

Richard Rhodes

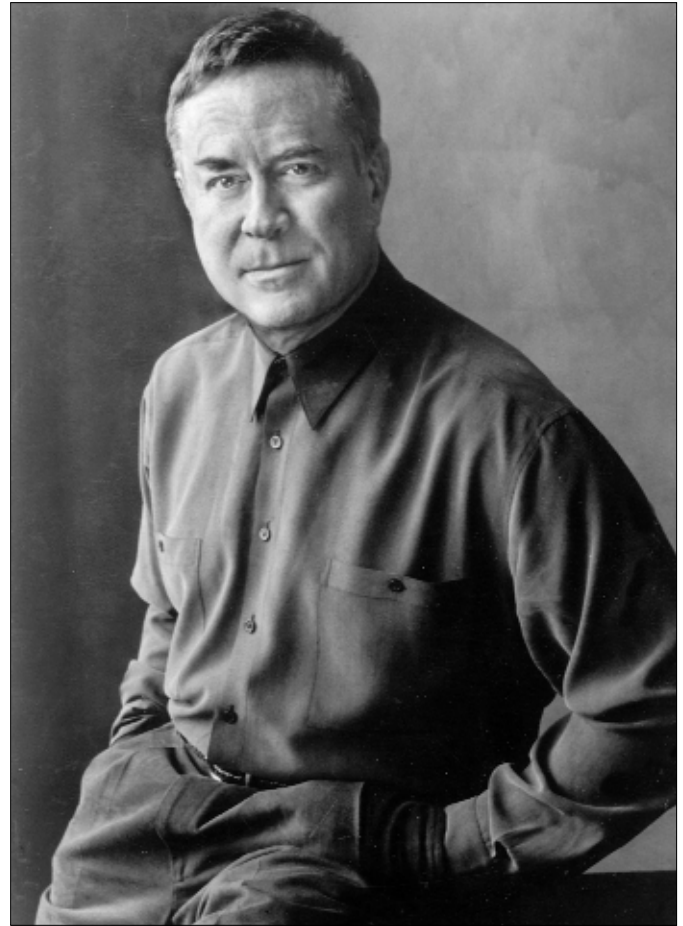
on nuclear technology

Richard Rhodes is the author of 18 books, including *The Making of the Atomic Bomb* (published in 1986), which won a Pulitzer Prize in Nonfiction, a National Book Award, and a National Book Critics Circle Award. He also has written *Dark Star: The Making of the Hydrogen Bomb* (1995); and *Nuclear Renewal: Common Sense About Energy* (1993), which provides a look at the viability of nuclear power in the United States.

His writing reaches far beyond nuclear issues. Other works include novels such as *The Last Safari* and *The Ungodly*, and nonfiction books including *How To Write: Advice and Reflections* and his most recent, *Why They Kill: The Discoveries of a Maverick Criminologist*.

Rhodes, a Kansas native and a 1959 graduate of Yale University, has received numerous fellowships for research and writing, including grants from the Ford Foundation, the Guggenheim Foundation, the MacArthur Foundation, and the Alfred P. Sloan Foundation. He has been a visiting scholar at Harvard University and the Massachusetts Institute of Technology, and a host and correspondent for documentaries on nuclear issues on public television's *Frontline* and *American Experience* series. He lives in rural Connecticut.

Rhodes talked with *Nuclear News* about the experiences as a journalist that opened his eyes to the value of nuclear technology, and about how other journalists don't seem to be doing their homework in that regard. With what nuclear has to offer—power generation, food irradiation, medical uses,



Richard Rhodes: "While people are phobic about radiation, they are not when it is to their benefit."

Besides your acclaimed books on the atomic and hydrogen bombs, you've written on American farming, mad cow disease, your childhood, and, in a novel, the Donner party. How did you get interested in writing about nuclear issues?

Back in the 1970s, I was doing a lot of magazine work while writing fiction on my own. This was the time of the energy crisis and there was a lot of work writing about nuclear issues, particularly on nuclear power. That's when I noticed, for example, that there had never been a complete narrative

history of the development of the bomb, which led directly to my writing *The Making of the Atomic Bomb* in the first half of the 1980s.

What is interesting is that in the '70s when I was first writing about nuclear power, I had the usual kind of ill-informed hostility toward it that most journalists still have today. But as I came to know the subject and assemble some facts, I changed my mind completely. I really got into nuclear technology as a journalist. I think that is obvious from what I've written lately.

So you didn't start writing about nuclear with a clean slate?

Not at all, and I don't think journalists do. We're all the product of our education and background and experiences with other people. It's as clear now as then that journalists are prepared by their backgrounds to be hostile. One of the dirty little secrets of the whole antinuclear movement is that in many ways it is not about environmental issues, because if it were, the movement would be pronuclear. Rather, it is about something that arose from the era when there was profound skepticism

etc.—journalists *and* the American public need to take a hard look at a technology that provides so much to benefit humanity, he said. The interview was conducted by Rick Michal, *NN* senior associate editor.

and hostility to large corporations, which is still a feature today of the antinuclear movement. That movement is as much concerned about the centralization of energy generation as it is about anything else. Since energy is successfully and efficiently generated by large central plants, the antinuclear movement really reflects the hostility to large organizations and particular corporations.

I came in with all of that. But getting to know the atomic scientists who worked on the bomb and developed the first nuclear power systems in the country and in the world, I came to understand that there was a very different story, that if I looked at other forms of energy generation, nuclear power looked better and better.

A reviewer once called you "a peerless explainer of difficult concepts." How much do you think this affects the public's acceptance of nuclear energy—that it's perceived as too difficult to be understood easily?

Most people in the general public don't know, for example, that steam generators are a part of any power generating system. So I'm not sure that it's the relative difficulty of explaining fission over chemical burning that is the issue. Rather, I think nuclear power has been the center of a great deal of attention because, for example, of the waste it produces. All generating systems produce waste, of course, but the difference of nuclear power is that its waste is sequestered in one place rather than spewed across the land. The waste issue is something that the general public has been made aware of by the attention it's been given rather than by any inherent difficulty.

I don't think that "difficult concepts" is the issue. What has deeply affected nuclear power's reputation is the historic development of nuclear weapons and, in particular, atmospheric testing. American people became sensitized to the notion of strontium-90 getting into the milk supply. I remember those headlines vividly from the '60s. The public came to be phobic about radiation. In a recent talk [see adjoining article], I mentioned an experience of going to the dentist and having him tell his assistant that I needed a radiograph. Technically that's what we call X-ray films that are taken. When I kidded the dentist about it, his response was, "I have patients who have serious dental disease who refuse to be X rayed." That sort of phobia is clearly a problem that the nuclear power industry has been suffering for a long time. The fact that coal burning releases much more radiation into the atmosphere is just one of those strange ironies—people don't associate radiation with coal. Nuclear, then, takes the brunt of that fear—not fear of nuclear power really, but of the bomb.

Why is it that you seem to be one of the few journalists who sees benefit in nuclear technology?

I don't know. All I can say is I did my homework and I'm afraid that one of the secrets of journalism is that journalists don't take time to do their homework. They write based on what they already know. To some extent,

of course, they look into subjects and talk to each other. But that's not a very reliable way to find out the real facts about anything.

As a follow-up to that question, is the chasm increasing between science and liberal arts that the late C. P. Snow wrote about in the '50s in his book Two Cultures? Would the media's miscoverage of nuclear technology be an example of that chasm?

Yes, it would be an example. I'm not sure that the chasm is any worse now than it ever has been. For example, while researching on the development of the bomb, I found that back in the early 1930s at Oxford University in England they had not yet wired the physics laboratory for electricity. That pervasive standoff between the humanities and science is still very much evident in the universities and in the backgrounds of intellectuals. There's a sort of snobbery about technology in particular—somewhat less so with science—that pervades the literary intellectuals of America as opposed to other Western countries.

On the other hand, we're embedded in technology today and it's so much more evident now than it used to be. I look at my desk in front of me; desks used to have a phone at best. Now there are computers, fax machines, printers, cell phones, etc.

Of course, to some people it's very depressing, which I find amusing, because half the population of the United States is alive today due to technological changes in the 20th century, most of them in public health. Half the population of America would not be alive—a quarter would never have been born because another quarter would have died before they were old enough to reproduce. That's a direct outcome of modern science and technology. People just don't know that. The paradox is that good technology is transparent. People walk through it and use it and don't realize it. Right now, of course, we're at a stage where technology is also obvious because computers aren't yet transparent.

How do other journalists and media people treat you once they realize you're pronuclear?

The first response I always see is real surprise. Sometimes that gives way to hostility and suspicion. Sometimes that gives way to puzzlement and perhaps reconsideration of their own positions, because I've reached a point where I have a reputation as someone who is credible. Here's an example of the degree of hostility. For the *Frontline* documentary "Nuclear Reaction," for which I was correspondent, I did a certain amount of publicity before and after the show. At one point, I was on the National Public Radio program "Talk of the Nation" debating a Nobel Laureate physicist. He was deliberately making statements that he knew he couldn't back up about nuclear power—that there would inevitably be a major accident within the next 10 years, etc. I, of course, was defending nuclear power. In the background I could hear the producer whispering to the host, "Ask him who's paying him," which I thought was absolutely appalling. The assumption was that if I was

defending this form of energy generation as having benefits to humanity, I must be on the payroll of the nuclear power industry. Subsequently, after that program was aired, the radio station got calls and letters from people saying, "Rhodes gives lectures to nuclear power organizations and makes money off of his position." The station called me and asked about the charges. I responded yes, but that I make part of my living giving public speeches. It's also true that I speak to universities about violence, and I speak to Los Alamos about the bomb. I certainly am not in the pocket of the nuclear power industry and I was insulted that the station had asked. So, yes, being pronuclear does have an effect and people do notice it.

Why would the scientist you were debating deliberately make false statements?

Academics often take positions that they can't back up. It is often mantled with their credibility. For example, I've been working on the subject of whether exposure to violent media makes people violent. I've discovered that some of the most frequently cited research documents are fraudulent. The data were deliberately shaped to fit the conclusions that the researcher wanted to arrive at. It's no surprise, then, that the Nobel Laureate I was debating made statements that were outrageous. He claimed to be able to back them up, but he cited research that turned out to be 20–30 years old. I presumed he was hostile to nuclear power and wanted to put it down in debate.

Recently, a weekly news magazine had a special issue devoted to what life would be like in the future. A colorful illustration depicted the world being powered 50 to 100 years from now by fuel cells, wind machines, solar panels, and gas through pipelines. But there was no mention of nuclear power. I was amazed at that. Do you think this is a case of a news magazine influencing the news instead of reporting it?

Before that, within the last year, there was a major series of features in *Science* that talked about future energy, and it totally ignored nuclear power as well. It talked about solar and wind. It's strange that people think these widely dispersed forms of energy generation that require large amounts of surface area are not going to have environmental effects, not to mention the necessary processes of manufacturing, which produce toxic wastes and so forth. Solar panels are large semiconductors. Semiconductors are notorious for producing a stream of toxic waste. There will also be some major portion of the annual production of iron in the entire world required to build and maintain that sort of scale of solar or wind-powered systems. More than that, it simply isn't practical, certainly not in terms of wind.

You're asking a question that has to do with a pervasive mentality. The Kyoto Protocol talks about everything for limiting CO₂ releases into the atmosphere except nuclear power. This is amazing, because CO₂ won't be limited without the use of nuclear. It bothers me

most of all because although it looks like a debate among people with different technological predilections, it's actually about something much deeper and more serious. It's about people in the world who suffer and die because they don't have enough economic resources in their countries. Are those people going to be able to develop these resources so they can live with less of what's called structural violence? This is defined as violence that is built into the structure of a society by the way resources are shared and allocated. If we graph life expectancy by country with gross domestic product by country, the result is a smooth, logistic curve of life expectancy directly correlated to economic resources per country. In a country that does well economically, its people live long lives. In a country that doesn't have much, its people live short lives, which is a kind of violence that is built into its society. The only way this country is going to get from where it's at to where we are is by having access to more energy resources.

If we want to live in a truly polluted world, then those energy resources are going to continue to come from fossil fuels. If not, they will come from natural gas and nuclear power, because those are the only major sources of energy that are in the pipeline today. Energy resources will not be able to come from so-called renewables at the scale that is necessary to change the way people live. Look at the fraction of world energy generation shared by various sources of power. It is immediately clear that oil and coal have declined, and that natural gas and nuclear power are the only two sources today that are increasing their fractions. Those are the two sources that will dominate world energy production in the 21st century.

What about nuclear power in Europe and Asia? France has had some difficulty with its new N4 reactors, and Japan has recently experienced difficulties that have caused some turning of public support.

France is still totally committed to nuclear electricity generation and it's up to around 80 percent of their total supply. It's interesting to see Germany struggle with whether they're going to relicense their plants, which is what I think they're debating now.

Japan's problem, let's be clear, was not a nuclear power problem. It was a problem in a fuel formulation factory for a particular fuel being prepared for a research reactor. Of course, it affected public opinion about nuclear power. But my impression of the Japanese is that they're going to go forward for the obvious reason that they have no other choice. Neither do the French. They have no resources of their own.

To look at the future of nuclear power, look to South Korea, which is building a dozen new reactors in the next 10 years. Look to China, which is going to continue to build a lot more nuclear power plants in an attempt to get a handle on the coal pollution in that country. Those are the areas where nuclear power would seem to be under most immediate development.

What will the Europeans do? There's a real possibility that the green movement that has

cut into the development of nuclear power is a fad, that with global warming and continued air pollution and with nuclear's good safety record, Europe's attitudes will change. The important proviso, of course, is as French nuclear power executives have told me: "One more Chernobyl and we will all have to fold up and steal away." That would probably be the end of nuclear power. It's important that we keep investing heavily in improving the safety systems on all those Russian reactors.

In your book Nuclear Renewal, you blame the U.S. industry's mismanagement for a lot of its problems. How do you feel about the job that management has done for the last five years or so?

They've improved enormously. I think it's a great step forward that the consolidation of operations and ownership of nuclear power plants is ongoing, because another thing I learned from the French is that "this is not just another way to boil water." We need a safety culture, an operating culture that's quite different from the one that prevails at fossil fuel electrical generation plants. It looks to me as if this is what is happening in the U.S. as a few companies are specializing in the nuclear power business and operating their systems with a level of professionalism that perhaps wasn't there at the outset.

Should the U.S. allow the reprocessing of nuclear spent fuel, thus eliminating some of the waste problem?

I strongly believe, after studying the issue, that the United States should reprocess its fuel. It's amazing that we are willing to bury good plutonium in the ground and then have to worry about it all those eons because of its long half-life. The reason that we stopped reprocessing, of course, is that Jimmy Carter decided that we had to set a good example if we were going to negotiate nuclear nonproliferation with other countries. He reasoned that by stopping reprocessing, we would be wearing an honest face when we went to the bargaining table with countries that might be considering going nuclear in terms of weapons. How he arrived at that decision is one of the great mysteries of the Carter era. Dave Rossin, one of the former assistant secretaries of Energy [and a past president of ANS—Ed.], has been researching a book on Carter's decision and has interviewed several hundred people who were around Carter when he made that decision. It's a mystery to them. Carter apparently made it on his own without any major consultation. There was one work-up of a "how a country could go nuclear with reactor plutonium" scenario. But the truth is, no nation that has developed nuclear weapons has done so with power reactor plutonium. It is not good weapons material.

And, of course, the idea that a group of terrorists would be able to take nuclear fuel in its oxide form and somehow reprocess it to get the plutonium out is just absurd. It is a phony issue. It stagnated the American nuclear power industry and has given it one more sense that it is dangerous, because it could somehow make bombs for people. The reprocessing of

spent fuel is a decision that needs to be looked at again.

Will the American public accept food irradiation?

I think so. Irradiation is a mature technology that's been around for 40 years. It's used successfully in other countries. It changes food considerably less than cooking changes it in terms of the supposed nitrates and so forth. That's really what we're talking about, people being worried about whether their food is sufficiently fastidious if it's been irradiated. People forget that about 10 000 people die in the United States every year from poisoning caused by food contamination. Hundreds of thousands more are injured and sickened, sometimes severely with permanent damage to their bodies, because of food contamination.

The irony is that this debate happened in the United States once before. It used to be that milk was delivered raw from the farms and kept in barrels in stores where people dipped for their daily supply. This was typical of the tenement sections of New York City in 1901–1905. Every summer there would be an epidemic of babies dying of diarrhea from contaminated milk. The public health people of the day tried to get pasteurization in. There was a great hue and cry that it would change the flavor of the milk, that it was not natural, that it would introduce foreign elements into the milk supply. There were even physicians who testified before Congress that it would take away their business. But, finally, sanity prevailed and pasteurization was rapidly introduced, and by 1920 infant mortality had been reduced dramatically in the United States because of this simple process for protecting the food from bacterial contamination.

The same thing is playing out with food irradiation, which is comparable to pasteurization in its function. Another complaint was that if milk was pasteurized, then farmers wouldn't have any reason to clean up their dirty farms. That is an argument being used today against food irradiation. But the fact is the *E. coli* that has been killing people the last several years in the United States is a new strain that lives in the intestines of cattle and is not something the farmers can clean up. Rather than trying to maintain a sterile, surgical environment on a farm or in a meat-packing plant, we should maintain the standards of cleanliness that are already in effect at those places and also irradiate the food products.

There also would be much less spoilage of vegetables and fruits if they were lightly irradiated to kill the organisms that live on the surface of those materials. Scientifically, it makes great sense to irradiate our food supply. Politically, it's been a problem because people are phobic about radiation.

The irrational public fear that's directed toward radiation and other issues in nuclear technology now seems to have spread toward genetically engineered foods. Do you see the public suspicion as a threat to technological progress?

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Interview, continued

No doubt. Yes, absolutely. However, while people are phobic about radiation, they are not when it is to their benefit. A lot of nuclear technology goes on in hospitals and doctors' offices and nobody worries much about it except for the occasional person who doesn't want his teeth X rayed, for example. The fact is that if a person has a heart attack and a test is needed that uses a radioactive isotope to track what the heart is doing, that person isn't going to say, "It's radioactive? Oh, just let me die." The person will let the medical staff inject the radioactive materials. It's a selective thing and it suggests that it's something that can be educated away. I think it's clear that Americans have been willing to tolerate all this debate about nuclear power simply because we have the luxury of doing so. The French and Japanese didn't have that luxury, so they were able to move on and educate their populations.

Do you have an opinion on the prospects of fusion nuclear power?

Fusion? Maybe in 20 years? I've been hearing that since I first started writing about thermonuclear fusion. But, honestly, who knows? It's an interesting technology but it's obviously also a very difficult technology.

What's the immediate future—meaning the next five to ten years—for nuclear power in the U.S. if Al Gore wins the presidency, or if George W. Bush wins?

I don't know George W.'s position on this issue. Vice President Gore would seem to need some serious educating in this department from his book *Earth in the Balance*. I would hope that he's pragmatic enough to be educable. If he truly is concerned about the quality of the environment and air pollution, then I would think he would take another look at nuclear power. He should.

What would it take for the American public to be more accepting of nuclear power?

I doubt very much if the United States is going to simply let its nuclear industry slip away. We're now relicensing plants, which is the next phase of nuclear power. Under these conditions, nuclear power is coming in cheaper even than natural gas.

I want to stress again that I think the issue of what sources we use to generate our electricity ultimately concerns human health and welfare, not some argument about whether these are dark corporations taking us over, or whether nuclear waste can be successfully buried. These are questions that have to deal with human lives, with real benefit to the population of this country and the world. It's sad to see these concerns lost in the noise. It's an issue of reeducating the public. When we did "Nuclear Reactions" for *Frontline* several years ago, we interviewed a woman who had been near Three Mile Island who said that her child had been vomiting green bile after the accident. The interviewer asked her, "Have you had the radon checked in your basement?" And she looked disbelieving and said, "No. Should I?" Obviously, there is a lot of educating to do. ■

Changing perspectives on nuclear energy

Perhaps educating journalists and editors will help change the public's perception of nuclear power as an unwise choice for electricity production into the view that it is the "greenest" choice.

BY RICHARD RHODES

I'VE BEEN WRITING about nuclear power issues since the early 1970s, when the Energy Crisis moved them to the foreground. I vividly remember interviewing Philip Fleger, chairman of the board of Duquesne Light, which started up the first demonstration nuclear power plant on the Ohio River at Shippingport, Pa., in 1954.

The economics of the Atomic Energy Commission-sponsored project were favorable—because of AEC subsidy, the plant cost Duquesne only \$5 million—but the basic reason Duquesne went nuclear, Fleger recalled, was pollution control. Pittsburgh was still very much the Smoky City in the early 1950s. It had begun urban redevelopment in the late 1940s, instituting strict smoke control. By the time the AEC solicited bids for the demonstration project, sulfur dioxide controls were under discussion in the Pittsburgh area, well ahead of the rest of the nation.

Duquesne at that time was petitioning to build a coal-fired power plant on the Allegheny River, and citizens were resisting. "We encountered a great deal of harassment and delay from objectors," Fleger told me—objectors to coal, that is, not nuclear power. Fleger added, "It began to look as if we wouldn't be able to complete the plant on time to meet the power demands we were facing." How's that for *déjà vu*? From Fleger's and the Pittsburgh community's point of view, Shippingport was a godsend.

In 1954, nuclear power was generally perceived to be the green form of energy for electrical generation. Nothing whatsoever has changed, factually speaking, in the 46 years since then. Nuclear power is still the greenest

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form of energy for electrical generation, greener even than hydropower or solar if damage to the environment is the measure. What have changed in the intervening years, as you know all too well, are nuclear power's reputation, particularly in the eyes of journalists and editors, and the public's perception of the dangers of radioactivity.

I could multiply examples, but let me mention only a few:

■ I needed a root canal in April. When my dentist wanted an X ray, he asked his assistant to take a "radiograph." I kidded him about it. He said he had patients with serious dental problems who simply refused to be X rayed because they were afraid of radiation.

■ Food-borne bacteria cause some 9000 deaths and more than 100 000 serious illnesses in the United States every year. Many of these deaths and illnesses could be prevented by irradiating food, particularly fresh meat. Irradiation could also increase the shelf life and preserve the freshness of fruits and vegetables, greatly reducing waste. The technology has been mature for at least 40 years, but processors and grocers in the United States still shun it because they fear bad publicity from anti-irradiation activists who claim without warrant that irradiation induces cancer-causing chemical changes in food.

■ The Associated Press covered the story of the steam leak at Indian Point-2 in mid-February. The third paragraph of an AP followup story on March 3, as printed in the *New York Times*, read as follows:

On Feb. 15, radioactive water heated in the reactor leaked from one of the generator's 32,000 tubes into the clean water that surrounds them. As a result, a small amount of radioactive steam discharged into the atmosphere. There were no injuries, and the increase in radioactivity was too small to be measured, officials said. Still, it was the worst accident in the plant's 26-year history. [My emphasis.]

The next day, in a further followup story by a *Times* reporter, the qualifiers were gone. The accident became simply "the most serious incident in the history of the 26-year-old plant."

The Nuclear Energy Institute does an excellent job of addressing these issues, and serves as a highly credible source of information. But I would submit to you that the most

fundamental educational challenge facing you today and in the years ahead is improving the nuclear knowledge of journalists and editors.

I always get a laugh at conferences like this one when I recommend as a primary strategy that each and every one of you adopt a journalist. It's never clear to me whether the laugh is a nervous laugh or a skeptical laugh. But I mean the recommendation seriously, if not literally.

Many journalists and editors, in my experience, don't understand or don't credit nuclear power's environmental advantages in comparison to fossil fuels. They have no mental tables of comparison to assess accident risk, so that "Three Mile Island," for example, is regularly evoked like a mantra in the same breath with "Chernobyl," as if the two accidents were in any sense equivalent. (I remember the near-apoplexy of my late physicist friend Luis Alvarez at the screaming headlines reporting the Chernobyl fallout approaching California bearing *picocuries* of radiation. "Picocuries," Luis would repeat with exasperation; "picocuries!") Worse, journalists start from the assumption that organizations exist primarily to lie, cheat, and defraud the public, so that official information is *prima facie* suspect in their eyes. And they are particularly skeptical of the nuclear power industry.

By "adopt a journalist" I mean invite a journalist or editor to lunch—and to dinner. Connect and communicate, face to face. Journalists don't have time to go back to school and relearn the fundamentals. They generate stories on the fly, by the seat of their pants, with whatever knowledge and bias they've stored up ahead of time or can glean from each other. And since American education today, from kindergarten to graduate school, draws heavily on the received wisdom of environmentalism and is thus pervasively antinuclear, that's what most journalists know and believe. Reeducating them means first of all establishing your credibility with them. Only when they have come to consider you a credible source will they be able to hear the facts with

less bias.

It evidently doesn't occur to most journalists, not even those who write for the *New York Times*, to ask themselves where all the waste goes from coal, oil, and natural gas burning, whether the disposal of fossil fuel wastes is an "unsolved technical problem," or what the environmental persistence might be of nonradioactive wastes from fossil fuel burning (such as sulfur, arsenic, mercury, cadmium, and lead) compared to radioactive wastes with known half-lives.

It doesn't occur to them to ask whether burning coal with its load of natural uranium and thorium might not release more radioactivity into the environment than a nuclear power plant of comparable size. (As you may or may not know, a 1000-MWe coal plant releases about 100 times as much radioactivity into the environment annually as a 1000-MWe nuclear plant. Not that such coal radiation is harmful—it isn't. It may even be beneficial.)

It evidently doesn't occur to journalists and editors to assess accidents and breakdowns in the nuclear power industry in the context of accidents and breakdowns in other industries—by comparison, for example, with Bhopal, with dam overflows and failures, with coal-mine accidents, oil- and gas-plant fires, and pipeline explosions.

There's nothing in the stylebook of any news organization I know that forbids contextual comparisons of this kind. They're very rarely made, probably because they dramatically exonerate nuclear power, which challenges journalists' antinuclear bias and thus induces uncomfortable cognitive dissonance. When I defended nuclear power in debate with the late physicist Henry Kendall on the National Public Radio program "Talk of the Nation" several years ago, even though I have what I believe to be a good reputation for objectivity, I could hear the producer in the background stage-whispering to my interviewer: "Ask him who's *paying* him. Ask him who's *paying* him."

In the century just beginning, two forms of energy will dominate world production: nat-

ural gas and nuclear power. Wood, coal, and oil have all peaked, one after another, as fractions of total world energy production; only natural gas and nuclear power are increasing their share. And because major, complex technologies require more than half a century to spread around the world, no other energy source, such as solar or thermonuclear fusion, can overtake the lead of natural gas and nuclear power across at least the next 50 years.

The challenge—your challenge and mine—is to communicate that promising evolution away from higher carbon energy sources to the public here and abroad, which will benefit from the reduction in pollution, including global warming, that the change will foster. Your industry, by steadily improving its capacity factor, has already made the largest contribution of any U.S. industry to meeting the commitment the United States made at Kyoto to limiting CO₂ releases into the atmosphere.

The United States may lag behind in this evolution because of nuclear phobia. If we do, that will be a lost opportunity for reducing domestic pollution and for contributing our expertise to the world and profiting from that contribution.

Psychologists deal with phobias by doing behavioral retraining, which basically means helping their clients feel emotionally secure enough to accept reeducation. Antinuclear activists, in my experience at least, are largely beyond help. For the activists I've met and debated, nuclear issues are as rigidly defined and as nonnegotiable as abortion is to antiabortionists.

But in the long run, the explicit opposition of antinuclear activists influences public opinion less than the implicit opposition of the media, which is why journalists and editors need to be reassured and reeducated. They, not the activists, are the gatekeepers of public opinion. Journalists and editors need their phobias relieved, to balance their reporting of these vital issues. You know your work better than anyone else. Sharing the good news about nuclear power is a challenge you're eminently qualified to meet. ■■