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Public Eyes

Investigating the Causes of Breast Cancer

MARCY JANE KNOPF-NEWMAN

“Whatdunit?”

Allie Light and Irving Saraf’s documentary Rachel’s Daughters: Searching for the Causes of Breast Cancer (1997) opens with a series of vehicles driving through a central California desert landscape accented with sparse wildflowers set against a vivid blue sky visible beyond the hills. The environment seems pure until a power line, which rests unobtrusively at the top of the camera’s frame, enters the viewer’s consciousness. The audience soon realizes that these cars are en route to a funeral. We see women crying, hugging as they gently place flowers on a casket. Though we do not know it yet, the body of a young woman lies inside that coffin. Throughout this opening sequence, we hear the voice of poet and ecologist Sandra Steingraber, setting the narrative in motion.

We are a generation who was born and came of adult age during the most toxic and environmentally unregulated decade ever known. Whose baby food was contaminated with traces of DDT, PCBs, and DES. Our neighborhoods were sprayed with pesticides and filled with toxic waste. Most of these chemicals did not even exist before World War II. We are the generation whose early idealism opened the original generation gap. We didn’t know that this gap would come to mean premature and early death in our thirties, forties, and fifties. We didn’t know that the “in” generation was destined to become the cancer generation. We didn’t know that so many of our mothers would bury us.

Steingraber’s voice-over gives the first hints as to whatdunit? That is, what killed her? We may not know who died, but we have an idea what killed her. It also links the film to Rachel Carson in crucial ways. The audience who listens to these words—while witnessing people grieving over a death—will hear resonances with Carson’s Silent Spring. Indeed, the film Rachel’s Daughters is as much a daughter of Silent Spring as the women with breast cancer featured in the film.
are daughters of Rachel. They are Rachel's daughters because they inherited the environment laden with toxic chemicals that her generation exploited. They are Rachel's daughters because they pursue the research questions about the causes of cancer that Carson put into the public sphere with her landmark book. And they are Rachel's daughters because they show us how their narratives and the supporting scientific evidence can lead to change.

Perhaps the most famous claim Carson made public in Silent Spring was about the carcinogenic "biocide" DDT (dichloro-diphenyl-trichloro-ethane). Concerned that there was no safe dose since no long-term scientific studies proved otherwise, she alluded to future irreparable damage that could occur if no one researched the potential dangers. Ironically, she posits, "since so many people came into extremely intimate contact with DDT and suffered no immediate ill effects the chemical must certainly be innocent of harm" (Carson 1962, 21; emphasis mine). Such an entrenched belief system—that these "elixirs of death" would be considered innocent until proven guilty—struck her as tragic. With the unregulated use of DDT, she anticipated higher cancer rates and worried about the effect on future generations. The film suggests that the woman buried at the beginning of Rachel's Daughters may have died as a result of exposure to the contaminants Carson worked tirelessly to limit.

Thirty-five years after the publication of Silent Spring, Light and Saraf created a film that revisits and revives Carson's central questions through the lens of breast cancer. That they merge her work with this specific type of cancer is significant: Carson herself was dying of the disease while writing this last book, although the public was not aware of that fact. In the spirit of Carson's life and work, Rachel's Daughters awakens viewers who are versed in breast cancer literature, science, or medicine to a paradigm shift. The film unravels three mythologies persistent in public discourse about cancer. First, the film represents a diverse body of U.S. women with breast cancer: working-class and middle-class; African American, Chinese American, Native American, white, Latina; lesbian and heterosexual; women diagnosed in their twenties, thirties, forties, and fifties; and women from the south, the east, the north and the west. Second, it minimizes the use of barren war metaphors. Third, rather than wonder "why me?"—which usually encourages women to blame themselves—the women in the film set out on a journey to discover answers to the more complex and productive questions why? and what causes the disease? Decentering the expected breast cancer discourse leads the film's protagonists and creators to investigate environmental links to the disease and discover why women are diagnosed and dying from breast cancer at alarming rates.

Propelling the film's narrative structure is a new mode of inquiry—one that blends investigative journalism with hard-boiled detective work. In the second scene of the documentary, each of the women with breast cancer gets labeled as an "investigator" or "detective" as they take on the role of private eyes who
probe into what caused their breast cancer. There are eight such women, but I
hone in on one in particular, Jennifer Mendoza, a thirty-two year old Latina
nanny. Although her role in the documentary is the smallest of the group, her
presence functions as the film’s emotional core. Precisely halfway through
Rachel’s Daughters, we learn that the body in the casket in the opening scene
was Jennifer’s. Thus she embodies the warning that Carson sounded in the fable
that begins Silent Spring. Jennifer’s body becomes a testament to the need for
laws regulating substances that indicate harm. For she believes that exposure
to DDT led to her cancer, and by extension, to cancer in the farmworker com-
community she grew up in. Her premature death feels like déjà vu; just like Carson,
Jennifer dies of breast cancer while making the public aware of the dangers
pesticides pose. Unlike Carson, Jennifer displays her deteriorating health before
the camera. Light and Saraf situate Jennifer’s death in ways that interrupt the
film’s narrative and motivate us—citizens and scientists alike—to intervene
with a strategy and an argument for preventing breast cancer. The brevity of
Jennifer’s life and appearance on screen serves as a cautionary tale to propel
viewers into action, action that promotes collaboration among women with can-
cer, scientists, and activists; action that includes and highlights poor women and
women of color; action that investigates the environmental and the biological.

**Just the Facts, Mam(m)**

Typically detective narratives intimate a crime has taken place. Of course, Rachel’s
Daughters begins with death, though we do not yet know who has died nor how
or why she died. Certainly something is out of synch; the natural order of the life
cycle is suspended here because we are told mothers are burying their daugh-
ters. But a murder did not bring these women to the graveyard. Or did it? Janette
Sherman provocatively posits this question while wondering why those who
pollute the environment are not held responsible: “Dr. John Gofman said: ‘I am
aware of no instance in the civilian economy where we take it as a premise that
injury and murder of members of the public are to be regarded as beneficent
acts.’ Yes, murder is the word he used. Think about it! If you or I cause harm, and
are told we are causing harm, and don’t stop, and it results in the death of a per-
son, wouldn’t we be put in prison before we could blink an eye? Why have cor-
porations been allowed to escape punishment for the harm they have caused?”
(Sherman 2000, 218) Gofman’s provocative use of the term “murder” does not
prove a direct cause-and-effect relationship between pollution and cancer. His
hyperbolic language certainly implies wrongdoing and projects blame while he
suggests that producers of toxic substances should be held accountable for the
damage their products cause. Gofman’s discourse positions the political nature
of breast cancer—especially in one strand of dominant rhetoric that blames
women’s lifestyle choices rather than investigating larger systemic causes of the
disease. For many farmworker families there is no agency in where one lives or what one does for a living. Therefore, blaming women with cancer for “choices” they make within the context of Jennifer’s community is not attuned to the complex way that race and class factor into this equation. And this is one gesture the film makes: rather than pointing fingers at women’s dietary or reproductive choices, it looks for answers in larger social, political, and institutional forces.

If the first scene of Rachel’s Daughters suggests that a crime has occurred, the second scene shows us the detectives collecting theories about how and why it happened. Nancy Evans, a fifty-something white woman who is the lead detective, invites her cohorts to tell their stories: “We have come here today as women living with breast cancer to find out why, not just why me? or why us? but why so many of us have this disease.” They first convene in a San Francisco house to share their individual cancer stories, each of which doubles as a clue: how they found out about their diagnosis, about their mothers’ breast cancer, what course of treatment they chose, and how their physicians minimized their concerns. The camera pans the room following the women tightly as they speak while capturing knowing glances from their peers. Interspersed within each verbal telling of the story are images that the camera uses to reinforce theories of causation the speaker reports. For instance, Essie Mormon, a forty-something African American woman, shares with the group the story of her diagnosis and her theory of its cause: “I was raised in rural Mississippi where DDT was used to kill the bugs and stuff on plants. I remember the stuff flying around in the air like fog. I said to one of the doctors, ‘I wonder if this exposure to DDT could be a cause of this breast cancer.’ And the doctor said to me in this greater-than-thou attitude: ‘Well, I don’t think so.’” As she recounts these details, black-and-white footage of a truck spraying DDT in suburban neighborhoods fills the screen. As in Essie’s case, in each of these narratives is a doctor who did not believe they had breast cancer or whom they had to fight to get a biopsy or mammogram. Personal narrative underscores the larger purpose of the film—to detect what causes breast cancer—but personal experiences also generate their research questions. They work collaboratively to collect facts from their stories and from scientists to postulate what’s going down? Each woman extrapolates from her story to decide what larger systemic questions she will investigate as they divide the detective work: pesticides, hormones (birth control, hormone replacement therapy [HRT]), genetics, electromagnetic fields (EMFs), polychlorinated biphenyls (PCBs), and radiation.

The new way the film approaches cancer is made clear by the way the women discuss it: there is no mistaking these women for scientists or reporters. They are novices. And this is part of the film’s argument: their personal concerns guide their questions, and their emotions affect the way they arrive at conclusions. Their inexperience as scientists makes them, perhaps, more susceptible to an emotional perspective or to be easily persuaded. The documen-
tary style, however, also follows some elements of the generic formula guiding hard-boiled detective stories, which legitimates the use of sentiment in this context. Heta Pyrhönen outlines the traditional plot of this subgenre, which hinges on “the story of the investigation, with a focus on what will happen next” (Pyrhönen 1999, 21). In other words, the crime does not take center stage. Because the primary subject is the detective and not the crime, Pyrhönen argues that “this subgenre evokes a more emotional form of reader participation than does the ‘whodunit’” (Pyrhönen 1999, 22). Of course, in traditional detective films and novels, the successful investigator is devoid of emotions. Indeed, when s/he begins to feel or become personally involved in a crime, s/he begins to make mistakes; feelings cloud his/her objectivity and judgment. But in Rachel’s Daughters the reverse is true.

As the emotional core of the documentary, Jennifer Mendoza’s presence in the film elicits viewer participation. Unlike all the other investigators, she speaks of her illness in the present tense, and she wears a cap on her head because she is still bald from chemotherapy. Likely because she has less distance from cancer, she cannot speak about it without tearing up. And, as audience members watch her tell the story of her disease, it becomes increasingly difficult not to cry along with her:

I was first diagnosed with breast cancer in 1993 at the age of twenty-eight. And I had known that I had breast cancer for five years, but nobody believed me. And I didn’t want to believe that I had it either, so I kept letting doctors say “oh, you’re too young.” Eventually I found a surgeon who would do a biopsy, and it turned out that I did have a tumor. And my breast wasn’t healing well and they found another tumor. And I did the strongest chemotherapy and a year and a half later I was diagnosed with cancer—with metastatic breast cancer—and now it’s in my liver and my bones and I also had a brain tumor and that was pretty devastating. I never anticipated that I wouldn’t get cancer again, but I always thought that I’d have a little more time.

As she speaks about her chemotherapy treatment, the camera cuts away to a close-up shot of a clear fluid dripping from an IV tube. Taken in concert with all of the environmental hazards shown during the narratives, this shot turns the drug into a suspect as well. Images of chemotherapy in this context juxtaposed with stories of a childhood surrounded by pesticides paints a bleak picture of a life sandwiched between chemicals treating cancer and chemicals that possibly caused cancer—and, significantly, a life in which few choices could be made to limit exposure to those substances. Racism, sexism, and classism converge as Jennifer’s intuitive sense about her body gets silenced by medical professionals. Zillah Eisenstein blends all of these concerns about power: “breast cancer is more socially, economically, and racially constructed than it is geneti-
cally inherited. This means understanding a range of social factors: an increased number of women being exposed to toxicity in the workplace, shifting discourses about women’s health, so-called science narratives with their masculinist and racialized assumptions, and global capital with its petro/chemical-pharmaceutical empire and postindustrial-medical complex” (Eisenstein 2001, 85–86).

In this sociopolitical context, Eisenstein offers a way of seeing how these often unarticulated factors contribute to increased exposure to carcinogenic substances for the most disenfranchised populations. Racism, sexism, and classism collide here in a couple of important ways. First, few studies focus on Latina women’s health, let alone breast cancer incidence and mortality rates. Second, little attention is paid to the labor and health conditions of people like migrant farmworkers. Third, the way women’s breasts get fetishized in U.S. culture privileges white women’s bodies as valuable—if only to serve heterosexual male fantasies—in such a way that erases brown women’s bodies. All of these elements play a role in the health care setting: the way Jennifer’s concerns about her body were trivialized and silenced indicates that these dominant cultural ideologies seep into medical institutions as well.

The ways in which Latina bodies are devalued by agribusiness in the context of farmworker communities compels Jennifer to uncover the possible cause of breast cancer in her body and in her community. She knows who she wants to interview, in part, because she already has a strong suspicion of what caused her breast cancer at such an early age. As she volunteers, the film cuts from the first group meeting to follow Jennifer climbing a staircase into an office building as she explains her rationale for selecting her subject: “I’m interested in interviewing Marion Moses because she’s an expert on the link between cancer and pesticides. She’s been very active in the migrant farm community, and prior to my generation everyone was a migrant farmworker in my family. Down below my house they grew pesticide-laden soybeans, and I drank the water that ran off into the creek.” Embedded in her story is the hypothesis that pesticides may cause cancer. Woven into her theory is the tangled web of racism, classism, and sexism that controlled both her home and her family’s work environments.

Although Jennifer’s story already puts forth a compelling and plausible theory about the link between breast cancer and pesticides, her visit with epidemiologist Marion Moses provides the audience with some facts that support her theories.² Both women sit down together, side by side, facing the camera, suggesting a collaborative dialogue; the camera angle encompasses both of them, indicating this process of inquiry. Jennifer poses questions that allow Moses to validate her intuitive sense of her body and illness in ways that the medical professionals she dealt with did not. The investigation commences when Jennifer asks a question reminiscent of Carson: “For those of us born in the sixties, how much DDT do we have in our bodies?” To respond, Moses historicizes DDT
as a post–World War II product. While she relates this narrative, black-and-white archival footage shows farmers spraying cows with DDT, factory machines mixing the chemicals, and military planes preparing to spray urban and rural landscapes alike. The wartime marching band music in the background accents this propaganda footage. These film images document and allude to answers. Gradually Moses’s narrating voice fades out to be replaced with a vintage newsreel voice who promises: “Today’s target for this B–25 is Rockford, Illinois. A peacetime mission to spread five hundred gallons of DDT, the army’s miracle insecticide, over the city stricken with an infantile paralysis epidemic. By spraying the city, authorities will test the theory that insects are carriers of the dread germ. A farmer turns to an instrument of peace, becomes an instrument of science, and may become the means of saving countless lives.” This deep, male radio-announcer voice serves as an ironic reminder of the military’s practices, practices intended to protect American citizens but that possibly harmed them instead. Those words and images sit uncomfortably in the mind of the viewer as Moses corroborates Jennifer’s theories about what caused the cancer in her body. Moses links the current and historical situation to Rachel Carson, who called these chemicals “elixirs of death.” The audience watches black-and-white footage of Carson serenely walking through the woods with her binoculars in hand as Moses reveals that she now calls these toxins “the Rachel Carson chemicals.”

In this one-on-one interview, Moses teaches the audience that everyone has DDE, the substance DDT becomes once it breaks down in our bodies. This is due, in part, to postwar spraying described in the newsreel; after widespread government use, pesticides like DDT became popular agricultural tools. The danger for women is in the way DDT enters mammalian bodies and mimics the female hormone estrogen. With this information, Moses offers the audience its first important clue: DDT and similar chemicals become foreign invaders, mimic estrogen, and interfere with the body’s hormone production: “Some of them are called xeno, xenoestrogens. Xeno means foreign; it’s a Greek word, so it means chemicals that are foreign to the body. Our body works, our ovaries and the uterus, and the testes, and all of our endocrine functions work because they are very finely tuned. Well, these chemicals—these environmental chemicals—can throw that out of balance. It’s called disruption. And so they’re called endocrine disruptors.” To demonstrate how ubiquitous these chemicals are, Moses shows Jennifer pesticides currently on the market that behave like estrogen if they come into contact with our bodies. People store many pesticides similar to DDT in their homes: keltane (more commonly known as insect or vegetable dust), methoxychlor, lindane. These are all chlorinated hydrocarbons that act like female hormones. These products do not label their carcinogenic potential for consumers. Although DDT may not be on the U.S. market any longer, other chemicals interfere with our bodies in the same fashion, most notably PCBs, which, according to Moses, exist in “snow, wind, the arctic snow,
wildlife, people's tissue, newborn babies, everywhere they've looked to test for these chemicals."

In what may appear to be a non sequitur, Jennifer pursues a concern about diet by asking, "What does it mean to eat low on the food chain?" Moses's answer, "Not eating things that come from animals," seems at the outset to support the dominant discourse suggesting women need to be responsible for their health by changing their diet. Implicit in this imperative is that she is to blame if she does not watch her diet with an eye toward "preventing" breast cancer.5 This issue is significant, however, because when we eat, we do not just eat the food on our plates. Moses elaborates, "If everything is contaminated—if the seas are contaminated, if the lakes are contaminated, if the water where you lived is contaminated—everything has to go somewhere. In my work with farmworkers, you'll never convince me that any level of a cancer-causing pesticide is safe. People like Jennifer and farmworker children, I think, are paying the price." Identifying the risk of eating explains that when we eat meat, chicken, or fish we also take in the food eaten by those animals. If their food—other animals and plants—is contaminated, we incorporate all of their contaminated materials into our blood and tissue in addition to the contaminants we take in on our own. Light and Saraf splice in images of a damaged planet that we see as Moses explains the hazards of pollution on the animals that we consume. They juxtapose images of fish swimming near the ocean's floor in what appears to be clean water, a dark trash-filled wave crashing against the shore, and a helicopter spraying pesticides on a farm as workers harvest the crop. We all ingest pollution in some way, but, returning to Jennifer's initial concerns, Moses concludes by exposing the need for further studies on farmworkers and their families whose proximity to pesticides on a daily basis warrants further investigation.

The narrative frame of Rachel's Daughters asks viewers to participate in piecing together the clues as the investigation unfolds. The questions that arise in Jennifer's session with Moses may not be answered definitively, but they lead citizens and scientists in the direction of pursuing research that combines the study of the environment with an examination of power that structures unequal relations between agribusiness and farmworkers. Each meeting between the investigators and scientists builds on the previous one in ways that illustrate the complex landscape of studying cancer. For it is not just what a woman eats, or where she lives, or where she works that predicts a future cancer diagnosis. Nor will her blood relatives' history of breast cancer indicate a woman's chance of developing the disease. Light and Saraf make this clear by constructing a tight argument that demonstrates the role of the environment in increased breast cancer incidence and mortality. If one were to gather the story of breast cancer from the mass media, one might believe that the answers to "curing" the disease lie entirely in genetics. Steingraber also challenges the perception that diet alone explains the increased incidence rates when she echoes Moses's cau-
tion about eating high on the food chain. Steingraber depicts this cumulative effect that can create problems in the breast: "If you've got herbicides in your drinking water and you're spraying some on your lawn, and you're getting a little in your diet. Those can all add up to something that's quite significant. And nobody's looking at that right now." Like Moses, she points to an area for further research. To support her claim, Steingraber tells her cancer story. In her home state of Illinois, some studies implicate the triazine family of herbicides in breast cancer in animals and humans. Regardless of whether or not pesticides get phased out, the nature of their chemical composition means that the substances we've already used remain in our soil, drinking water, fog, and rain. Her evocative words describe how contaminants saturate the soil and run off into the drinking water and evaporate into the rain: "A woman can be diagnosed with breast cancer, leave her doctor's office, stand in the rain at the bus stop, and there'll be breast carcinogens falling on her." While she illustrates this scenario, the camera turns to Essie opening her umbrella to walk to her first interview. Thus the film forces viewers to witness the shift not only from the visual image of a tractor in Illinois to Essie at a bus stop in the rain, but also from the abstract theories about chemical carcinogens to a real person in the documentary with whom viewers come to identify.

Forecasting breast cancer risk gets further complicated, however, depending upon the age of the woman. Menarche and menopause play a crucial role in this scenario, as epidemiologist Devra Lee Davis points out: "when you get to be an adolescent your breast is starting to actually grow. During the time the breast is growing it's getting hit with more DDT. Finally, you get close to the change of life, and your ovaries are no longer producing as much estrogen as they were. But guess what's in your fat in your body? All that DDT that you've been exposed to in your life and all the other xenoestrogens." These hormonal factors become important because one of the proven "vulnerability factors," as Davis refers to them, for breast cancer is a woman's lifetime exposure to estrogen. Davis backs up her scientific theories by reciting some of the mortality statistics of women who die from the disease in industrialized countries. To appeal to our sentiment, she concludes by saying, "These numbers, these statistics are human beings with the tears removed." This statement hits home as the film cuts abruptly to a weakened, emaciated, gaunt Jennifer speaking from a hospital bed.

Light and Saraf's gesture of moving from the findings that the investigators weave together about the pesticides, fat, and hormones to the startling reality of cancer mortality is crucial. It represents the way in which this film will not allow statistics to become abstract. It demonstrates how the film refuses to allow these stories to be perceived as merely anecdotal. The detective narrative is interrupted when the film cuts to the startling scene of Jennifer's hospitalization for neutropenia, which makes us add up all the clues about the suspect
DDT. From her bed, she tells the audience that her neutropenic fever originated as an “illness created by a broken-down immune system from chemotherapy.” In other words, the chemotherapy agents compromised her immune system to the extent that her body could not fight off invasion by germs. In what would be her last words in the film, a bald and trembling Jennifer who tries to keep from crying says, “I guess I just want to say this all needs to change. This is just too much torture.” Her words and presence serve as a reminder for the audience that current treatments do not suffice. To underscore this point, the film splices in earlier footage of a healthy-looking Jennifer with a full head of dark, curly hair, eating a piece of chocolate cake at the Women and Cancer walk in Golden Gate Park where she first met the film’s directors. The movement between images from her past and present emphasize the tragedy of a thirty-two-year-old woman living through and dying from breast cancer that metastasized to her liver, brain, and bones.

Jennifer appears one more time in the documentary when her father takes her home to die. At that point the tragically short dates of her life—1964–1996—flash over a smiling photograph of a prepubescent, innocent child. The placement of her death—precisely halfway through the film—amplifies the sentimental tone as it becomes obvious that the funeral at the beginning of the documentary was hers. The film flashes back to scenes from the drive through central California and the funeral; this time we are placed in the perspective of a passenger in one of the cars driving toward the cemetery. Now when we see the funeral scene we are a part of it; we are more attuned to the fact that parents are burying their children. This is not merely a statistical fact. It’s personal. And Jennifer’s harrowing story and her death sensitizes viewers to this by tugging at their emotions as she says goodbye to the directors and the other detectives from the back of her father’s van. Something is out of order. This sentiment and fact guides and fragments the film’s narrative time. It does so in part to remind the audience of the mystery these women try to unravel. But it also serves to tell a very different story about breast cancer. In this documentary, women are not “cured”; “survival” is as cunning as the cancer cells. Jennifer’s life is cut short just as her death interrupts the film’s narrative and charges it with an affective sentiment that has the potential to propel viewers into action.

The specter of DDT as a murder suspect—evidenced in the death of Jennifer—shows up in other interviews throughout the remainder of the film. Although the detectives explore a variety of suspicious toxins, DDT remains the one that turns up the most often. For instance, it comes up in discussions of cancer clusters in suburban Long Island, which is one of the places Carson followed while writing her manuscript; it also shows up in inner-city tenements inhabited primarily by African Americans (Lear 1997). But one aspect of pesticide use that was not explicitly on Carson’s radar screen was the way that poor
people and people of color were and are exposed to harmful chemicals at greater rates and for longer periods of time.

Perhaps because Jennifer’s death leaves such an indelible mark on the other investigators, Essie adds to this mix an aspect of how environmental racism taints perceptions of breast cancer incidence and mortality. She wonders why epidemiologists study the farm owners rather than the migrant workers who live and work in and around the pesticides: “I read that some of the studies that were supposed to be done on farmworkers, that they did them on the farm owners.” Complicating the issue of race and class is that of nation and language; Marion Moses’s research reports that two-thirds of migrant workers are foreign born: “92 percent Mexican, 4 percent other Latinos, 3 percent Asian, and 1 percent Caribbean” (Moses 1993, 162). Moreover, this sometimes hidden distinction is significant, as Rachel, one of the film’s investigators, concurs that scientists conduct less research on the workers even though they are the most exposed: “All the research that has been done on pesticide exposures has been done on growers, people who own the farms, and much less so on workers. And they don’t speak English. But if we want to get at the answers those are the people we need to be studying.” Nancy echoes Carson when she states, “Absolutely, and they are the most exposed. Really the pesticides are just creating bigger pests that become resistant to the chemicals.” The detectives pose these questions to each other as they realize there are far more questions than answers.

The clues the investigators piece together may not yet reveal a unified, airtight case about the suspect pollutants. But the documentary offers some clear directions to guide research. For one function of the documentary, according to Paula Rabinowitz, is “to induce feeling, thought, and action” (Rabinowitz 1994, 8). It should be clear at this juncture that Light and Saraf infuse all of the above elements into their film. While certainly any breast cancer activist could easily be mobilized after viewing this film, scientists could also leave Rachel’s Daughters with new hypotheses to investigate—the environmental question as it permeates categories of race, gender, and class. The scientific and personal narratives in the film underscore the direction science should follow: that is, in the footsteps of Rachel Carson. Midway through the film, Steingraber accentuates the powerful meaning of the documentary’s title. “I consider myself a daughter of Rachel,” she says in response to the criticism leveled against Carson by her critics, who could not understand why a woman without biological children would want to protect the environment for future generations. As she speaks, more black-and-white footage of Carson walking through the Maine woods and writing on her porch illuminates the screen. These silent images give way to one of Carson’s only television interviews with CBS Reports. The camera remains close-up on her face as she says, “We have to remember the children born today are exposed
to these chemicals from birth. Perhaps even before birth. Now what is going to happen then in adult life?" This segment supports Steingraber’s awareness of the extent to which Carson worked hard to make her science useful to the public: “I often think of her while she was in radiation treatment trying to piece together scientific evidence, to try to make it a compelling narrative for the rest of us.” Those words could be used to think about how this film and the scientists, survivors, and activists represented in it construct stories about breast cancer that are provocative enough to move viewers to action. For just as Carson intended Silent Spring to capture her audience’s attention as concerned citizens—enough to motivate them to act—this film anticipates that viewers will become Rachel’s daughters by taking on the role of detective and pushing scientists to be accountable to the public. That the film places the scene of Jennifer Mendoza’s departure and death immediately following this interview with Steingraber and clip of Carson suggests that young women die when the children are not remembered. Moreover, the call to action followed by the film’s most affective scene makes the case and film a compelling narrative for the audience.

Guilty Until Proven Innocent: The Precautionary Principle

In the documentary’s final scene, the remaining detectives convene on a beach with a vibrant green, grassy hill in the background. They discuss how scary it feels to walk away from this investigation without solving the mystery. Their frustration and fear are understandable, but as a political tool this film can potentially help set the research agenda by changing the types of questions we ask about breast cancer. For instance, Rachel says, “part of the problem is that the field of science is such a competitive field that there is little incentive for scientists to actually try and work together. I mean we’re told it’s genetics or it’s the environment. Well, the reality is it’s probably both.” Indeed. This film demonstrates how powerful multidisciplinary scientific collaboration can be by editing together a diversity of scientific voices. If all of the people studying cancer worked together as do the detectives in the documentary, it might be possible to achieve results that answer some of these lingering questions.

The investigation ends with another possibly lethal interruption, yet another sign that we remain far from a sure-fire treatment or “cure.” Two investigators divulge that their breast cancer has recurred: Pamela, an African American woman in her forties, and Susan, a white woman in her fifties. Uttering the last words of the film, Susan says, “I’m alive now, but behind me there are four women who have died and behind each of them there are four more women.” Susan’s provocative remark is particularly striking because ten of the women featured in Rachel’s Daughters are now dead. Whether viewers know about these more recent deaths or not, her pronouncement sits indelibly in the audience’s mind because these numbers become embodied as women wearing black dresses and
veils draped over their heads cover the mountain behind the group. A statistic appears written over their image: “180,000 women are diagnosed each day, 44,000 of those women die.” These women comprise a racially and ethnically diverse group. The juxtaposition of text and veiled women dressed in the color of mourning is a warning for what will happen if we do not tend to the environmental causes of cancer. But it is also a provocative form of protest. For although these women are not members of the international feminist peace network known as Women in Black, both groups practice a similar political strategy. Women in Black renders visible the suffering of those who can no longer speak, oftentimes because they are dead. The presence of the women wearing black in this film, a group also called Women in Black, serves as an intervention: mothers can avoid burying their daughters if viewers become actively engaged in the push for environmental research about breast cancer. In other words, viewers must continue the work begun by Rachel Carson.

It should be remembered that Carson herself, while dying of breast cancer, worked through a daunting set of questions that seemed unanswerable at the time. To trace the complex history and science behind post–World War II chemicals, she also had to collaborate with activists and scientists from a variety of subspecialty fields. That collective effort grew into Silent Spring. And although there is no tangible solution to the mystery that Jennifer and her cohorts attempt to solve in the film, their labor produces some important outcomes. The detective process does not lead them to definitive answers, but it does show us a new way to look at cancer—or any public health issue, for that matter—and it leaves us with a new way of approaching research and activism. Therefore, the solution to the crime is not whodunit or whatadunit, but what can we collaboratively, collectively do about it? The film answers by asking the audience to take up where it left off. Concluding the film with Women in Black alerts us to the fact that Jennifer and the other women in the film who have since died are at risk of becoming a statistic if we do not act.

When activists, scientists, and policy makers gather together, the potential for new methodologies is remarkable. This was the case when Marion Moses worked with Cesar Chavez to create a union for farmworkers in Delano, California, she explains: “the signing of the table grape contracts was delayed by at least a year because the workers refused to compromise the issue of worker and consumer health and safety in regard to pesticide use” (Moses 1973, 848). Placing a set of social and economic concerns together on the table ultimately helped health care systemically—as opposed to sick care—for migrant farm laborers as well as those who would eat the food products they cultivated. More recently, one can witness a new attitude toward pesticide use in the statement that grew out of the 1998 Wingspread Conference in Racine, Wisconsin, which avows, “When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships
are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof” (Raffensperger 1998). This statement, otherwise known as the precautionary principle, asks that chemicals not be treated as innocent until proven guilty. Rather, it implies, harm could be prevented if suspicious toxins or pollutants were studied before they were put on the market. Instead of asking people who are sick with illnesses like cancer to testify before Congress and actively work to hold industry accountable for their harm, the precautionary principle makes the corporate entity producing the substance take responsibility for showing their safety. One of the organizations that educates the public about the need for institutionalizing this practice is the Silent Spring Institute, which Light and Saraf feature towards the end of the documentary. This institute pays homage to Carson in name and practice by bringing together activists and scientists to study the cause of breast cancer on Cape Cod. By highlighting this collaborative organization, the film presents a model that could be reproduced in other contexts like farmworker communities to study the links between public health and pesticides.

Rachel’s Daughters and the scientists presented in it all allude to the potential held in one of Carson’s initial, bold proposals of testing a product’s harm prior to placing it on the market for public consumption. As the film makes clear, however, such practices would not necessarily produce positive results unless every nation embraced it. For once harmful chemicals enter the atmosphere, they travel across national boundaries in the air, water, and soil. Zillah Eisenstein imagines what a world would look like if everyone agreed to place public health before profit:

Agricultural pesticides would be largely eliminated. Foods would not be packaged in carcinogenic plastics. Cows would not be injected with hormones such as rBST to increase milk production. Instead, the stock market guides those in the seats of power. These types of choices are not part of a natural landscape but rather are specifically derivative of a corporate-consumer mentality set on efficiency, productivity, and profitability. This mental set draws the parameters for a particular kind of science. It makes it harder to get grant money for interdisciplinary research, which attempts to look at the multiple factors defining chemical risk. (Eisenstein 2001, 89)

While in some ways Eisenstein speaks of a U.S.-specific context, her concern is decidedly global. For she reminds readers that although DDT was outlawed in the U.S. in 1972, as a result of the work Carson initiated, “it remains in use as a cheap and effective control for malaria in most poor countries. As late as 1991, the U.S. exported at least 4.1 million pounds of pesticides banned or suspended from use here, including tons of DDT” (Eisenstein 2001, 89). Exporting DDT to the Third World while banning it in the United States does not reduce cancer
incidence and mortality rates. What it does suggest is that corporations manufacturing toxic chemicals continue to operate with economic concerns overriding concerns about the ways in which exporting pesticides reproduces racism, classism, and sexism on a global scale. This confirms the need for activists to pressure companies to incorporate—not only in rhetoric but in practice—the precautionary principle.

Cognizant of the imperative for a world free from such carcinogenic substances, the United Nations included precautionary principle language in its treaty on persistent organic pollutants, signed by over 122 countries including the United States, at the 2001 Stockholm Convention. Steingraber alerts us to its significance: "The treaty is a strong one. It immediately abolishes from worldwide production and use eight toxic pesticides and severely restricts the use of two others. Beginning in 2025, it prohibits the use of PCBs in electrical transformers. ... Dioxins and furans are to be reduced immediately and eventually eliminated "where feasible," and DDT is allowed only on a limited basis and strictly for malaria control" (Steingraber 2001, 286). Rachel's Daughters leads viewers along with its detectives to reach the conclusion that the precautionary principle is a logical preventative tool for cancer as well as for other public health concerns. The argument conveyed through the personal and scientific narratives in the documentary make it obvious that if such practices had been implemented soon after the publication of Silent Spring in 1962, many of these cancer stories either might not exist or they might have had less morbid endings. Through the union of affectively charged stories and scientific hypotheses and studies, Rachel's Daughters presents not only a paradigm shift that embeds the environment in every layer of cancer research, but it also asks us to think in dramatically different terms: that new chemical substances are guilty until proven innocent.

NOTES

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1. On Carson's breast cancer, see Linda Lear's Rachel Carson and Sandra Steingraber's Living Downstream.

2. Marion Moses's epidemiological work is importantly aimed at Spanish- and English-speaking audiences as she publishes her work in both languages. She has also created a bilingual video for training and education on the dangers of pesticides.

3. See Theo Colborn, Dianne Dumanoski, and John Peterson Myers’ Our Stolen Future for a study of the myriad ways that endocrine disrupters affect (1) the immune system by making the body less resistant to disease, (2) human intelligence by increasing learning disabilities, (3) reproduction by lowering sperm counts, and (4) puberty by creating earlier menarche.
4. On pesticides that mimic female hormones, see Marion Moses's *Designer Poisons*.

5. For one of the most dangerous pronouncements of diet as a method of "preventing" breast cancer, see Bob Arnot's *The Breast Cancer Prevention Diet*.

6. The cover photograph of this book is from the film *Rachel's Daughters*.

7. Women in Black began in 1988 as a coalition of women who gathered in the West Bank to protest Israel's occupation. Since then this loosely organized group has convened in the United States, England, Italy, Spain, Azerbaijan, and the former Yugoslavia to stand in silent vigil on behalf of those who have been killed, tortured, or raped as a result of wartime atrocities. One of the film's directors, Allie Light, knew about this group and in fact participated in the initial vigils in Israel. However, those women are different from those who participate in the end of her film. See http://www.igc.org/balkans/wib/mission.html.

8. For an analysis of this corporate "presumed innocent until proven guilty" rhetoric, see Dan Fagin and Marianne Lavelle's *Toxic Deception*.

REFERENCES


