson published one of the most influential books of modern environmental science, *Silent Spring*. Her findings threatened to undermine the power of chemical pesticide companies, whose representatives criticized Carson fiercely. Not only were the attacks directed at Carson's work and findings, but at Carson personally, besieging the scientist because of her gender. This particular type of attempted defamation is exclusive to the female experience. Women must defend the quality of their work, while also proving that the nature of being a woman does not make them unable to perform well.

Carson had to prove that she was competent and her work credible. Her work in environmental science was unorthodox: Carson worked as a free-lance author rather than as an expert chemist, she presented information with poetic language, and she collected data by forming relationships with powerful male politicians. The lack of institutional support forced Carson to use these methods, which also highlighted more feminine skills. When defending herself and her findings, Carson faced the difficult task of combatting gender-based criticism when her female experience was apparent in her work.

The Coming Up of Carson and Chemicals

Rachel Carson's interest in the natural world stemmed from her upbringing on a farm in Pennsylvania. She received her first writing prize at the age of ten for a story published in St. Nicholas Magazine, a monthly children's magazine about animals. The magazine gave many famous writers their first exposure, including Louisa May Alcott, Mark Twain, and F. Scott Fitzgerald, so this early notoriety suggested uncommon talent and foretold her future fame (Stein 2015).

Carson went on to graduate magna cum laude from Pennsylvania College for Women with an undergraduate degree in biology and then obtained a master's degree in zoology from Johns Hopkins University. During her time at Johns Hopkins, Carson worked as a lab technician for the Marine Biological Laboratory (Lear 1993).

Despite her extensive educational background in the hard sciences and hands-on experience in a lab, Carson was hired by the U.S. Bureau of Fisheries in 1936 for the unappealing task of writing about other scientists' work for the agency's public brochures. At this point in the 20th century, women were frequently hired for low status positions and received less public acknowledgement than "professional" male scientists (Hammon 2015).

Because promotion often relies on undertaking high visibility projects, Carson did not have much opportunity for mobility within the Bureau of Fisheries, now called the Fish and Wildlife Service by simply writing brochures (Rhode 2017, 59). Only after receiving significant recognition for articles she wrote outside of the government agency in *Sun Magazine, Nature,*

and *Colliers*, was Carson was promoted to the position of Chief Editor of Publications at the Fish and Wildlife Service, eleven years after Carson began working for the Service. Carson's choice to work multiple jobs in order to gain recognition showed she already realized that her status as a woman in science would force her to work twice as hard as her male counterparts.

Unfortunately, once promoted, Carson had less time to focus on writing because she was given administrative responsibilities and fell into the trapping phenomenon known as "housekeeping"—taking on tasks that have "low visibility, status, and rewards, such as committee work and informal advising" (Rhode 2017, 36). This inhibited Carson's ability to continue moving upward, but she was unable to find work outside the Fish and Wildlife Service due to the fact that most high-profile scientific jobs receiving funding were centered around nuclear research for the Manhattan Project since Vannevar Bush, Director of the Office of Scientific Research and Development submitted *Science, The Endless Frontier* (Bush 1945). The only women working this project were skilled physicists and Carson studied biology.

Another barrier to Carson's career advancement was her family life. She was unable to sacrifice the job security offered by her bureaucratic position because she was the sole breadwinner and primary caretaker for her mother and adopted grand-nephew after the deaths of her father, sister, and niece. The burden of caretaking indicated another uniquely female experience, as family obligations disproportionately affect women (Rhode 2017). The lack of laboratory positions for women and the burden of family responsibility forced Carson to concentrate on writing rather than pursuing more respected scientific positions.

One of Carson's essays, *The World of Waters*, was accepted for publication in 1937. Carson had originally submitted the work as the annual research findings to the Fish and Wildlife Service but her supervisor refused to publish the piece because he felt it was too lyrical for a standard government report (Popova 2017a). The essay, retitled *Undersea*, was published in the September issue of *Atlantic Monthly,* under the name R.L. Carson (Stein 2012). The omission of her full first name reflected Carson's fear that she would not be taken seriously if her gender was known. A publishing company, *Simon & Schuster*, contacted Carson for a deal to write a book after being impressed by *Undersea*. She accepted the offer and wrote two novels between 1937 and 1951, while still working as chief editor for the Fish and Wildlife Service. The first book, *Under the Sea Wind*, published in 1941, sold poorly and made Carson's efforts seem futile. But persevering through the challenge of working two jobs and caring for her family paid off when *The Sea Around Us* became a bestseller in 1951 and was adapted into a documentary. Through this success, Carson accumulated enough wealth to quit working her government job and pursue a full time writing career (Stein 2012).

Though the acclaim was great for Carson financially, she was disenchanted by the fact that the positive reception derived from her prose-like writing style rather than her vast knowledge of aquatic life. For instance, Kirtley F. Mather, a geologist on the faculty of Harvard University, commented that "most notable is the fine literary style that makes it a truly enthralling volume" in his review of the book (Mather 1951). The movie adaptation confirmed that the positive reception could be attributed to romantic language rather than scientific facts. Carson was deeply disappointed to find that though she had the right to review the script, she had no right to control its contents which she called "a cross between a believe-it-or-not and a breezy travelogue" (Lear 1997, 239). Carson did have an emotional connection with the environment that she wanted to extend beyond the scientific community, commenting, "the pleasures, the values of contact with the natural world, are not reserved for the scientists" (Popova 2017b), but she did not know how to reconcile the importance of cultivating public sentiment for natural

beauty with the importance of scientific facts. If she continued to write poetically so that she could make money, her work would fail to meet the standards of academic reporting.

Carson had to follow the path that guaranteed a greater income to support her family and agreed to write on commission for some magazine articles and a television script for the episode "The Better Half" on an educational television show called *Omnibus*. The lack of high profile job opportunities for women scientists, the burden of caretaking, and profit associated with poetic rather than technical writing undermined Carson's credibility as a scientist in two ways. First, Carson was forced to work primarily as an author, citing other scientists' work. Laboratory work that would have qualified her in the scientific community came as a secondary priority. Second, in order to be a successful author Carson had to adopt a writing style that did not align with traditional scientific reporting. Carson was in a double bind; she was interested and educated in science and could not sustain herself without writing as a lyrical author, but if she wrote as a lyrical author she would not be respected within the scientific community. Furthermore, Carson's writing style, though less respected within the academic community, was received well by the public giving her a larger platform to publicize biological issues and defend her concern with "romantic beauties and mysteries of this earth" (Popova 2017b). Was it more important to have the evidence respected among Carson's peers or reach a broader audience?

In 1955, the United States entered the Vietnam War, during which the military explored chemical warfare as a tactic against the Vietnamese and launched Operation Ranch Hand, a program that sprayed toxic herbicides including Agent Orange over the land (United States Institute of Medicine 1994). During this same time, chemicals were also sprayed across the United States as pesticides to protect crops. The same methods used to kill people in war abroad were used for food security in Carson's homeland and deemed safe by the government. Concern spread across the United States and judicial disputes multiplied as aerial pesticide spray programs increased in popularity and contaminants began to affect health. In 1946, the federal government started using DDT, a toxic insecticide, on public and private lands to eradicate an invasive species of gypsy moths (U.S. Environmental Protection Agency 1975), in 1957 the United States Department of Agriculture (USDA) planned to eradicate fire ants with aerial spraying (Williams 1983), and in 1959 The Great Cranberry Scare occurred, during which citizens were advised not to consume cranberries because they contained high amounts of the carcinogenic herbicide aminotriazole (Tortorello 2015). Though many landowners protested the government's herbicide and insecticide programs in court, lawsuits were often lost because chemical experts denied the "threat of irreparable damage" in their witness testimony (Murphy v. Benson 1957). Carson paid close attention to the evidence of environmental damage accumulated through these cases, which served as a starting point to writing *Silent Spring*. She focused on the use of DDT, the widely protested toxic insecticide used to kill moths (U.S. Environmental Protection Agency 1975).

Silent Spring

In 1958, Carson began developing the idea for a publication that would discuss the toxicity of chemical pesticides. An initial setback to Carson's writing was her lack of opportunities to do field research. She no longer worked for the Fish and Wildlife Service and therefore had no institutional affiliation to support her. Carson was forced to rely on personal relationships to gain access to information. Interpersonal skills are often considered a "feminine skill", and though some feminist literature defends the use of different gendered skills in the workplace (Grosz 1995), leveraging them was unconventional. So-called 'professional' male

scientists were able to conduct research due to their direct access to the data available within government, academic, or private institutions. Carson used alternative methods, including reading through testimony from a lawsuit between Long Island residents against the USDA for the use of DDT (Murphy v Benson 1957) in order to gain support and information from more conventional scientists. The records included the names of expert scientists such as Mary Richards and Marjorie Spock. They collaborated with Carson to contact independent and government scientists for their findings on chemical use (Lear 1993, 34).

At this point, the American government saw Carson and other scientists concerned with chemical harm to be a threat to national security. As communist fears spread, chemicals proved to be a useful weapon in the Vietnam War effort and provided a sense of security against the threat of increased conflict. Chemicals were defended for their use as weapons as well as for the protection of crops. An abundance of food, in contrast to the shortages in the Soviet Union, served as a point of nationalism; if Americans could feed their people, they were perceived as more successful than the communist bloc (Carles 2010). Some government officials believed that Carson was undermining the anti-communist effort – Ezra Taft Benson, former United States Secretary of Agriculture, speculated that she was "probably a Communist" (Stoll, 2012), which was a highly scandalous claim to make during the McCarthy era. This period started in 1947, when President Truman signed Executive Order 9835 to screen civil service employees for disloyalty described as association with "totalitarian, Fascist, Communist, or subversive" (Goldstein 2006) organizations which was used as a means for political repression and 'witch-hunting against government and popular culture figures in hearings notably led by Senator Joseph McCarthy. However, despite government backlash, other scientists realized how much damage pesticides caused and supplied her with confidential data as long as she promised to maintain their anonymity (Lear 1993).

Despite the risks of public outrage, Carson persisted. She partnered with the Audubon Naturalist Society and mobilized journalists who could further showcase the health hazards of pesticide use. *Silent Spring* was initially meant to be a long article for *The New Yorker* co-written with another scientist, Edwin Diamond, but he refused to work with a woman whom he believed let her emotion interfere with accuracy (Smith 2001). Therefore, Carson decided to work independently, knowing that despite her emotions, she could portray the truth about the dangers of pesticides. She also made the decision to adapt her research into a book with in-depth clarification rather than just an article, in which she would only have written an introduction and conclusion had she continued working with Diamond. Carson further put herself at the center of attention when she called the USDA public service film that defended pesticide use "flagrant propaganda" (Taylor 2016).

Beyond national security, the federal government had another reason to protect the chemical industry. Since the Environmental Protection Agency (EPA) was not established until 1970, the USDA was responsible for pesticide regulation and protecting the agricultural industry. This meant that the same agency that reaped the benefits of pesticide use was also responsible for its regulation, posing a conflict of interest. Pesticides provided greater economic security for agriculture by allowing for greater crop yield. Since the USDA's scope did not reach beyond farm policy, the agency did not have an interest in environmental integrity. Instead, they knew environmental protection undermined their work. The USDA's disregard for environmental and public health was protected by the chemical industry, which had the capital to defend pesticide use in court. During the Food and Drug Administration (FDA) hearings following the Great Cranberry Scare, chemical companies such as Amchem and American Cyanamid provided

testimony defending the use of the herbicide aminotriazole, despite the fact that one of their earlier reports expressed concern that the chemical could cause cancer (Janzen 2010). The hearings were meant to assert that authority of the FDA and justify Secretary of Health, Education, and Welfare Arthur S. Flemming's, warning announcement, given after he was criticized for being alarmist and the FDA and USDA disputed which agency should regulate the chemicals (Janzen 2010). However, the inclusion of testimony from Flemming's chemical industry adversaries effectively promoted the use of chemical pesticides further by giving a voice to the industry to propagate their product. Testimony also undermined the Delaney Clause, a Food Additives Amendment that had previously stipulated "no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal" (Tortorello 2015). The final decisions of the hearings were retrospectively noted to be "the beginning of the end of the Delaney Clause" (Janzen 2010).

Over the course of four years, with the help of other concerned scientists and the Audubon Naturalist Society, Carson finally gathered enough information to finish *Silent Spring*. The book's publication was greatly anticipated as a result of the media attention paid to chemical controversy.

Criticism of Silent Spring

In the months leading up to its release, journalists, activists, and scientists promoted *Silent Spring* across the country. Supreme Court Justice William O. Douglas supported the book's claims and advocated for legal changes. However, the book also received a lot of negative attention. Pesticide manufacturers such as DuPont and Velsicol Chemical Corporation prepared responses and threatened to sue the publishing company, Houghton Mifflin (Murphy 2005). But Carson had spent too much time and energy working on the book and felt that its message was too important to be kept private, so she insisted on its publication and decided to face the attacks. Chemical representatives, government officials, and even some peers spewed vitriol against Carson, mostly attacking her gender. A lot of the charged commentary was true; Carson was a female activist with an emotional attachment to nature and an opposition to some of the government practices of the time. Since she could not deny this, Carson was faced with the task of proving that these qualities did not undermine the credibility of her work.

Robert White-Stevens, a Cyanamid biochemist who was the assistant Director of the Agricultural Research Division of American Cyanamid and a spokesman for the chemical industry, came out strong against Carson, calling her a "fanatic defender of the cult of the balance of nature" (McLaughlin 2014). There was no actual "cult of the balance of nature" but he used such loaded words to undermine the media attention and scientific support for environmental protection. His language evoked fear and insinuated that environmentalists are irrational. His word choice also has implications of gender bias: use of "fanatic" and "balance of nature" targeted Carson's femininity. Describing Carson as a fanatic was a demeaning term likening her to being hysterical, which, at the time, carried the connotation of a medical condition.

The American Psychiatric Association considered Female Hysteria a mental illness until 1952, when doctors realized that the symptoms—nervousness, sexual desire, and insomnia—were part of normal human functions (Tasca, Rapetti, Carta, and Bianca 2012). The invocation was used to discredit women who were acting normally when men found their concerns inconvenient. This type of rhetoric undermines the credibility of female investigative journalists. Ida B. Wells, an earlier investigative journalist and civil rights activist, was called a "crusader"

which implied "that the journalism being done is based in emotion and rhetoric rather than facts" or "that the journalist in question is outright twisting the facts to shaper her bias" (Lind 2015).

Attacking Carson's appreciation for nature was also loaded. Respect for the environment was viewed as feminine romanticism, not to be taken seriously. During the Ribicoff hearings concerned with pollution in urban areas, Secretary of Health Abraham Ribicoff stated "you're never going to satisfy organic farmers or emotional women in garden clubs" (Stoll 2012). There was a consensus among men who felt threatened by activism that women who loved nature were too emotional to be taken seriously and their demands too irrational to be met, and therefore they should be ignored.

Chemical representatives also used insults aligned with the government's anti-communist agenda that asserted the necessity of chemical pesticides for food security. Velsicol, the company that threatened Houghton Mifflin, argued that the elimination of pesticides would "reduce [our supply of food] to East-Curtain parity" (Stoll 2012), referring to food shortages in the communist Soviet Union. Ezra Taft Benson, the original accuser that Carson was a communist, asserted that her gender non-conformity proved traitorous political affiliation. He pointed out that although Carson was physically attractive yet, she never married -- asking, "why a spinster was so worried about genetics" (Lear 1997, 429). The remark illuminates a mentality that women who do not fit stereotypes have no place in voicing their concerns. Carson did not marry because she was focused on building her career and supporting her mother and adopted son. A double bind existed for Carson; she could not afford to expand her career if her family responsibilities grew with marriage, but because she was not married, it was assumed that she could not be reliable. Culture in the 1950's particularly emphasized conformity. Tradition was valued and the combined culture of conformity and fear of "other" created by the Cold War, which made citizens who acted out of the norm immediately suspect (Griffith 1970). Benson played off of fear by asking why an unmarried woman should be so concerned with public health. It led people to question Carson's motives – perhaps she was anti-chemicals not for health reasons but rather, because she had communist motives.

Unexpectedly, some backlash came from Rachel Carson's peers. One of Carson's harshest critics was Edwin Diamond, the scientist who was supposed to co-author the article for *The New Yorker*. Diamond initially supported the anti-pesticide movement, but when Rachel Carson decided to work alone and achieved fame, he jealously resorted to publicly insulting Carson's work with glaring sexism. Diamond first attributed the success of *Silent Spring* to the timing of its publication with rising momentum of activism, and also to Carson's use of "graceful prose" – a symbol of femininity in her work. He then accused the arguments in the book of being "more emotional than accurate"–a highly gendered accusation, since accusations of being emotional are usually only directed at women (Warner 2007, 2).

After hearing the virulent criticisms, Carson had to choose how to react. The attacks were deeply personal and offensive. If Carson called out the overt sexism, she could perhaps convince people of her competency. But many of the attacks accused her of being too emotional and an aggressive response could backfire. If Carson responded too harshly, she could feed into the slander used against her undermine her own credibility.

Epilogue

Carson rose above the harsh words and relied on the undeniable truth of her data to prove her credibility. She could not deny that she was a woman with an emotional attachment to nature and an opposition to government programs for chemical use. So instead, Carson chose not to

address those characterizations and relied on the fact that her findings were undeniably true to show that she was competent despite being a woman.

CBS Reports ran a television special on Rachel Carson to discuss the conflicting positions on pesticide use called "The Silent Spring of Rachel Carson" (Johnson 2007). Though the special included people like Robert White-Stevens who attacked her so viciously, the airing was significant because it gave Carson a platform to present and defend her research. Carson remained calm and presented data based evidence without feeding into the shrill, nature-obsessed, communist image that the chemical lobby fought so hard to portray her as. Carson's biographer observed that, "in juxtaposition to the loud-voiced Dr. White-Stevens in a white lab coat, Carson appeared anything but the hysterical alarmist that her critics contended" (Lear 1997, 437). Afterwards, President John F. Kennedy's Science Advisory Committee invited Carson to speak in front of them, where once again, facts prevailed over sexism. As a result, the book was received with overwhelmingly positive reviews, Congress was prompted to review the dangers of pesticides, and the President's Science Advisory Committee made the ensuing pesticide report public.

Legacy

Silent Spring sparked major environmental protection movements. The United States government and several other countries banned the use of DDT, a chemical pesticide of main focus in the book, and the Nixon Administration created the EPA to mitigate the conflicts of interest within the USDA.

Carson was one of the first to note that it was unfair to trust federal agencies to protect against damage caused by the same industries the agencies profited off. She condemned the "financial inducements behind certain pesticide programs" (Lear 1997, 358-361). This was a precursor to modern concerns about lobbying undermining public health (Brezis and Wiist 2011). Some other issues include the pharmaceutical industry's marketing of products known to be harmful, for which it paid over $30 billion in settlements over the course of 25 years (Almashat, Wolfe, and Carome 2016), and the National Rifle Association (NRA) influence over a congressional movement to prevent the Center for Disease Control (CDC) from publishing any research that would suggest gun violence as a public health issue (Kaplan 2018), which remains a subject of contention. Lobbying posed a concerning conflict of interest over pesticide use, and though it has not completely been resolved, the United States government tried to reform the problematic institutions. In addition to creating more specialized agencies like the EPA, the government has also passed laws to limit financial inducements of support, such as the passage of the Bipartisan Campaign Reform Act of 2002 (Bipartisan Campaign Reform Act of 2002).

Rachel Carson's dilemma of gender-based criticism has also persisted. During the campaign for the 2016 presidential election in the United States, President Trump accused opposing candidate, Hillary Clinton, of "playing the woman's card", questioned her strength in his ad "Dangerous", and blamed Clinton for her husband and former President, Bill Clinton's, public sexual history (Chozick and Parker 2016). While femininity is often still the subtext of criticism against women, Carson's experience highlighted the intersection of environmentalism and feminism. The eco-feminist movement was born and it seeks to overcome gender issues and environmental issues together, as they both include states of oppression caused by male domination and amplified by capitalism (MacGregor 2006). Supporters regard Carson as the "Mother of Environmentalism" and simultaneously a feminist icon. As a result, current eco-feminist activism has shifted to an agenda that seeks to eradicate all forms of oppression in order

to protect the rights of everyone. Kimberlé Crenshaw coined the term intersectionality as a way of noting where power and oppression of marginalized groups overlap (Columbia Law School 2017), which is highly applicable to these issues. It is important to recognize the cross roads in order to work towards a holistic solution of unequal power dynamics, as equity cannot exist without the uplifting of all oppressed groups.

Intersectionality was exemplified by the 2017 Women's March where approximately 7 million people globally; 4 million in the United States protested the election of Donald Trump. It was likely the largest demonstration recorded in American history (Chenoweth and Pressman 2017). Though the protest originally opposed the President's obvious disregard for women's issues, activists of many different issues came together in solidarity. The mission of the Women's March included support for other movements including environmental justice (Women's March 2017). The awareness observers began to have about sexism within the scientific, governmental, and corporate institutions in conjunction with the revelation that rich interests groups could influence the government and academic community to promote their agenda began to shed some light on the fact that men with money had an unequal amount of power pertaining to many different issues.

Carson's work also brought attention to the cancer epidemic in America. Only 18 months after *Silent Spring* was released, Carson died from breast cancer. It is possible that the disease was directly linked to her research, having worked with some of the carcinogenic chemicals, but it was also possible that she was just another one of the millions of Americans who fell victim to the rising cancer trends because of trace levels of toxins in the air, water, and food. DDT, the particular pesticide in question in *Silent Spring*, increases risk of breast cancer fourfold (Konkel 2015). Carson's exposure to DDT was not contained to a lab, but the chemical contaminated her living environment. Her town of residence, Silver Spring, Maryland, saw flocks of birds die of exposure to DDT and it is for this reason that the name "*Silent Spring"* was chosen. Everyone in America, not just scientists, was susceptible to the fatal effects of pesticide spraying. The report from Carson's meeting with the President's Science Advisory Committee acknowledged the "toxicity of specific compounds" (PSAC 1963) and awareness spread about how certain substances and behaviors could initiate carcinogenesis. National Awareness months for different cancers were not created until the 1990s, when the number of cancer cases in America reached record highs, but Carson's work was one of the first to prove that there are specific factors that can induce cancer and that government regulation could prevent death (NRDC 2015).

Ultimately, Carson's struggles led to national reform. Her diligence showcased the capability of women and opened the door to conversations about equality, power, and public health.

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Appendix
Exhibit 1

Never underestimate the power of a woman.

Bill Mauldin, an editorial cartoonist for the *Chicago Sun Times*, comments on the adeptness of women in investigative journalism that was bringing down major American industries. Rachel Carson is likened to Jessica Mitford, who criticized the funeral home industry in *The American Way of Death* by showing how their words crushed the men who lead the chemical and funeral industry (Mauldin 1963).