Frank Uekoetter
Rachel Carson Center for Environment and Society
Munich, Germany

Remembering Rachel Carson.

Remarks on the Fiftieth Anniversary of the Publication of *Silent Spring*

Presented at the 7th Annual Biocontrol Industry Meeting ABIM in Lucerne, Switzerland, on October 22, 2012.

Fifty years ago, Rachel Carson published her best-known book, "Silent Spring". As every anniversary of this kind, this is a chance to reflect on a remarkable person and a remarkable book; and at the same time, it is a chance to reflect on what the person and the book tell us in our own time. It only takes a quick look at the Internet to recognize that when we talk about Rachel Carson, we are not talking about a figure from a distant past that we have come to terms with. We are talking about a contested figure and a contested legacy: there is no consensus about what this person means, or should mean, to our own time.

The general significance of Rachel Carson and her book is surely beyond doubt. In 2011, *Time Magazine* included *Silent Spring* in its list of the 100 best nonfiction books of all times. *Discover Magazine* put the book on its list of the "25 greatest science books of all time", and Random House's Modern Library ranked it as number five in its list of the 100 best nonfiction books of the twentieth century. Furthermore, the interest in the book is not just of a historical nature. When people talk about Rachel Carson nowadays, they usually have a strong opinion on her. For many, she is a hero: a pioneering figure of environmentalism that paved the way for everything that followed. In that vein, *Silent Spring* has been called a book that shook the earth, and even the bible of environmentalism. For others, she is a villain, subject to vigorous attacks. To be sure, I do not intend to put these two views on a par. It is quite clear in my opinion that the latter view is confined to a small minority that usually has connections to conservative, "free-market" organizations like the American Enterprise Institute. But then, even small minorities can generate a lot of noise. My point here is that the sharp divergence of opinion is already remarkable in itself. When we celebrate a fiftieth anniversary, historians usually witness a convergence of views: disagreements over interpretations remain – they are, after all, the daily bread of the historian – but we usually see the development of some common ground, and we usually see emotions fading into the background. Now somehow that did not work with Rachel Carson: people are still passionate about her and her book, and as you will see, there are good reasons to be passionate. The book and the controversy that surrounded it continue to speak to us today; and certainly to people like you who are dealing with biological insect management.

Of course, a lot of the excitement came from the topic that Carson discussed: pesticides, and specifically DDT, are big business. However, the drama also came from the plot itself, a

plot that is familiar ever since David picked his slingshot and volunteered to fight against a man known as Goliath. Americans in particular have come to cherish the lonesome hero who dares to speak truth to power, and not only in Hollywood movies. American history knows a long list of people who picked a fight against corporate interests in the name of the public good: from Upton Sinclair, who attacked the scandals in Chicago's stockyards in his novel *The Jungle*, to Ralph Nader, consumer advocate and green party candidate for president in 2000 and 2004.

Like many people from this tradition, Rachel Carson drew vigorous attacks from corporate America – attacks that were malicious and based to a great extent on false assertions. And yet Rachel Carson does not fit that tradition easily, and not just because she was a woman, which obviously made her stand out in a masculine political sphere. Her approach to pesticides was far removed from the flame-breathing, muck-racking fervor that others brought to their issues. She was no crusader for a certain cause, no activist who sought the spotlight, and certainly no builder of organizations. Like so many writers, she was basically a shy person – though she was not naïve about her book. She knew that she was raising an explosive issue.

Few things in her biography point to the possibility that she would become the center of a bitter political struggle. Born and raised in Springdale near Pittsburgh, Pennsylvania, she received an MA in zoology from Johns Hopkins University and worked as a biologist for the U.S. Fish and Wildlife Service for fifteen years. She published her first book *Under the Sea-wind* in 1941 and her second book *The Sea Around Us* a decade later. Thanks to the success of her writing, she resigned from government service in 1952 to pursue her literary career. Her books were at the intersection of nature writing and popular science, and her favorite theme was the ocean. I am sure you will agree that this is not the career of someone who is about to pick a fight with pesticide manufacturers.

If there was any hint as to what was to come, it was the sense of wonder that she brought to her topics. Rachel Carson was concerned about the web of life, about the interrelatedness of all living things. In spite of all progress in science and technology, man was far from mastery of the natural world: for humans, the proper attitude towards nature was humility. *Silent Spring* was dedicated to Albert Schweitzer, and Schweitzer's theme of reverence for life clearly resonated through its pages: admiration, awe, and love were what drove Rachel Carson in her commitment to the natural world. In 1957, Rachel Carson was about write a book that laid out this philosophy; she already had a provisional title, *Remembrance of Life*. But then, another topic captured her attention: pesticides, and specifically DDT.

Technically, DDT was one of many synthetic chemicals that were en vogue in the fifties, produced by some of the largest chemical manufacturers. However, DDT was more than just any product, not just because of its potency, but also because of its history. DDT was first used by the military during World War Two, as it had helped American soldiers to survive in malaria-infested environments. In 1948, the Noble Prize for Medicine went to Paul Müller, the Swiss chemist who had discovered the insecticidal effect of DDT while working at the

laboratory of the Geigy Dye Factory in Basle, Switzerland. In 1955, the World Health Organization made DDT one of the pillars of its global campaign to eradicate malaria.

In short, DDT was a substance like few others: a war hero; a demonstration of American benevolence, as it offered help to impoverished, malaria-stricken nations in the colonial and post-colonial world; it was a key element of the Green Revolution that was starting in Mexico; and it was a showcase for the wonders of chemistry. After all, the post-war years were an age of chemical euphoria, where an ever-growing number of inventions from plastics to miracle drugs was raining down on a grateful consumer society. Chemistry was big, and it had charisma. Many of you will know the line from the film *The Graduate*, where a good family friend tells Dustin Hoffman to go into plastics. Life was getting better through chemistry, and DDT was a spectacular case in point.

But behind the scenes, doubts were growing about the pervasive use of DDT: the chemical miracle was loosing some of its magic. Resistance problems were starting to show already by the late 1940s, and scientists started to worry about the consequences of widespread use, as DDT did not discriminate between beneficial and harmful insects. As early as 1945, the U.S. Fish and Wildlife Service was conducting experiments with DDT at its Patuxent Research Refuge to learn more about the side effects. We know that because a staff biologist wrote a letter to *Reader's Digest* suggesting that the magazine cover these experiments, as they were clearly "of more than ordinary interest and importance". You are probably guessing the name of that staff biologist: it was Rachel Carson.

However, *Reader's Digest* was not interested in these experiments, and Carson, still a government employee, turned her attention to other topics. She did not return to DDT until the fall of 1957, when DDT was already embroiled in controversy. At that time, the US Department of Agriculture and allied state agencies conducted large aerial spraying campaigns against fire ants and a few other species. These were campaigns of eradication in name and in spirit: massive campaigns that spread the chemical poison far and wide, and campaigns that were controversial within expert circles due to their indiscriminate use of the substance. However, this was not a kind of misuse that one could blame on some misinformed underlings. It was precisely the kind of use that a chemical miracle tends to encourage – after all, if you have a hammer, everything looks like a nail. The excess, and the dreams about eradication, were symptoms of a society obsessed with chemical solutions.

Even more, the spraying campaigns drew public criticism. The government took the liberty of spraying private land during this campaign, which was obviously a provocation for residents and property owners. In the calm suburbias of the late fifties, a low-flying plane spreading chemicals was an unwelcome intrusion. Furthermore, DDT was mixed with fuel oil for spraying, and that made it a particularly awkward experience. As a result, affected citizens spoke up, and a group on Long Island filed a lawsuit to stop the campaign. Rachel Carson learned of the controversy and the lawsuit, and the issue galvanized her attention: for someone concerned with the web of life and reverence towards nature, pervasive DDT use with horrendous side effects looked like a classic example of what NOT to do. And yet she ap-

proached the issue with a good deal of caution, as we can already see by a look at the timeline: almost half a decade went by until Rachel Carson published her book. She spent the time well, delving deep into the scientific literature and the critique of DDT, probably deeper than many other authors would have done. However, the thoroughness paid off: when her book became embroiled in controversy and a Presidential commission looked into her concerns, reviewers found that the science was sound.

However, we are getting ahead of our story. As we have seen, Rachel Carson was a popular writer, and she had a cause that quite a number of citizens and experts were already concerned about – but that, by itself, barely makes for a book that rocks the world. However, a number of events had set the stage in the years before 1962. After all, *Silent Spring* was not the first book that looked at the underside of modern mass consumption. From 1957 to 1960, journalist Vance Packard published three best-selling books that offered a moral critique of the advertising industry and the huge mountains of waste which consumerism brought with it. Just before Thanksgiving 1959, the U.S. Secretary of Health, Education, and Welfare Arthur Flemming warned of cranberries that were contaminated with a cancer-causing weed killer. The announcement received a strong response because cranberries are part of a traditional Thanksgiving dish. And then there was the infamous thalidomide scandal, where a popular drug that doctors prescribed against morning sickness during pregnancy caused appalling birth defects. The drug manufacturer was German, and so were most of the victims. The U.S. was spared because the Federal Drug Administration had not allowed commercial sales of thalidomide, due mostly to the skepticism of a woman, Frances Kelsey, who won a presidential award for her wise decision in August 1962, just weeks before the first copies of *Silent Spring* hit the bookstores.

The greatest single factor for the reception of *Silent Spring* was the fear of fallout from nuclear tests, which had emerged as a transnational concern in the late fifties. In 1954, a Japanese fishing vessel had been caught in a nuclear cloud from a U.S. test on the Bikini atoll. The crew grew sick from nuclear radiation, and their fate made headlines worldwide. People all over the west were protesting against the nuclear arms race, and particularly against the huge number of nuclear tests in the open atmosphere, as winds carried the radioactive substances to virtually every corner of the globe. With a view to *Silent Spring*, it was the perfect precedent: one of the key themes in Rachel Carson's book was the presence of DDT even in remote places, far away from the sites of use. With that, people were already sensitized to both the reality and the danger of global contamination, and many reports drew on the parallelism between the two threats. And beyond the issue of nuclear testing was the fear of nuclear war, the ultimate fear of societies around the world ever since Hiroshima and Nagasaki, and that fear was particularly strong in 1962: just a month after the book launch, the Cuban missile crisis brought the world to the brink of nuclear war. The vigor of the public response certainly had a lot to do with this context. The individual citizen was a helpless victim when it came to nuclear war. But perhaps one could do something about DDT.

With all that, the stage was set, and the book became an immediate sensation. There was none of the awkward silence after publication that authors are painfully familiar with: the dispute started right after the *New Yorker* published excerpts in June 1962. As early as July 22, 1962, the *New York Times* noted in one of its trademark plays with words that *Silent Spring* was making for a noisy summer. The debate over DDT, heretofore an issue behind closed doors, finally became a public debate. On August 29, president Kennedy answered to a press question about the administration's take on Rachel Carson – at a time when the book was not even out.

At last the public had taken notice. But so had the producers of DDT. The industry's response to *Silent Spring* started even before it hit the bookstores, as the Velsicol Chemical Company of Chicago tried to pressure Houghton Mifflin into not publishing the book. Within days, industrialists were waging an all-out war, stressing the need for science, progress, the power of chemistry, and all the other things that Rachel Carson was allegedly against. Behind the scenes, the critique was even more vicious, targeting the fact that she was an unmarried, childless woman and probably worse. This being Cold War times, the former Secretary of Agriculture Ezra Taft Benson was reported as saying that Carson was "probably a Communist."

Of course, the arrogant response was a public relations disaster. Today's managers surely would have sent out invitations to round-table talks and written press releases that they had nothing to hide – but then, these were the sixties. American business was at the apogee of its power and at the apogee of its prestige, and critics were either communists, or unstable characters, or cultural conservatives like Vance Packard. But Rachel Carson was neither: she was a scientist and former government employee. Industrialists were completely unfamiliar with that kind of creature, and they just could not believe that there was not more to it – a hidden agenda to discredit science, or industry, or chemistry, or all of the above. In a CBS broadcast on April 3, 1963, a visibly agitated spokesman for the agricultural chemicals industry, Robert White-Stevens, lamented about "gross distortions" in Rachel Carson's book and suggested that she wanted the insects to take over the world while Rachel Carson calmly presented her evidence. In short, industry was trapped in a hole, and it kept on digging.

From the point of view of her opponents, Rachel Carson was not just uncovering an inconvenient truth. She also did so in a way that was profoundly irritating. First of all, she was writing well, thus irking the scientists who saw brilliance with words as a sinister craft. Proper experts surely did not resort to these kinds of skills because they did not *have* to. And then there was the way the book opened: It started with a fable about a town in the heart of America that lived in harmony with nature until a strange blight creeps in and poisons everything, with the result that no birds were singing in the spring – the proverbial *Silent Spring* that the title proclaimed. It really does not take too much fantasy to imagine the business people and their scientists shaking their heads in disbelief as they read that book that everybody was talking about: you just could not do that!

It took a while until the debate moved from principles towards the actual evidence. The President's Science Advisory Committee studied the book, vindicated its evidence, and recommended government reforms. A Senate subcommittee invited Rachel Carson for a hearing, in which she excelled. On that occasion, Senator Ernest Gruening compared *Silent Spring* to the antislavery classic *Uncle Tom's Cabin* and dared to predict that Carson's book would change the course of history. The book indeed gave a boost to critics and skeptics, raising the profile of all those voices that had previously been marginalized due to the might of industrial chemistry. *Silent Spring* opened doors for many issues that implied risks for consumers and the natural environment, far beyond the specific issue of DDT and pesticides. Of course, American industry was still strong when it came to these things, but its cultural hegemony was no longer unchallenged.

In short, what we have here is a perfect Hollywood ending, except that it was actually true: the lonesome hero who spoke the truth is vindicated; the chemical giants paid dearly for their hubris; and the general public, as well as the government, paid more attention to the environment ever since. But of course, no self-respecting historian will want to conclude on such a note, and that is why I would like to raise a question that is rarely being asked in this context: industry surely lost the battle with Rachel Carson – but did DDT lose as well? DDT use decreased sharply during the 1960s, and the U.S. government finally banned domestic use – but then, that decline would have occurred anyway, though certainly more slowly, if *Silent Spring* had never been published. After all, DDT was already under attack from several sides: it was loosing its thrust due to resistance problems, it was causing side effects that received growing attention with widespread use, and it brought peaceful suburbanites to file lawsuits. However, all that was fading into the background when everyone talked about Rachel Carson and her book. In other words, *Silent Spring* provided a substance in trouble with a graceful exit.

We can better understand this irony of history when we see the controversy over *Silent Spring* in context. After all, the enthusiasm for pesticides did not exist in a vacuum. The years around 1960 were generally prone to these kind of techno-scientific utopias, and we see similar dreams in many contemporary debates. Irrigation and high dams would make deserts bloom; atomic energy would provide electricity too cheap to meter; and weather modification would take care of inhospitable climates – and I am not even mentioning space-age fantasies here. All these utopias were gradually cut to size as they became a reality. We now know that spaceflight is dangerous and expensive, that nuclear power is risky, that high dams have side effects, and that weather modification doesn't work. More precisely: we learned that *from experience*. It is only in the case of pesticides that we learned that *from a book.*

I think the difference is important, and probably the root cause of the enduring polemic against Rachel Carson. We never had that long and painful experience of gradual disillusionment that we had about so many other technologies: in the case of pesticides, disaffection came quickly, and it came at the hand of a woman. It all happened very fast, too fast for some – and so, ironically, some of the magic of DDT survived precisely *because of* Rachel Carson and *Silent Spring*. Ever since Rachel Carson, DDT had the air of a chemical miracle that un-

fortunately was stabbed in the back in a bout of public hysteria – a heroic fate, at least from the view of people who are more concerned about environmentalism than about malaria. In short, the polemic against Rachel Carson is essentially an evasive action. It is easy to criticize a woman and a book. Devising a strategy against malaria is not.

There is another fault line underlying the clash over *Silent Spring*, and one that may be of particular interest to this audience. It is interesting that many of her critics called Rachel Carson an "amateur" or a mere "scientific journalist" even though she was a trained biologist from a major university. What we see at work here is a distinction between the "hard" science of chemistry and the "soft" science of biology – with the pesticides people representing the hard science and Rachel Carson, the biologist, the "soft" one. In this kind of dichotomy, chemistry was simple, as chemical reactions worked no matter what – biology was diffuse and complicated because living organisms are oh-so-sensitive. In fact, Rachel Carson amplified these aversions towards the biological sciences by invoking time and again the "balance of nature" – a phrase that was probably not so much a scientific concept as a metaphor for her amazement about the wonders of the natural world. In a way, Rachel Carson's *Silent Spring* was a powerful warning of a harsh reductionist perspective when dealing with nature.

Two years after the publication of *Silent Spring*, Rachel Carson died of cancer. She has been hiding her disease, knowing that her critics would exploit it, and probably we should not devote too much attention to it either. After all, few things suggest that the disease influenced her thinking and writing. Carson was already working on her book when the disease showed up; furthermore, she had been diagnosed with breast cancer a decade before, and the treatment had worked. Finally, the post-war years were still rigid about the separation between private and public affairs, and Rachel Carson certainly did appreciate that distinction very much.

Rachel Carson's death was untimely: she became only 56 years old. And yet it does not seem that her death did any damage to her cause. She had made her case, she had won the hearts and minds of the American public, and any future book that she might have published would have had a hard time to compete with *Silent Spring*. Furthermore, her death spared her of the obligations that usually confront authors of her kind: demands to keep up the fight, demands to bring the same vigor to other causes, invitations to speeches and fundraisers. It is rather likely that Rachel Carson would have come to hate these obligations and would have disappointed many people; in fact, she did disappoint some already in the brief two years that she had after *Silent Spring* was out. Faced with the proposal to write a book about water pollution, Rachel Carson declined, noting, "One crusading book in a lifetime is enough." She was, after all, no activist, no builder of institutions, and certainly no master of the sound bite. She had done what she could. Others would have to take it from here.

After all, Rachel Carson's book was merely a beginning: a rallying cry, a warning, a call for caution; and it is a long way indeed from here to proper regulation. We can see that in one significant fact: the federal ban on domestic DDT use that I previously mentioned did not come until 1972, a full decade after the publication of *Silent Spring*. It has become customary for presentations on Rachel Carson to fast-forward from her death in 1964 to the 1972 ban,

suggesting that the decision was part of her enduring legacy. Of course it was; but then, the world of 1972 was fundamentally different from that of 1962. A lot of things had happened along the way: a student rebellion, conflicts over civil rights and Vietnam, the Torrey Canyon disaster and the Santa Barbara oil spill, and the spectacular Earth Day celebrations on April 22, 1970, when an estimated 20 million Americans joined environmental demonstrations.

In 1962, the issue of whether or not DDT should be banned was still beyond the horizon. Rachel Carson certainly never asked for it: after fifteen years in government service, she knew that drastic demands would most likely backfire. As it was, Carson was rather flexible when it came to solutions, and so the most frequent question to her was about what should be done. In the concluding chapter of *Silent Spring*, she spoke about all kinds of solutions, including many biological ones. In the end, the chapter read more like a laundry list of ongoing research and development, but that was precisely her point: she meant to show that there was really "a truly extraordinary variety of alternatives to the chemical control of insects." Rachel Carson was no romantic who dreamed of a world without insect control. She knew that there were human desires and human necessities. Her question was how we deal with them.

And in a way, that is what makes the book so powerful, and so enduring up to the present day. *Silent Spring* was ultimately not about solutions or technologies – it was about a mindset, about human hubris; and the massive, indiscriminate use of DDT was merely a symptom of that mindset. For all the diligence that she put into researching the impacts of pesticides, she always looked beyond the specifics, towards that big question that pesticides as they were used in her time exemplified: what happens when humans intervene with brutal, indiscriminate acts into the web of life? And how can we come to more circumspect solutions that do not jeopardize the balance of life? These are the real questions behind *Silent Spring* – big questions, difficult questions, and questions that we are wrestling with to this day, and certainly those among us who are dealing with biological insect management.

As you probably know, *Silent Spring* is still available in print, in English as well as other languages; the German translation alone has been sold some 140 000 times to this day. There are also a few good books about Rachel Carson and a number of websites that deserve reading. After all, there is a big, enduring message that Rachel Carson has for our time: a call for humility and reverence for life. Of course I know that it is much easier to speak and write about humility than to actually live it: humility is probably not a virtue that they teach in salesman school. And yet it helps to put things in perspective once in a while, and to acknowledge what humans like to ignore: that the natural world is infinitesimally more complex than our way of thinking. We will never be masters of the web of life – but merely lifelong apprentices. The best we can hope for is tweak that web here and there to edge out a niche for us humans while doing as little damage as possible to the rest of the natural world.

When the U.S. Department of Agriculture started its fire ants eradication campaign, it did so with a clear goal: it sought victory. Eradication campaigns are the kind of struggle that make heroes, and it is only in hindsight that we can recognize the folly of these efforts: when man sets out to wage war on nature, he usually ends up with second place. It was a long proc-

ess of learning, and certainly a painful one, but the end result was unambiguous: even the most miraculous of substances is no panacea but rather a step on uncertain terrain; and when we make steps on uncertain terrain, we are usually better off with small, careful ones. We have learned that from experience; and we have learned that from books like *Silent Spring*. And for that reason, I shall conclude this talk with the words that Rachel Carson used to conclude her book, where she wrapped up her case with the following declaration:

> "The 'control of nature' is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth."

Thank you for your attention.

This text is the transcript of a speech. It is hereby offered for information purposes.

For those who would like to read more about Rachel Carson, I recommend the following books:

Linda Lear: Rachel Carson. Witness for Nature (New York, 1997).

Lisa Sideris, Kathleen Dean Moore (eds.), Rachel Carson. Legacy and Challenge (Albany, New York, 2008).

David Kinkela, DDT and the American Century. Global Health, Environmental Politics, and the Pesticide that Changed the World (Chapel Hill, 2011).

Lukas Straumann, Nützliche Schädlinge. Angewandte Entomologie, chemische Industrie und Landwirtschaftspolitik in der Schweiz 1874-1952 (Zürich, 2005).