Silent Spring's 50-Year History of Selective Data

Ronald Bailey | Sep. 26, 2012 10:30 am

This week *Silent Spring* will turn 50.

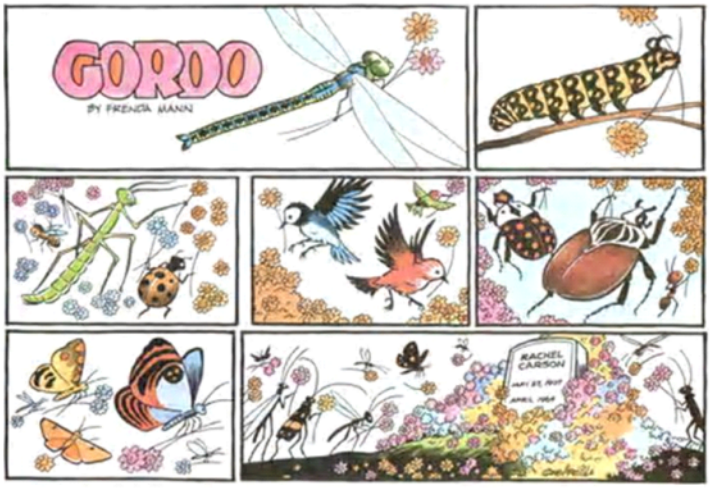
Rachel Carson's jeremiad against pesticides is credited by many as launching the modern environmentalist movement, and the author, who died in 1964, is being widely lauded for her efforts. "She was the very first person to knock some of the shine off of modernity," says environmentalist Bill McKibben in a *New York Times Magazine* article from this past Sunday.

"The hostile reaction to *Silent Spring* contained the seeds of a partisan divide over environmental matters that has since hardened into a permanent wall of bitterness and mistrust," writes William Souder, author of a new biography of Carson, *On A Farther Shore*. He adds, "There is no objective reason why environmentalism should be the exclusive province of any one political party or ideology." That conclusion is flatly wrong.

In *Silent Spring*, Carson crafted a passionate denunciation of modern technology that drives environmentalist ideology today. At its heart is this belief: Nature is beneficent, stable, and even a source of moral good; humanity is arrogant, heedless, and often the source of moral evil. Rachel Carson, more than any other person, is responsible for the politicized science that afflicts our public policy debates today.

First, let's acknowledge that Carson was right about some of the harms that extensive modern pesticide use could and did cause. Carson was correct that the popular pesticide DDT did disrupt reproduction in some raptor species. It is also the case that insect pests over time do develop resistance to pesticides, making them eventually less useful in preventing the spread of insect-borne diseases and protecting crops. In fact, the first cases of evolving insect resistance were identified in California orchards in at the beginning of the 20th century, when species of scale insects became resistant to the primitive insecticides lime sulfur and hydrogen cyanide. By 1960, 137 species of insects had developed resistance to DDT. To preserve their usefulness, pesticides clearly needed to be more judiciously deployed.

Carson, however, realized that tales of empty birds' nests and bug and weed-infested crops were not enough to spur most people to fear the chemicals she opposed. The threat had to be made more immediate and intimate. Carson biographer Souder notes, "In 1960, at the halfway point in writing *Silent Spring*, just as she was exploring the connection between pesticide exposure and human cancer, Carson was herself stricken with breast cancer." Given the sorry state of medicine in the 1950s, few diseases were scarier than cancer. And deaths from cancer had been rising steeply. Carson cited government statistics showing that cancer deaths had dramatically increased from 4 percent of all deaths in 1900 to 15 percent in 1958.



"The problem that concerns us here is whether any of the chemicals we are using in our attempts to control nature play a direct or indirect role as causes of cancer," wrote Carson. Her conclusion was that "the evidence is circumstantial" but "nonetheless impressive." She added the claim that in contrast with disease germs, "man *has* put the vast majority of carcinogens into the environment." She noted that the first human exposures to DDT and other pesticides were barely more than a decade in the past. It takes time for cancer to fester, so she ominously warned, "The full maturing of whatever seeds of malignancy have been sown by these chemicals is yet to come."

But hinting at cancer doom decades away was not enough. Carson was convinced that pesticides could wreak their carcinogenic havoc much sooner rather than later. As evidence she cited various anecdotes, including one about a woman "who abhorred spiders" and who sprayed her basement with DDT in mid-August. She died of acute leukemia a couple of months later. In another passage, Carson cites a man embarrassed by his roach-infested office who again sprayed DDT and who "within a short time ... began to bruise and bleed." He was within a month of spraying diagnosed with aplastic anemia.

To bolster these frightening anecdotes, Carson cited data that deaths from leukemia had increased from 11.1 per 100,000 in 1950 to 14.1 in 1960. Leukemia mortality rose with pesticide use; suspicious, no? "What does it mean? To what lethal agent or agents, new to our environment, are people now exposed with increasing frequency?," asked Carson. Fifty years later the death rate from leukemia is 7.1 per 100,000. Half of what Carson cited in *Silent Spring*. In fact, the incidence rate is now 12.5 per 100,000.

Carson surely knew that cancer is a disease in which the risk goes up as people age. And thanks to vaccines and new antibiotics Americans were luckily living much longer; long enough to get and die of cancer. Average life expectancy was 46 in 1900 and the annual death rate was 17 out of 1,000 Americans. By 1960, life expectancy had risen to nearly 70 years and the annual death rate had fallen to 9.5 per 1,000 people. Today, life expectancy is 78 years and the annual death rate is 7.9 per 1,000 people. Today, although only about 12 percent of Americans are over age 65, they account for 56 percent of new cancer diagnoses and 69 percent of cancer deaths.

Did cancer doom ever arrive? No. In *Silent Spring* Carson cites data showing that American farmers were then applying about 637 million pounds of pesticides to their crops. The most recent Environmental Protection Agency estimate is that farmers used 1.1 billion pounds in 2007. (The amount of insecticide applied to crops has been falling recently, as farmers adopt genetically enhanced insect-resistant crop varieties.)

What happened to cancer incidence rates? According the Centers for Disease Control and Prevention, age-adjusted incidence rates have been dropping for nearly two decades. Why? Largely because fewer Americans are smoking and lots of women stopped using hormone replacement therapy, which researchers have now concluded significantly increased the risk of breast cancer.

Back in the early 1990s, based on sketchy research, environmentalists began pushing the hypothesis that past exposure to organochlorine pesticides, such as DDT, was fueling a breast cancer epidemic. However, after years of research a major review article in 2008 in the journal *Cancer* found that exposure of organochlorine compounds like DDT "is not believed to be causally related to breast cancer."

With regard to overall cancer risks posed by synthetic chemicals, the American Cancer Society in its most recent report on cancer trends concludes, "Exposure to carcinogenic agents in occupational, community, and other settings is thought to account for a relatively small percentage of cancer deaths – about 4 percent from occupational exposures and 2 percent from environmental pollutants (man-made and naturally occurring)." What factors really do increase cancer risk? Smoking, drinking too much alcohol, and eating too much food. In fact, while overall cancer incidence has been falling, cancers related to obesity — e.g., pancreatic, liver, and kidney — have risen slightly.

The first notable triumph of environmentalism occurred in 1972. Ten years after *Silent Spring*, William Ruckelshaus, Administrator of the barely two year-old Environmental Protection Agency, banned DDT, overruling an administrative law judge's fact finding after months of scientific testimony that "DDT is not a safety hazard to man when used as directed" and that its benefits outweighed its costs. As part of the justification, Ruckelshaus noted in his decision, "Public concern over the widespread use of pesticides was stirred by Rachel Carson's book, *Silent Spring*."

Carson biographer Souder oddly concludes that the fierce opposition from chemical companies, agricultural interests, and their allies in government "put Rachel Carson and everything she believed about the environment firmly on the left end of the political spectrum. And so two things – environmentalism and its adherents – were defined once and forever." He gets it backwards.

Carson described the choice humanity faced as a fork in the road to the future. "The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress at great speed, but at its end lies disaster," she declared. "The other fork of the road – the one 'less traveled by' – offers our last, our only chance to reach a destination that assures the preservation of our earth." This kind of apocalyptic rhetoric is now standard in today's policy

debates. In any case, the opposition to *Silent Spring* arose not just because Carson was attacking the self-interests of certain corporations (which she certainly was), but also because it was clear that her larger concern was to rein in technological progress and the economic growth it fuels.

Through *Silent Spring*, Carson provided those who are alienated by modern technological progress with a model of how to wield ostensibly scientific arguments on behalf of policies and results that they prefer for other reasons. It is this legacy of public policy confirmation bias that Yale law professor Dan Kahan and his research colleagues are probing at the Yale Cultural Cognition Project.

In a recent study on how Americans perceive climate change risk published in *Nature Climate Change*, Kahan and his colleagues find that people listen to information that reinforces their values and ignore that which does not. They observe that people who are broadly identified as being on the political left "tend to be morally suspicious of commerce and industry, to which they attribute social inequity. They therefore find it congenial to believe those forms of behavior are dangerous and worthy of restriction." On the other hand, those broadly considered as being on the political right are proponents of technological progress who worry about "collective interference with the decisions of individuals" and "tend to be skeptical of environmental risks. Such people intuitively perceive that widespread acceptance of such risks would license restrictions on commerce and industry."

As trust in other sources of authority – politicians, preachers, business leaders – has withered over the past 50 years, policy partisans are increasingly seeking to cloak their arguments in the mantle of objective science. However, the Yale researchers find that greater scientific literacy actually produces greater political polarization. As Kahan and his fellow researchers report, "For ordinary citizens, the reward for acquiring greater scientific knowledge and more reliable technical-reasoning capacities is a greater facility to discover and use—or explain away—evidence relating to their groups' positions." In other words, in policy debates scientific claims are used to vindicate partisan values, not to reach to an agreement about what is actually the case. This sort of motivated reasoning applies to partisans of the political left and right, who both learned it from Rachel Carson.