

A Biography of Rachel Carson

by Marilyn MacDonald

Le texte qui suit est une pièce sur la moralité qui analyse les opinions contradictoires de Rachel Carson et de son respect pour la vie et d'un adversaire imaginaire, White-Stevens, Ph.D., représentant les sciences et leur relation avec l'industrie, le milieu des affaires et l'évolution économique.

Author's Note: The legacy passed on from Margaret Benston is clear—a critique of Present-science that reinforces with its inertia the myths of progress, objectivity, linearity (field independence), adversarial learning, and the rightful dominion of technocracy; and a call for change to Future-science by finding alternatives and doing them. In particular, the exclusion of women, and attributed female characteristics, from Present-science has impoverished it. Future-science will be richer for its recognition of subjectivity, of holism and of co-operation. The following is a morality play that deals with these issues.

OPENING: (Picture a courtroom. A couple of ceiling fans turn slowly; late summer sunshine reflects off white-plastered walls and sinks into the dark wood panelling; chairs and benches are all well-worn, wooden and empty.)

Then the scene fades, and reopens to a view of the room from the front of the Defence's table. Sounds of bustle and movement indicate that the courtroom has filled. In the Judge's Bench is a computer console, and on the corners of the Bench are cameras; a mesh-covered circle in the centre of the front of the Bench is probably a speaker. Now reverse the view and scan the courtroom. Show the Defence's table first, where a woman is seated—late middle-age, with short, brown, curly hair; and wearing a conservative white linen skirt and jacket, a flowered blouse, and sensible walking shoes. Show the Prosecution's table next, where a man is seated—slightly older than the woman, white-haired, and dressed in a blue suit with gray pinstripes, an indeterminate school tie, and a white shirt with a button-down collar. Both are looking in some surprise at the spectators. These, as they come into view, turn out to be from a number of species of plants and animals. In several places, telescopic arrangements suggest the presence of smaller spectators, possibly microbial. The woman has a look of dawning wonder, and the man, of dawning exasperation).

VOICE: Court is now in session, Gaian Justice Information System presiding. The case before us has been brought by the Prosecutor,

Robert White-Stevens, against the Defence, Rachel Carson. He charges that she, during her lifetime, spread ecologically unsound information; and that she betrayed her species in the constant war for existence that characterizes life on Earth. Are both parties ready to begin?

rws (the white-haired man): I'm not too sure what I'm doing here. Last thing that I remember was being stung by some damn-fool wasp. If I'd known that I was that allergic, I'd have had the proper medicine with me! Say, if this is to be a trial, don't I have the right to a lawyer or two? If it's a question of cost, American Cyanamid will cover it. Just like the pharmaceutical companies, we in the agrochemical business haven't had to look back since the 1940s. Our profits have stayed at twice the national average or better. Except for the problems caused by that communist sympathizer over there! (indicates the defendant) She would have been happy to see our great democracy overwhelmed by the Soviet hordes. Sure, the National Agriculture Chemicals Association put together a budget of \$250,000 to go after her... I mean to give people the facts about our industry. By the way, where are we? Why am I here with that do-good, bird-loving, hysterical spinster? And (looking at the spectators and the Judge, obviously having less trouble adjusting to being tried by a machine than to being observed by other species) where are the Real Decision Makers? The Good Book says that Mankind has dominion over things here on Earth. Besides, it's ridiculous for something to be able to make decisions about you when you can't even understand each other. Where's the fairness in that? They probably don't speak English. (look of consternation passes over his face) Why, they're probably not American! Somebody is going to be in trouble over...

VOICE: The Court will answer as many of your questions as possible, Dr. White-Stevens. First, as to where we are. In short, Dr. White-Stevens, you are in the presence of Life-on-Earth, as it was, is, and will be, a matrix of possibilities of being-and-becoming. Unfortunately, we have to put it into a form that you can comprehend, so we use the stereotype of this courtroom, and some species that you might recognize. Dr. Carson, on the other hand, is seeing the life force much as it is, because she spent so much of her life aware of it.

As for your other questions, you are here because this Court brings together those beings who were locked together in life by opposite points of view. You are to resolve your disruptions, to

arrive at Truth, and to get on with whatever Karmic development you are pursuing. We tried lawyers at one time, but they were far too concerned with procedure and precedent, and spent days arguing about “what-if’s.” Just getting the two beings together seems to accomplish more. For you, I appear as a computer, representing a data bank of the life experiences of species on Earth. I am the reference against which your arguments will be compared, and the arbiter which will decide the outcome of the Trial.

rc (who has been partly listening to this discussion and partly

“I think ecological soundness comes from being aware of the world around you. It’s not something that you can put in a test tube and extract knowledge from by boiling it in concentrated sulphuric acid.”

watching the spectators): Could you tell me just what the outcome of the trial will involve?

VOICE: Humans have most closely understood this outcome as the manifestation of previously unrealized potentials in future opportunities. To put it bluntly, the outcome decides your next incarnation.

rc: What an interesting concept!

rws: Hey, in that case, I demand a lawyer! I demand a trial by my peers! I am a very, that is, was a very important research scientist and...well, as the Prosecution, I don’t see why I’d be on trial anyway. It’s all about whether she had any right to do what she did.

VOICE (patiently): Yes, Dr. White-Stevens. But, you see, the charges laid against Dr. Carson reveal as much about you as they do about her. And those are the issues that we hope to resolve. The list of charges to be considered include: 1) that Rachel Carson, during her lifetime, spread ecologically unsound information; 2) that there exists a state of war between and within members of species of life on Earth; 3) and that Rachel Carson, during that state of war, betrayed her species.

On the first charge, ecological misinformation, how do you plead?

rc: Well, not guilty. I certainly researched all my books, and brought all my experience into putting each of them together. I know that, from childhood, I loved being outside. We were lucky enough to live on a farm. We had 65 acres of woods and fields, and, even though they were more pets than anything, we had horses, cows, chickens, dogs—so much to explore and learn about...

(As rc talks, a screen at the side of the courtroom flashes statistics, pictures, and so on, much like an NBC SportsWeekend presentation. The first image is:)

Rachel Carson: Statistics

Born: America, 1907. (this is superimposed over a series of Pathé News shots of life in urban and rural America at that time, showing the growth of factories, of industrialization and urbanization, and the mechanization of farming)

Parents: Maria McLean and Robert Carson. (a series of pictures of both parents, in the peculiar stiffness of turn-of-the-century photographs)

Education: public school in Pennsylvania (1912 to 1924); Pennsylvania College for Women (literature and biology—1924 to 1928); John Hopkins University (Master’s degree, aquatic biology—1928 to 1930); Honorary Doctorates, Literature and Science (1952).

Ambition: to be a writer. (pictures of eleven year old Rachel sending off her first article accepted for publication, of Rachel at college working as an editor of a school paper, of Rachel at work for the US Department of Fish and Wildlife Services, writing pamphlets, editing publications, of Rachel at home typing a manuscript, reading research journals)

...that I always felt that each day was another exciting opportunity. I remember that Mama used to carry spiders and insects outside rather than hurt them. And we’d read such wonderful stories about Nature! After Father died in 1935, I took a job in Washington with the Government in order to support my mother and my nieces. There, it was harder to keep in touch with Nature, but I did talk to quite a number of people who were doing research on the sea and that was fascinating. When my second book sold well, we bought a cottage in Maine, right on the coast. I could explore to my heart’s content. One could bring up a bucketful of creatures, look at them under the microscope at the cottage, and return the creatures to the ocean before they suffered from the experience.

rws: I’d like to ask the court to keep the Defence on-track. What does this have to do with the soundness of her knowledge of ecology?

rc: Oh, quite a bit! You see, I think ‘ecological soundness’ comes from being aware of the world around you. It’s not something that you can put in a test tube, in a laboratory enclosed by a concrete building, and extract knowledge from by boiling it in concentrated sulphuric acid. People become too critical of themselves and of each other, and become afraid that what they think might not be serious enough, or good enough. That may be the biggest crime of those scientists and other people that hide their ignorance behind a facade of superiority—that they destroy the joy that others could get just by watching the world around them.

You see, that belief that people still have a spark of wonder buried within, a spark that could be fanned to a brightness that would lighten their lives, drove me to write my books. I did a tremendous amount of research for...

(second series of images appear on the screen)

Publications

Information pamphlets, booklets for D.F.W.S., 1936-49 (superimposed over pictures of housewives reading about the lives of

fish as part of wartime urgings to switch to seafood, of business people at restaurants reading about wildlife sanctuaries).

Under the Sea Wind, 1941. First edition sold under 1600 copies. Book selected by Scientific Book Club. Reissued 1952, sold over 500,000 copies; translated into several other languages. (images of the lives of four main animals of the book mixed with the bombing of Pearl Harbour and life in war-time America)

The Sea Around Us, 1951. Sold over 1.5 million copies in the first year, translated into several languages. Received eight awards. (images of the different scenes described in the book, mixed with pictures of different people reading the book)

The Edge of the Sea, 1955. (images of the four types of coastline and of people exploring them, using the book as a reference)

Silent Spring, 1962. (images of Viet Nam and of soldiers sprayed with Agent Orange; of migrant workers in California overdosed with DDT; of all the other 'non-target' species dying from all the other broad-spectrum biocides; mixed with pictures of the reactions from the chemical industry, the American Medical Association, the Department of Agriculture, and various farming associations contrasted with the Kennedy Commission and Advisory Committee on pesticides, and a collage of titles of books, environmental laws, and other efforts that came from *Silent Spring*)

...each book—about two to four years on each, reading the most recent journals, getting the declassified information from war-time research, corresponding with ecologists, amateur naturalists, government scientists, and so on. Everyone at Fish and Wildlife Services and at my publishers' were most helpful in putting me in contact with people in America and in other countries that might have information for my books. But the biggest part of the job was always to write out that information in a way that was interesting, that would make it come alive for people and make them feel the wonder of the intricate beauty of Nature. Write, and rewrite, and rewrite again—my advice to other writers was always to consider it a craft that only time and effort can perfect.

rws: Just a minute. That's one of the examples of ecological misinformation right there. Am I to understand that you believe that *anyone* can learn about environmental issues? Why, what would science be without experts? People would make decisions based on emotion or spiritual values or some such thing. Without the guiding light of economic analysis, there'd be chaos! The point in having experts is that they spend their lives learning about one particular thing, and they develop a language that will let them talk to other experts. If one makes that expertise available to all, the common man would be unable to appreciate the real value of things. He'd value the health of his family, when we are talking about the health of the nation...

rc: I'm not sure that you don't mean "where would the experts be without science." Many people wrote to tell me how much more they saw in the world around them after reading my books, and how they felt that they wanted to find out even more. Their eyes and their minds were opened to their own potentials by experiencing the world around them.

VOICE: Dr. White-Stevens, are you ready to provide specific examples in any of Dr. Carson's books of ecological misinformation? Bear in mind that the Court has available all research results to date, and that these include information provided by all

affected species.

rws (looking somewhat ashen at the implications of that statement): Well, I guess we could let the errors that we found pass in deference to the little lady's gender.

VOICE: I repeat, Dr. White-Stevens, are there specific examples?

rws: No, I guess not.

VOICE: Then we'll move on to the other charges. The next one asserts that species on Earth are engaged in a constant war of survival, and that members within and between species continuously strive against each other.

“How fascinating to consider the whole Earth as a living organism and to consider that the atmosphere and the soil could only have arisen and continued to exist by the interacting lives of the creatures on Earth.”

(third set of images on screen—series of recent publications on Gaia, on the biotic origin of the components of the biosphere, on co-evolution, on co-operation, on non-zero sum game theory and so on; mixed with pictures of ruminants, of nitrogen fixing bacteria in nodules on legumes, of members of a large number of species engaged in intraspecific co-operative behaviour)

rc: Oh yes, that's exactly what I'd been looking for. That was the anthology that I'd wanted to write next, before the cancer grew too strong. How fascinating to consider the whole Earth as a living organism, and to consider that the atmosphere and the soil could only have arisen and continued to exist by the interacting lives of the creatures on Earth. It fits in exactly with Dr. Schweitzer's theories about a Reverence for Life, that I'd always used as my guiding principle. I remember the experience that led me to the same flash of understanding that he had had:

From my own store of memories, I think of the sight of a small crab alone on a dark beach at night, a small and fragile being waiting on the edge of the roaring surf, yet so perfectly at home in the world. To me it seemed a symbol of life, and of the way life has adjusted to the forces of its physical environment. (Acceptance speech, Schweitzer Medal of Animal Welfare Institute, 1963)

So now we're finding that living organisms and their environment are inseparable, and that co-operation is as common as competition and predation! How interesting! One wonders that we placed so much emphasis on competition during industrialization, and on predation during all our times of war.

rws: But what about Nature red in tooth and claw, and survival of the fittest?

VOICE: Apparently, the definition of 'fittest' can cause some

problems. For long term survival, 'fittest' isn't just having the greatest number of offspring surviving in the next generation. Altruism, cooperation and mutual survival enter into the picture. It is the species that gets along that survives best in a stable community, and the species that takes advantage that lives best on the borderline of catastrophe.

rws: But such a great deal of our agriculture is based on our living with such opportunistic species. Certainly wheat and oats and other such grasses took advantage of the annual flooding of riverbanks. How can we wait for those species that take longer? We need many opportunists and we need them now. Its agrochemicals that will make sure that other species don't interfere with us!

(some background noises, muttering during most of RWS's speeches suggest that the spectators are not notably impressed with this attitude)

VOICE: Unfortunately, humans have gained the ability to engineer their own life forms. What with wiping out much of the natural genetic diversity, they seem to be well on their way to making sure that the world is populated, even if only briefly, with only opportunists.

rc: I remember just before I died that there were rumours that someone in England had solved the riddle of genetic inheritance and had come up with a chemical model for the process. Rosalind Franklin had some excellent x-ray analysis of DNA...

VOICE: Actually, that's another trial that will be coming up. We're just waiting for two researchers named Watson and Crick...

rws: Do you mean that scientists can make up organisms in the laboratory? How I'd love to see that! We'll be able to create whole sets of crops, pesticides, fertilizers—why, business will boom like never before! There'll be overseas markets and...

rc: The thought terrifies me! Adding new species to ecosystems—how many times do we have to do that before we learn that the existing balances will probably be upset? Are people aware of the possible consequences of this genetic tampering? Oh, if all this new information on cooperation were only known, surely people would choose a more benign road!

VOICE: We digress. How does the concept of a constant war for survival fit against the consensus of the Court? (brief pause while lights flash on the computer console) Evidence does not support the idea that each species is pitted against the other, and that one species can benefit only if another species loses. This charge is also dismissed.

In the final charge, that the Defence betrayed her species, how do you plead?

rws: Wait a minute! She should plead guilty based on the evidence of her own words! Just what was that...oh yes, she wrote something to this effect after finishing *Silent Spring* and sending it off to the publishers: (pulling out a wrinkled page of paper from a jacket pocket)

(It) was odd. I really had not been waiting breathlessly for Mr. Shawn's [editor, *New Yorker* magazine, which carried an advance serialized version of the book; causing Monsanto to rush into publication its *Desolate Spring* about the starvation in America which would follow the banning of pesti-

cides] reaction, yet once I had it I knew how very much it meant to me. (I went) into the study and played the Beethoven violin concerto—one of my favorites, you know. And suddenly the tension of four years was broken and I let the tears come. I think I let you see last summer what my deeper feelings are about this when I said I could never again listen happily to a thrush song if I had not done all I could. And last night the thoughts of all the birds and other creatures and all the loveliness that is in nature came to me with such a surge of deep happiness that now I had done what I could—I had been able to complete it—and now it had its own life..." (qtd in Brooks, 272)

I mean, really, doesn't that say that this woman values birds over people? We all know that "if man were to faithfully follow the teachings of Miss Carson, we would return to the Dark Ages, and the insects and diseases and vermin would once again inherit the earth," as I said repeatedly (Brooks, 298) during the many months that I spoke to groups throughout the United States.

(angrier than usual sounds can be heard from the spectators following this last quote)

rc: Now, Dr. White-Stevens, you know that there were surpluses before pesticides came into use. The federal government was even paying farmers to cut back on production just before the war. Also, I never advocated the discarding of pesticides, just of the indiscriminate ones that killed a great many species and that persisted long after their application, increasing in concentration up the food chain. I wanted an integrated pest management, where more research went into biological controls, where we monitored pest populations and only tried to limit not eradicate them, and where we practised hygienic farming techniques that minimized pest buildups. How else could we keep alive the beneficial insects, birds, plants, and microbes?

rws: Very fine and good, but how can agrochemical companies support new research and develop new products if we have to rely on overseas sales because it is illegal to use our products in the States? Or if we have to manufacture our products in other countries because the pollution control laws are too stringent in America? If we were to sell insects to control other insects, they might set up a self-sustaining control relationship, and then what would we sell? We'd go out of business.

rc: But you can't sell or manufacture dangerous things overseas and assume that they stay there! Don't you pay any attention to the world around you? Can't you see that that kind of shortsightedness is the greatest betrayal possible of humanity?

rws: You and that bleeding-heart Kennedy, with his commissions and his Advisory Council, and its blasted 1963 *Report on Pesticides* that resulted from your book...blaming industry, the Department of Agriculture and the Food and Drug Agency and requiring that pesticides have to be certified for safety before they're used. Isn't this America? Aren't we innocent until proven guilty? Why should the burden of proof be on us? Why should we be responsible for people who use our products unwisely? And then we get that silly Environmental Protection Agency...

rc: Oh, good! When?

rws: Well, Kennedy was assassinated so his reforms were

slowed down. We, and the other lobby groups involved in mining, forestry and the like, kept the pressure on to let the market place set the standards of safety. But Nixon finally gave in in 1970 and signed a National Environmental Protection Act. Other countries were doing the same thing—all of them referring to that *Silent Spring*. Fortunately, the budget of the Environmental Protection Agency can always be reduced if we can elect business-minded politicians.

VOICE: Returning to the third charge, Dr. White-Stevens, you enter in evidence a quotation from Dr. Carson, implying that her love for birds constitutes a betrayal of humanity?

RWS: Yes.

RC: But I'd have to plead not guilty to the charge, and I would want to use that very evidence as my proof.

You see, we can't exist without the other species of the earth. They are like the canaries that miners used to take down into the mines. If the birds died, then the miners knew that the air of the mine would soon kill them. If we continue to destroy so many other species, life on earth will cease, and with it will perish our species. To misquote one of the Romantic poets, "I could not love thee half so much, loved I not all life more."

RWS: Still, in the constant war for survival, mankind must...

VOICE: That charge has been dismissed.

RWS: If we are to prevail against the Red Menace and to fulfill our manifest destiny, so that the fittest form of society endures...

VOICE: That charge has been dismissed.

RWS (petulantly): I suppose that you won't even allow that the only purpose for a business is profit and that growth is the best indicator of the health of our economy?

VOICE (after several seconds of lights flashing on the console): No, those concepts do not match up against the requirements for system stability and resilience, and the principle of mutualism.

RWS: Well, then, I would like to point out that Dr. Carson's lifestyle was not natural, that she concerned herself with matters too weighty for women, upsetting the natural order of things. Not only did you unleash a plague of environmentalists upon the land, you probably gave those feminists a start-off as well!

RC: Really, Dr. White-Stevens! I raised my sister's two children after her death, and my niece's son after she died. And I looked after my mother after Father died in 1935. We had an enjoyable family life. It is surely more unnatural to desert those that need you? Then, with my studies, I was never alone, because there was so much wonder to see. Surely it is more unnatural to waste those gifts that God has given us, like the parable of the talents. Throughout my life I had a great many friends. Surely it is more unnatural to restrict oneself to a limited sphere, when one may help and be helped by so many others? Although I suffered ill health in the last seven years of my life, I honestly can say that I didn't regret any of my choices about living. My epitaph, from the final passage in *The Edge of the Sea*, is what I'd wished that others remember:

For the differences I sense in this particular instant of time that is mine are but the differences of a moment, determined by our place in the stream of time and in the long rhythms of the sea. Once this rocky coast beneath me was a plain of sand; then the sea rose and found a new shore line. And again in some shadowy future the surf will have ground these rocks

to sand and will have returned the coast to its earlier state. And so in my mind's eye these coastal forms merge and blend in a shifting, kaleidoscopic pattern in which there is no finality, no ultimate and fixed reality—earth becoming fluid as the sea itself...

Contemplating the teeming life of the shore, we have an uneasy sense of the communication of some universal truth that lies just beyond our grasp. What is the message signaled by the hordes of diatoms, flashing their microscopic lights in the night sea? What truth is expressed by the legions of barnacles, whitening the rocks with their habitations, each small creature within finding the necessities of its existence in the sweep of the surf? And what is the meaning of so tiny a being as the transparent wisp of protoplasm that is a sea lace, existing for some reason inscrutable to us—a reason that demands its presence by the trillion amid the rocks and weeds of the shore? The meaning haunts and ever eludes us, and in its very pursuit we approach the ultimate mystery of Life itself." (Carson, 1962: 249, 250)

(sounds of applause and general approval from the spectators, a surreptitious snort of disdain from the general vicinity of the Prosecution)

VOICE: So your defence, Dr. Carson, is that pesticides posed a threat to humanity which far exceeded the benefits to be gained from them? Further, that your lifestyle, of being responsible to oneself to achieve as much as possible, also is not a betrayal but rather an enhancement of humanity?

RC: Yes.

RWS: Well, if you're going to accept her work as ecologically sound, if you're going to accept a picture of the Earth as one big, happy family, and if you're going to toss out all the accumulated wisdom of white, industrialized mankind, then there's not much else I can say, is there?

(general sounds of agreement from the spectators)

VOICE: The Court dismisses the third charge against Dr. Carson. However, it would appear that the opposition of their views still remains. Therefore, it is the decision of this Court, since you both expressed an interest in the issue of genetic engineering, that you reincarnate into that issue in a manner consonant with your previous lifestyle. Court adjourned.

(Sound of bustle which normally accompanies departure of a courtroom audience; fade-out and return to a den in a suburban house where a woman is sitting in front of a personal computer, finishing a letter of protest to President Clinton about the appropriation of genotypes of Mediterranean grasses by American chemical companies. Zoom in for a close-up of a letter to a friend, held in place by a stack of books with such titles as *Mapping the Human Genome*, *Setting Genes to Work*, *Biotechnology and the Environment* and so on. The letter (or the part that we see) says "I've finally come to a conclusion, even though it will meet with a great deal of resistance from the big companies, a book has to be written that will put together all this information on genetic

engineering in such a way that people will be warned about what is being attempted..." Then the scene fades again, and refocusses on a chrome and white laboratory, with a bank of steel cages along one wall. Each cage has a small tag in the upper right hand corner. Zoom in on one cage and one tag, which reads "Monoclonal antibodies, tumour induction for factor III." Inside is a small white mouse covered with three large, induced cancer tumours. The scene fades to black).

Marilyn MacDonald is a professor of Women's Studies at Simon Fraser University. Her education is in Biology, Ecology and Outdoor/Experiential Education. She has worked as an environmental consultant, as an R&D contracts administrator, and as an environmental educator at various levels. She has been active in critiquing the relations between women and science and technology.

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Toward a Different Science

We cannot afford to give up the struggle to understand and to come to terms with our world. As women and as feminists, we must begin to deal with the science and technology that shapes our lives and even our bodies. We have been the objects of a bad science; now we must become the makers of a new one. What is needed in such new science is, first of all, a sense of the limits of appropriateness of reductionism and the development of a methodology which can deal with "systems that flow so smoothly and gradually that they cannot be broken up into measurable units without losing or changing their fundamental nature." Difficult as this may be in practice, its very adoption as a goal must mean a major change in scientific methodology. With this must come a consideration of the connections between the knower and the known and an understanding of the ways in which subjective factors are important in science. With this also must come a sense of limits—of what is not known or cannot be known or is not appropriate as a subject for scientific approach. We will need an understanding of appropriate levels of discourse—of when it might be appropriate to offer explanations in terms of basic physics or chemistry, for example, as opposed to when an explanation in terms of the relationship of an organism with its environment would offer more insight. This is not to say that these approaches are never encountered in present science, but the central core of present scientific methodology simply does not take them adequately into account.

The distortions and limitations of present science arise out of its social context. Science clearly shows its origins in a hierarchical, class-based society, and, more than that, just as clearly shows the marks of its origin and practice as a male enterprise. The claim that science is value-free, objective and purely rational is ideology and not reality.

From Margaret Benston, "Feminism and the Critique of Scientific Method." Feminism: From Pressure to Politics. Angela Miles and Geraldine Finn, eds. Montreal: Black Rose Books, 1989.