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The Human Cost of Anti-Science Activism

by Henry I. Miller

A stranglehold on food and medicine

DCTIVISM HAS LONG been part of the fabric of American life. It is often positive, as when it pushes for constraints on undue government intrusion into our lives.

Sometimes, however, activism can be destructive. For instance, activists from nongovernmental organizations (NGOs) and the media, as well as some within the government, have targeted a panoply of products, technologies, and industries that they dislike — pesticides, food additives, chemicals in general, pharmaceuticals, nuclear power, and biotechnology, among others — for opprobrium, over-regulation, and even extinction. And it seems that no stratagem, no misrepresentation, no outright lie is too outrageous for them.

BIOTECH: A FAVORITE TARGET

EBIOTECHNOLOGY HAS BEEN especially victimized by irresponsible activism. A prototypic example is professional activist Jeremy Rifkin's relentless, decades-old antagonism toward recombinant DNA technology, or gene-splicing, applied to the production of innovative new drugs, gene therapy for life-threatening diseases, agriculture, or anything else. Thirty years ago, he and his followers disrupted a public meeting, chanting, "We shall not be cloned," and displaying signs proclaiming, "Don't Xerox Life." That was hardly radical by the standards of the 1970s, but Rifkin's statement that biotechnology threatens "a form of annihilation every bit as deadly as nuclear holocaust" is extreme and baseless, a manifestation of a Big Lie — that biotech is untested, unsafe, unproven, unwanted, and unregulated — which is a mainstay of radical activism.

A broad scientific consensus long has held that the newest techniques of biotechnology are no more than an extension, or refinement, of earlier ones applied for centuries, and that gene transfer or modification by gene splicing techniques does not, per se, confer risk. Rifkin's assertions about biotechnology ignore the seamless continuum that exists between old and new biotechnology and the monumental contributions that both have made to medicine, agriculture, and innumerable scientific disciplines. The late Harvard evolutionary biologist Stephen Jay Gould, by his own admission, tried to be sympathetic to Rifkin's views but was overwhelmed by his "extremism" and "lack of integrity," and by his showing "no understanding of the norms and procedures of science." Gould characterized Rifkin's anti-biotechnology book, *Algeny*, as "a cleverly constructed tract of anti-intellectual propaganda masquerading as scholarship"; he said he had not "ever read a shoddier work."

And then there is Greenpeace, which may have attained the nadir of anti-biotechnology activism when, in 1995, the organization announced that it had "intercepted a package containing rice seed genetically manipulated to produce a toxic insecticide, as it was being exported . . . [and] swapped the genetically manipulated seed with normal rice." The rice seeds stolen by Greenpeace had been genetically improved for insect resistance and were



en route to the International Rice Research Institute in the Philippines from the Swiss Federal Institute of Technology in Zurich. The modified seeds were to be tested to confirm that they would grow and produce high yields of rice without requiring lots of chemical pesticide. In the Philippines and many developing countries in Asia where rice is a staple, disease-resistant and insect-resistant rice are of course desperately needed, but this fact has not dissuaded Greenpeace from its opposition. The organization has actually told inhabitants of developing countries concocted tales of gene-spliced crops causing homosexuality, illness, and baldness. In Africa, it has promulgated the myth that improved crops cause impotence and increase the spread of HIV/AIDS. Doreen Stabinsky, a so-called “science advisor” to Greenpeace International, has claimed that cotton fiber, animal feed, and cotton-seed oil from Bt-cotton plants can lead to an increase in the occurrence of antibiotic-resistant bacteria, including those that cause tuberculosis and gonorrhea. There is absolutely no evidence for such claims.

It is not only radical actors which perpetuate myths and phony science. Groups such as the Pew Initiative on Food and Biotechnology, the Center for Science in the Public Interest (CSPI), and Environmental Defense, which are supposedly more moderate, are in fact largely intransigent in their opposition to biotechnology. Yet they are subtler and therefore more insidious than the anti-biotech players who show their colors unambiguously. The reports published by the Pew Initiative on Food and Biotechnology, which was lavishly funded until it lost its financial support and folded in 2007, are worth exploring. For years, they received extensive media and government attention, largely because Pew touted itself as occupying the thoughtful, disinterested middle ground in the biotechnology debates.

Pew’s 2003 report “Public Sentiment About Genetically Modified Food,” which supposedly reflected general attitudes toward gene-spliced foods, was instead a disingenuous pastiche of truisms, half-truths, and sleight-of-hand. The survey on which it was based was nothing more than a push poll, more intended to sway public opinion than measure it. It found that “Americans’ knowledge about [gene-spliced] foods remains low,” with 54 percent saying they had heard nothing or not much about them. Then, without enlightening the subjects or offering them any sort of context, the survey went on to pose leading questions about safety and regulation. The 2004 report was no better. Only 32 percent of those surveyed reported they had heard “a great deal or some” about gene-spliced foods (a 12-point decline since 2001, in spite of biotech’s expanding applications and successes), which suggests that fully two-thirds of the sample were offering completely uninformed opinions. Unsurprisingly, like the previous survey, the 2004 version revealed that consumers are in favor of safe food: Eighty-five percent wanted regulators to ensure “that [gene-spliced] foods are safe before they come to market,” and more than 90 percent favored the labeling of gene-spliced foods and food ingredients.

EXPLOITING SCIENTIFIC ILLITERACY

WHE PEW APPROACH to polling described above is reminiscent of that used by the Idaho junior high school student Nathan Zohner, who found that 86 percent of survey respondents thought the substance “dihydrogen monoxide” should be banned when they were told that prolonged exposure to its solid form causes severe tissue damage, exposure to its gaseous form causes severe burns, and it has been found in excised tumors of terminal cancer patients. Only one in 50 of Nathan’s survey respondents correctly identified dihydrogen monoxide as water, or H₂O. As any pollster (and common



sense) will tell you, it's not hard to design survey questions to elicit a desired response — a trick that Pew mastered.

Because public understanding of science is so minimal, hoodwinking consumers on surveys isn't difficult. A study by the U.S. National Science Foundation found that fewer than one in four know what a molecule is, and only about half understand that the earth circles the sun once a year.

“Public Sentiment About Genetically Modified Food” was a disingenuous pastiche of truisms and half-truths.

The public's muddled view of biotechnology in particular is reflected in the results of a survey of 1,200 Americans released in October 2003 by the Food Policy Institute at Rutgers University. In an 11-item true/false quiz that was part of the survey, more than half of the subjects received a failing grade (defined as less than 70 percent correct answers). Only 57 percent recognized as false the statement “ordinary tomatoes do not contain genes, while genetically modified tomatoes do.” Perhaps most shocking of all, only two thirds knew that eating genetically modified fruit would not alter their own genes! One wonders whether the one-third who got this question wrong think that eating rabbit stew would cause them to hop.

The Pew surveys took advantage of respondents' ignorance about key facts: 1) with the exception of wild berries and wild mushrooms, wild game, and fish and shellfish, virtually *all* the organisms — plants, animals, microorganisms — in our food supply have been modified by one genetic technique or another; 2) because the techniques of the new biotech are more precise and predictable than their predecessors, biotech foods are likely to be even *more* safe than other foods; 3) virtually 100 percent of residents of North America consume gene-spliced foods *daily*, inasmuch as they're contained in practically every product made with corn oil, high-fructose corn syrup or other corn products, or soybean oil or soy protein; 4) food producers are already legally responsible for assuring the safety of their products, and the Food and Drug Administration does not normally perform safety determinations but primarily conducts surveillance of marketed foods and takes action if any are found to be adulterated or mislabeled; and 5) unwarranted, excessive regulation, including unnecessary labeling requirements, discourages innovation, and imposes costs that are passed along to the consumer and are a disproportionate burden on the poor.

What “location, location, location” is to real estate, “context, context, context” is to public policy — but the anti-biotech NGOs avoid context like the plague because they know that it undermines the impact of their fear-mongering. Surveys by Pew and other similar groups purposefully exploit consumers' (understandable) lack of familiarity with the nuances of both the new biotech and the way that food is currently regulated.

ACTS OF BAD FAITH

THE “GOLDEN RICE” saga is one of the vilest examples in the annals of cynical anti-technology activism. In 2000, a university research team based in Switzerland and Germany announced an extraordinary scientific achievement that resulted in the addition of beta-carotene, or provitamin A (the precursor of the vitamin), to rice grains. The creation of this “Golden Rice” (so called because of its yellow color) was widely hailed as



an example of how gene-splicing can benefit society, especially the inhabitants of less-developed countries. Vitamin A supplementation of the diet prevents blindness and death, and could be life-saving to the millions of children who are vitamin A deficient.

Activists lost no time in attacking even this beneficent and humanitarian innovation. First, they claimed that the rice itself would be unhealthy, because too much vitamin A can be toxic. That claim was rapidly discredited by nutritionists, who explained that Golden Rice is enhanced for beta-carotene, the chemical *precursor* of vitamin A that is not toxic at any dose. (It is converted in the body to vitamin A only as long as there is a deficiency.) Then, torturing the data while executing a convenient flip-flop, Greenpeace declared that Golden Rice had *too little* beta-carotene and that an adult “would have to eat around 9 kg [19.8 pounds] of cooked rice daily to satisfy his/her daily need of vitamin A.” Greenpeace’s Benedikt Haerlin threatened “direct action” against test plants in the field, and its radical media allies, including the UK’s Guardian, rushed to support its cause. The articulate yet know-nothing writer Michael Pollan took to the *New York Times Magazine* to dub Golden Rice “the great yellow hype.” They all condemned the developers of Golden Rice for working with for-profit companies to make seed available to the poor.

These reactions are the most detestable sort of distortion and misrepresentation. Even small amounts of vitamin supplementation to treat deficiencies can have huge effects, and the second-generation varieties of Golden Rice contain abundant amounts of such supplementation. Golden Rice and other similar products can be life-enhancing, life-saving adjuncts to persons with vitamin A deficiency — but only if their producers can overcome NGO opposition, media misreporting, and regulatory excesses, and get the new varieties to the farmers who wish to grow it. (It is unlikely to be widely available until at least 2011.)

Compared to such mendacious militancy against biotech, those who “merely” want more regulation of it can appear moderate. But correspondence published in the journal *Science* in 2003 opened a window onto the motivations of the so-called moderate wing of the anti-biotech lobby. Steven H. Strauss, a professor of forest science at Oregon State University, had proposed in an article in that journal a very modest streamlining of the regulation of negligible-risk genetic constructions of gene-spliced plants. The reform that he suggested would remedy, in a small way, the irreconcilable paradox in the current federal oversight of plant biotechnology: that the use of the most precise and predictable techniques — viz., gene-splicing — is far more stringently regulated than techniques that are less precise and predictable. In other words, Strauss was lobbying for regulatory proportionality: the basic principle that the degree of oversight should be commensurate with the degree of risk.

Jerry Cayford, of the Washington, D.C.-based Resources for the Future, responded in a letter that was published in *Science*: “Steven H. Strauss makes a plea for less onerous field trial regulations for less radical genetic modifications . . . thereby helping smaller companies and public-sector investigators to be able to afford to try out crop variants. Unfortunately, his pleas ignore the politics of the genetically modified (GM) food debate. . . . *Strauss’s proposal, reasonable as it may be, asks critics to surrender a major bargaining chip — strict regulation of field trials — but offers them nothing in return*” (emphasis added). In other words, although it would favor the interests of consumers, researchers, and the natural environment, sensible regulatory policy is not a goal in itself but is merely a bargaining chip to be held or given up in a negotiation among radical groups, business interests, academic researchers, and government regulators.



Strauss's response put Cayford in his place. Deploring Cayford's "hostage-taking" attitude, he observed that "the costs to people and environment of effectively losing genetic engineering from most agricultural sectors as a result of excess regulation are too great for so simple-minded a political approach." He added that there are few practices more "democratizing" than protecting and promoting the ideas and work of society's innovators when applied to improve food quality, dependability, and affordability." The coup de grâce in Strauss's response serves as a worthy epilogue to the unworthy efforts and venal motivation of anti-biotech activists, whether they are of the blatantly belligerent or subtly shifty variety: "With the high level of regulation and stigma successfully implanted in places such as Europe, policies and attitudes may take a generation or more to change course. The opportunity costs in dollars, and costs to human health and environment, will be incalculable."

YELLOW JOURNALISM

X NCONSTRUCTIVE ACTIVISM COMES not only from NGOs but also from the mainstream media. The consistently biased, inaccurate reporting of *New York Times* environmental reporter Keith Schneider during the 1980s actually induced some in the biotech community to devise a Keith Schneider Yellow Journalism Prize. The *Times* seems committed to keeping it in the family; the current contenders include Andrew Pollack, who writes for both the business and science sections; Denise Caruso, who writes frequently on biotechnology (almost always antagonistically and inaccurately); and Michael Pollan, who pens anti-technology, anti-business screeds for the *Sunday Magazine*

Pollack approaches the subject as though the genetic engineering of plants was basically new and its risks unknown.

Pollack's "Biotech's Sparse Harvest" on February 14, 2006, is a strong contender for the award. His thesis: "At the dawn of the era of genetically engineered crops, scientists were envisioning all sorts of healthier and tastier foods, including cancer-fighting tomatoes, rot-resistant fruits, potatoes that would produce healthier French fries and even beans that would not cause flatulence. . . . Resistance to genetically modified foods, technical difficulties, legal and business obstacles and the ability to develop improved foods without genetic engineering have winnowed the pipeline." While Pollack misses many of the nuances about the power, precision, and predictability of biotechnology applied to agriculture and food production, he devotes ample ink to anti-biotech activists, including the Pew Initiative on Food and Biotechnology and the radical Friends of the Earth. Memo to Mr. Pollack: All points of view on scientific and technological issues are not created equal. Good journalism is not served by a "balance" that creates a fake moral equivalence between those who hold discredited, doctrinaire views and those with supportable, legitimate viewpoints — not unlike equating creationism with Darwinian theory.

Reflecting the views of biotech's antagonists, Pollack approaches the subject as though the genetic engineering of plants was fundamentally new and its risks unknown. He ignores the context of new and conventional biotech applied to agriculture. The use of gene-splicing to craft small and precise genetic changes that enhance or introduce desirable traits into plants has been a stunning technological success, but excessive and unscientific regulation and the intractable opposition of activists have slowed its translation into consumer-friendly foods. Contrary to the implication in Pollack's article, gene-spliced



“potatoes that would produce healthier French fries” (because they have a higher than usual starch content and, therefore, absorb less oil) were developed, but they were not a commercial success because anti-biotech activists bullied the fast-food chains into rejecting them.

Pollack’s assertion that “Developing non-allergenic products and other healthful crops has also proved to be difficult technically” is simply untrue. A vast spectrum of such plants has been crafted by laboratory scientists, but they cannot afford the unnecessarily inflated regulatory costs to test the plants in the field. Excessive and unwise regulation, spurred by the drumbeat of activists’ opposition, is a major reason that products in the development pipeline “do not include many of the products once envisioned,” to quote Pollack. Unscientific and discriminatory EPA and USDA regulatory policies make field trials with gene-spliced plants 10 to 20 times more expensive than a similar plant engineered with less precise, less predictable conventional genetic techniques. Unlike pharmaceutical development, agricultural R&D is a low-budget enterprise that leads to largely incremental, almost indiscernible advances, and unscientific regulation and hugely inflated regulatory costs make the development of many promising and valuable food products uneconomical.

In a “news” piece in August 2006, reporter Debbie Carlson managed to lend credence to virtually every aspect of the activists’ Big Lie.

Finally, Pollack’s disparaging assertion that “industry . . . has been peddling the same two advantages — herbicide tolerance and insect resistance — for 10 years,” is puzzling. (And “peddling” is an oddly disparaging word choice for someone writing what is supposedly a straight news article.) These traits have been of monumental importance — not only to farmers’ bottom lines, but to occupational health and the natural environment. Enhanced pest resistance in plants has obviated the need for hundreds of millions of pounds of chemical pesticides (thereby reducing environmental and occupational exposures), and herbicide tolerance has made possible a shift to more benign herbicides and to environment-friendly no-till farming (which produces less runoff of chemicals, soil erosion, and carbon dioxide release).

Although the *Times* boasts perhaps the most impressive and consistent reportorial antagonism toward biotechnology, it is not alone among major media outlets. In a “news” piece in August 2006, Wall Street Journal reporter Debbie Carlson managed to lend credence to virtually every aspect of the activists’ Big Lie. Carlson’s inclusion of comments primarily from intransigent, ideological, long-time opponents of agricultural biotechnology — instead of from bona fide experts on the technology and its regulation — represents either blatant bias or inexcusable reportorial carelessness. The statements of the anti-biotech activists quoted in the article are predictably erroneous and misleading. The claim of longtime anti-biotech campaigner Jane Rissler that USDA is “not required to do an ecological/biological implications review” is simply wrong. And the touting of “marker-assisted selection” for genetic improvement of plants — an old technique of limited usefulness — is another attempt by activists to disparage the superior technique of gene-splicing, which is, in fact, more precise, predictable, and safe, as well as far more versatile than older methods.



Carlson's assertion that "laws regulating biotechnology will need to keep up with the work of scientists" is baseless and also misleading. What the laws and regulations need to keep up with and conform to is common sense and the basic rules of oversight; for decades, regulation has been risk-averse and inhibitory. Case-by-case reviews are performed on every gene-spliced plant variety that is to be field-tested — in defiance of the broad and long-standing scientific consensus that gene-splicing is essentially an extension, or refinement, of less precise and predictable genetic techniques. (Conventional genetic modification, by contrast, is essentially exempt from regulation.) Speculation by activists about the need for more regulation is merely a strategy intended to obstruct progress.

Biotechnology is not the only current victim of hypocritical, cynical, antisocial activism, of course.

Carlson lacks perspective on the recent history of the genetic improvement of plants. If she had bothered to consult some genuine experts, she would have discovered that the scientific consensus holds that gene-splicing is an improvement over blunter, brute-force genetic techniques (which receive neither attention from activists nor special regulation by government). One such older technique, in use since the 1950s, is induced-mutation breeding, which involves exposing seeds or cells to ionizing radiation or toxic chemicals to induce random, desirable genetic mutations. Thousands of mutation-bred crop varieties have been commercialized in North America and Europe, and since the 1930s plant breeders have performed "wide cross" hybridizations in which large numbers of "alien" genes are moved from one species or one genus to another to create plant varieties that cannot and do not exist in nature. Common commercial varieties derived from wide crosses include tomato, potato, oat, rice, wheat, corn, and pumpkin, among others. When they use these pre-gene-splicing technologies, plant breeders and food producers lack knowledge of the exact genetic changes that produced the desirable traits; and more important, they have no idea what other changes have occurred concomitantly in the plant, including those that could raise levels of toxins or alter the ability to cause allergic reactions. Greater precision is what makes gene-splicing superior — both more versatile and safer.

Finally, Carlson is incorrect in stating that the commercialization of drought-resistant crops is "far away," or that "it is too early to predict what regulatory trials will be required." Their development is advanced, many are already in field testing in various parts of the world, and their evaluation is, in fact, quite straightforward and not very different from the thousands of gene-spliced plant varieties possessing myriad new traits that have been reviewed and approved by regulators.

Enhanced drought-resistance in commercial crops will be an extraordinary advance, perhaps the most important of any now in development. Fresh water is in increasingly short supply in much of the world. Irrigation for agriculture accounts for roughly 70 percent of the world's fresh water consumption — even more in areas of intensive farming and arid or semi-arid conditions — so the introduction of plants that grow with less water would allow much of that essential resource to be freed up for other uses. Especially during drought conditions — which currently plague much of Southern Europe, Africa, Australia, and the United States — even a small percentage reduction in the use of water for irrigation could result in huge benefits, both economic and humanitarian.



Carlson's article did not merely lack "balance." In fact, she could not have salvaged the piece even with a few quotes from bona fide experts on biotechnology and agriculture: The activists' outright lies make it irredeemable.

BIOTECH: THE TIP OF THE ICEBERG

E IOTECHNOLOGY IS NOT the only current victim of cynical, hypocritical, anti-social activism, of course. Consider activists' intractable antagonism to the spraying of pesticides to kill insects that carry disease. The use of any pesticides — let alone the possible resurrection of the use of DDT, which was banned in the United States several decades ago — has been greeted by near-hysterical resistance from environmental activists, who have condemned the killing of mosquitoes as "disrupting the food chain." And several years ago New York's Green Party literature declared, "These diseases only kill the old and people whose health is already poor." One supposes we should feel indebted to these extremists for pointing out that mosquito-borne diseases are really a social good, a means for controlling spiraling health-care costs.

Since the banning of DDT, insect-borne diseases such as malaria and dengue have been on the rise. The World Health Organization estimates that malaria kills about a million people annually, and that there are between 300 million and 500 million new cases each year. Not only did government regulators underplay scientific evidence of the effectiveness and relative safety of DDT when they banned it, but they also failed to appreciate the distinction between its large-scale use in agriculture and more limited application for controlling carriers of human disease. Although DDT is a (modestly) toxic substance, there is a world of difference between applying large amounts of it on crops, as American farmers did before it was banned, and using it sparingly to fight mosquitoes and other disease-carrying insects. A basic — and ancient — principle of toxicology is that the dose makes the poison. The regulators who banned DDT also failed to take into consideration the inadequacy of alternatives for certain purposes. Because it persists after spraying, DDT works far better than many pesticides now in use, some of which are toxic to fish and other aquatic organisms.

Another example of a useful chemical in the crosshairs of activists is the fat substitute called Olestra. After an eight-year review — one of the most intensive and comprehensive evaluations of a food in history — in 1996 the FDA concluded that the product is safe for use in certain foods. From the outset, the CSPI has conducted a campaign of intimidation and disinformation against not only the product itself but against the regulators and independent advisors who evaluated and approved it.

Olestra is a potential boon to public health in the United States, where one person in three is obese and diets are dominated by fat. Americans have bought more than 10 billion servings of snacks cooked with Olestra. If they had chosen to eat regular, full-fat chips instead, they would have consumed more than an extra half trillion calories and 100,000 tons of fat. Ironically, CSPI has consistently decried the amount of fat in the American diet, but since regulatory approval of Olestra, the organization has abandoned objectivity in its attacks on the product. Its executive director, Michael Jacobson, called Olestra a "public health time bomb," adding that then-FDA Commissioner David Kessler "has lit the fuse." Jacobson appeared on ABC's World News Tonight to tell the American public that "the only kind of label notice that would be acceptable to us would be . . . a skull and crossbones."



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Inexplicably, even scientific and medical journals' activism at times contributes to public confusion about issues of safety and risk. In May 2007, the journal *Cancer*, a publication of the American Cancer Society (ACS), ran a special online supplement which concluded that breast cancer is caused by trace chemicals in the environment — including pesticides, chemicals in cosmetics, and substances such as PCBs and DDT. Elizabeth Whelan, president of the New York-based American Council on Science and Health, observed that the paper contained several obvious and serious flaws that should have caused it to fail peer review by experts. She also pointed out the damage caused by the popular press's uncritical acceptance of such findings, and that the journal and the ACS performed a grave disservice. Dr. Whelan suggested that instead of bolstering the unproven notion that “inescapable, invisible, hostile chemical agents” are a major cause of cancer, public health activists should be reminding women to take prudent measures such as getting regular mammograms and being vaccinated against human papillomavirus.

Another prominent target of misplaced activism from NGOs, journalists, and journals is the pharmaceutical industry, which for a half-century has been one of the nation's most innovative and profitable. It is not unreasonable to want lower costs and wider availability of drugs (as I do), but some activists are demanding nothing less than an end to the protection of drug companies' intellectual property — although this is an industry whose innovators on average expend 12–15 years and more than a billion dollars in direct and indirect costs to bring a drug to the American market. Only about 20 percent of drugs that begin clinical testing and proceed through trials are eventually approved for marketing; and even more ominously, only three out of ten drugs that are finally marketed recoup their development costs.

The stock-in-trade of many of the drug industry's attackers is the same used by Rifkin, Greenpeace, Pew, CSPI, Union of Concerned Scientists, and the rest: The Big Lie, repeated again and again, with endless variations and facets. These include accusations that innovator drug companies are really sponging off government-funded academic research, so, in effect, patients pay for drugs twice; the industry fails to make expensive drugs available to developing countries; companies irresponsibly suppress the results of “negative” clinical trials; drug development is insufficiently regulated; and protection of companies' intellectual property — primarily via patents — is an unfair “subsidy.”

Many of these charges are demonstrably false. In 1999, for example, the NIH thoroughly investigated whether its research funding commonly leads to the development of pharmaceuticals, the profits from which taxpayers might be entitled to share. Of 47 drugs that had earned revenues of \$500 million or more, NIH support had figured significantly in only four, two of which were actually the same drug. The NIH supports primarily pre-commercial, fundamental research into the biochemistry, physiology, and molecular biology of cells and organisms, in health and disease.

A CASCADE OF UNREASON

WHE ACTIONS OF irresponsible activists and their allies are most damaging to the weakest and most vulnerable among us. When the *Titanic* steamed into an iceberg, the disaster was not democratic: Fifty-six percent of third-class women passengers



died, while only four of the 143 first-class women passengers died. Just as the poor perished in disproportionate numbers because they were traveling near or below the ship's waterline, when it comes to overregulation, developing countries are likely to be closest to the "waterline." Flawed public policy that prevents the diffusion and availability of critical technologies and products is far more lethal than any iceberg.

Wellesley College political science professor Robert Paarlberg has accused NGO activists of bearing a large share of the blame for the dire situation that now prevails in Africa, where malnutrition and starvation are rampant, agricultural practices remain primitive, and unlike in the rest of the world, productivity is deteriorating. Agricultural production there is currently 19 percent below the level of 1970, and the largely agrarian countries are forced to import food. In his book *Starved for Science: How Biotechnology is Being Kept Out of Africa*, Paarlberg observes that "NGOs from rich countries too often depict modern agricultural science as the problem rather than the solution," and "even as NGOs warn Africa away from western science in the farming sector, they eagerly promote an extension of western regulatory standards into Africa." In other words, "Importing the latest farming technologies from the West is bad, but importing the latest in highly precautionary biosafety regulation is good." The unconscionable outcome: "Growing more regulations in Africa now gets higher priority than growing more food."

The NGOs characterize gene-spliced crops as particularly dangerous because of their potential to replicate the "tragedies" inflicted on the poor in the developing world by the original Green Revolution, which was based on improved agronomic practices and new genetic varieties of crops. Paarlberg wonders, as do I, how the avoidance of famine and reduction of poverty by raising agricultural productivity could possibly be considered a tragedy.

Another major target of misplaced activism from NGOs, journalists, and journals is the pharmaceutical industry.

In *The March of Unreason*, the British polymath Dick Taverne (aka Lord Taverne of Pimlico) analyzes the nature of contemporary activism. He posits that "in the practice of medicine, popular approaches to farming and food, policies to reduce hunger and disease and many other practical issues, there is an undercurrent of irrationality that threatens science-dependent progress and even [threatens] the civilized basis of our democracy," and that we ignore this trend at our peril. This irrationality emanates, he believes, from a "new kind of fundamentalism" that has infiltrated many activist campaigns — an indiscriminating Back-To-Nature fervor that views science and technology as the enemy and as a manifestation of an exploitative, rapacious, and reductionist attitude toward nature. It is no coincidence, according to Taverne, that eco-fundamentalists are strongly represented in anti-globalization and anti-capitalism demonstrations around the world.

What drives this ominous trend? A "politico-legal-media complex" peddling fear in the guise of promoting safety that has effectively banished agricultural biotechnology from Europe and Africa, has the chemical industry on the run, and has the pharmaceutical industry in its crosshairs. The motivations for the opposition to critical and even life-saving technologies and products are complex, but they are not new. In fact, they are strikingly similar to Alexander Hamilton's summary of the reasons that the United States Constitution would not, in some quarters, receive a fair hearing. In October 1787, in the first installment of



what was to become the *Federalist Papers*, Hamilton discussed the formidable obstacles to acceptance of the new Constitution. Some would oppose it, Hamilton predicted, out of fear that ratification would threaten their wealth and power. Others would reject it because they hoped to profit from the political disarray that would ensue. The opposition of still others resulted from “the honest errors of minds led astray by preconceived jealousies and fears.” Certainly, we see all of these contributing to today’s irresponsible activism toward innovative technology and products.

Historian Richard Hofstadter’s classic essay about religious and political movements in American public policy, “The Paranoid Style in American Politics,” analyzed the psychology of misguided activism. He called the religious and political activists’ obsession “paranoia” and observed that “the central image is that of a vast and sinister conspiracy, a gigantic and yet subtle machinery of influence set in motion to undermine and destroy a way of life.” Hofstadter identified a characteristic “leap in imagination that is always made at some critical point in the recital of events.”

How ironic that these activists imitate the very conspiracies that they imagine are threats to society. Viewed from Hofstadter’s model of the paranoid style, the “conspiracy” here is large, profitable, multinational companies deciding which products to pursue in order to maximize profits, and over-promoting them; while the activists’ “leap in imagination” resides in the conviction that stimulating competition and permitting the marketplace to decide the success or failure of seeds, drugs, computers, and toothpaste — that is, the free-market model — somehow is bad for consumers, the natural environment, and, in particular, the inhabitants of less-developed countries.

Anti-technology, anti-business activists — whether they are found in NGOs, government, or the media — claim to fear a world in which exploitative, rapacious, multinational corporations conspire to strip away individual choice from the world’s farmers and consumers. Yet it is *they* who are guilty of the mendacity and manipulation they imagine they see in others; *they* who are guilty of stripping away the freedom of researchers to research, farmers to farm, doctors to doctor, and consumers to consume vaccines, drugs, and foods that can be life-saving. If their actions are unopposed, regressive public policy will reduce significantly the pursuit of knowledge and production of wealth worldwide.

Henry I. Miller, M.D., is a research fellow at the Hoover Institution. From 1977 to 1994, he was an official at the U.S. National Institutes of Health and Food and Drug Administration. He is co-author (with Gregory Conko) of *The Frankenfood Myth: How Protest and Politics Threaten the Biotech Revolution* (Praeger), chosen by *Barron’s* as one of the 25 Best Books of 2004.

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Silencing the equivalent gene in humans that is silenced in this genetically modified wheat holds the potential of killing people. But it gets worse. Silenced genes are permanently silenced and can be passed down the generations.Â Heineemann apparently did an analysis based on the sequence of the SEI and SEII genes, comparing them against the human genome and looking for matches. He found them in the gene for the enzyme mentioned by Judy Carman. In humans, the equivalent gene is known as glucan (1,4- α), branching enzyme 1, abbreviated GBE. The Soviet science was based on the anthropological understanding of man as a tabula rasa, which made it possible to explain the omnipotence of Soviet pedagogy as well as the unswerving belief that it was possible to educate every child into a true member of the socialist society. The present study provides insight into the disciplining of the left-handed childrenâ€™s bodies and minds using pedagogical tools that was being conducted in Soviet Latvia.