CHAPTER 16

When Outsiders Can Be Effective

The examples of public interest science activities described in the preceding chapters are extremely varied. They involved the courts, Congress, federal agencies, and state and local governments. Some fights were over in a matter of months while in other cases the battle wore on for many years. But there is a unifying theme in all these cases: they all involved scientists and citizen groups trying to change government policies by presenting their criticisms and recommendations as effectively as they could in the most favorable forum that they could find. In this chapter we try to abstract some of the lessons that these case studies have to offer about when and how outsiders can be effective.

Easy Fights

Sometimes, when there are no great vested interests involved, it is not difficult to change government policy. The practice in question may be simply a matter of thoughtlessness, and thus when it becomes a political embarrassment the agency responsible may move quickly to rectify the situation. This was what happened twice, for example, after the Colorado Committee for Environmental Information disclosed that the Army was storing nerve-gas bombs under the approach path to Denver's airport. The plan to send twenty-odd trainloads of chemical weaponry rumbling through cities across the country for eventual dumping in the Atlantic Ocean off New Jersey was the Army's idea of an easy way out of its embarrassment. Then, when the proposed rail shipment was revealed and provoked general outrage, the Army quickly switched signals and agreed to follow a National Academy of Sciences panel's recommendation to detoxify the obsolete gas in place. Then, when the public relaxed, thinking that the issue was settled, the Army relaxed, too, and the detoxification program

wallowed in technical difficulties–again the easy way out. Most recently, in summer 1973, the Army changed course once again and agreed to begin detoxifying the nerve gas bombs immediately in response to renewed pressure from the citizens of Denver.

In contrast to this case, where the resistance to changing the criticized practices was lackadaisical, the critics of the federal ABM, SST, and pesticide-regulation programs encountered the most bitter opposition. Here they were attacking policies that involved billions of dollars. As a consequence, the battles were rough and prolonged and required the active involvement of large numbers of citizens in addition to scientists.

Hard Fights

In hard-fought cases the success of the outsiders depends upon a number of factors, including the timeliness of the issue, whether it poses a personal and obvious danger to individual members of the middle or upper class public, the existence of an appropriate forum, the special visibility of certain issues in particular localities, and the credibility of the public interest scientists themselves.

TIMELINESS

The influence of scientist-advocates has often depended upon the timeliness of an issue. Thus, after Bo Lundberg and others had denounced the SST for years with little apparent effect, the new environmental movement in the late 1960s came to see the SST as a symbol of all that is destructive to the environment–and found it a ready-made issue complete with documentation.

Similarly, in the case of defoliation in Vietnam, the protests of a few biologists and ecologists went unheard for several years until the American public became disgusted with the entire United States Indochina policy. Only then was the American Association for the Advancement of Science willing to take the step of funding the Herbicide Assessment Commission's expedition to Vietnam. And when the HAC returned, it found an audience willing to hear its distressing findings.

Finally, in yet another case, the ABM became a popular issue in part because the dissenting scientists took their case to the public at a time when the insatiable appetite of the military-industrial complex was becoming a matter of popular concern. Cost overruns and the failure of new weapons systems to meet their performance specifications, along with the well-advertised mismatch between the Army's words and deeds in Indochina, had eroded the public's usual willingness to provide the Pentagon with a blank check.

PERSONAL AND OBVIOUS DANGER

One feature that all these public campaigns have in common is that their success depended on large numbers of people being able to see the technologies

under attack as a potential threat to themselves personally. Consider the ABM debate. For years, scientists and strategists had argued the relative merits of various nuclear weapons systems, but the average educated person generally ignored the debate. The matter of strategic weapons was cloaked in technical jargon and military secrecy, and their destructiveness, while undeniably enormous, seemed remote and impersonal. But when the Johnson administration decided to place Spartan antimissile missiles armed with multimegaton hydrogen bombs in the suburbs of some of the nation's largest metropolitan areas and it was pointed out that an accidental explosion would have very obvious and personal consequences for large numbers of people, the reaction of suburbanites was direct and politically potent. The Nixon administration was forced to ban the ABMs to faraway North Dakota where they were given a new mission: guarding missiles instead of people.

William Shurcliff made the issue of the SST similarly direct and personal. He pointed out that the sonic boom from each transcontinental supersonic transport flight would annoy everyone in a path some fifty miles wide stretching from coast to coast. The popular response finally forced the government to promise that SSTs would not be allowed to fly over the United States.

In both of these cases the government moved to accommodate the public's concerns in an attempt to save the programs. But in neither case did the political reexamination of these programs stop at this point. The "bombs in the backyard" and the sonic-boom issues served to make the ABM and SST programs respectively visible to Congress and the nation, and they remained front-page news for some time thereafter. An overall reexamination of these programs followed which ultimately led to their demise.

AN APPROPRIATE FORUM

Not every issue conjures up in the minds of the public the fear of a mushroom cloud, of a picture window broken to shards by a sonic boom, or of some other such dramatic event. And the public does not and cannot respond effectively to all of the important issues which are presented to it directly. Fortunately society offers other, less political forums in which some of these issues can be dealt with–in particular, judicial and administrative hearings.

The case of DDT is a good example. The steadily accumulating level of DDT in the biosphere worried nature lovers, who saw the damage already being suffered by wildlife. But the danger to man, even when articulated by Rachel Carson in her powerful book *Silent Spring*, was not clear to the general public. Opposition to the use of DDT was largely limited to "birdwatchers" and scientists.

Enter the Environmental Defense Fund. Bypassing the politically entrenched pro-DDT forces in the Agriculture Department and Congress, the EDF sued in the courts to block unnecessary use of DDT on Long Island and then in western Michigan. Although the courts ultimately refused to assume jurisdiction, the evidence presented–of DDT's lack of efficacy, ecological harmfulness, and likely carcinogenicity–convinced local officials to stop using it anyway. The EDF kept

up the legal pressure, and ultimately, after several rounds in the District of Columbia's Court of Appeals, they forced the federal government to ban DDT altogether.

The courts. The role which the courts played in this case is fairly typical. They did not themselves decide the merits. Rather, they considered whether the responsible government agencies had taken adequate account of the hazards involved in the use of DDT. This allowed the opponents to put the case against DDT into the record, after which the court would as often as not agree with them that the government agency had not done its job properly and would order the agency to try again.

It might seem to be a futile gesture to return an issue in this way to an agency which is politically committed to a particular policy, but in practice this has not been so. A court decision that an agency has not done its job properly can be a tremendous blow to that agency's credibility and can, for example, encourage a previously reluctant state government to make up its own mind. This seems to have been the effect, in a number of states, of the decisions of the U.S. Court of Appeals on the suits brought by the Environmental Defense Fund against the U.S. Department of Agriculture and the Environmental Protection Agency.

Recent developments in the law, particularly the National Environmental Policy Act of 1969 with its requirement of comprehensive "environmental impact statements" on federal actions significantly affecting the quality of the human environment, have greatly increased the jurisdiction of the courts on environmental issues. Thus, the courts can provide an alternative forum for scientist action in issues that for reasons of technical complexity, lack of public interest, or political entrenchment of vested interests are unsuitable for a public campaign aimed at Congress. A small number of scientists can have a tremendous impact in the courts if they have a good case and are able to call upon their colleagues for expert testimony. Only a half-dozen scientists organized the entire Environmental Defense Fund campaign against DDT, but their efforts were supported by the testimony of more than a hundred expert witnesses.

Administrative hearings. The hearing on DDT held by the Wisconsin Department of Natural Resources illustrates another forum for public interest science: the administrative hearing. Other examples are the protracted administrative hearings on the effectiveness of emergency core-cooling systems begun in January 1972 by the Atomic Energy Commission and the administrative hearings on DDT held by the Environmental Protection Agency in 1971 and 1972. Each of these hearings allowed critics to lay out at least some of the issues for the record, irrespective of the sympathies of the sponsoring agency. Even when the finding of the hearing examiner was adverse to the critics' cause—as occurred with DDT—other interested groups were able to draw their own conclusions. Thus, the Administrator of the Environmental Protection Agency disagreed with the hearing examiner and found the case against DDT persuasive. And on the nuclear safety issue some influential segments of the media were shocked by what the hearing record showed of the internal workings of the Atomic Energy Commission, and the AEC, under a new chairman, did some house-cleaning as a result.

LOCAL DEBATES

A number of our case studies involve local controversies which grew into national debates. This is what happened after the Environmental Defense Fund had put its show on the road for two years. The issue had developed to the point where it could play to the audience in Washington.

The EDF has applied this technique to other issues. A majority of its hundred-odd current legal actions concern local rather than national issues: saving an unspoiled river, stopping an industrial polluter, or suing for changes in state electricity rate structures. But the EDF Board of Trustees tries to choose its cases so that they will establish precedents applicable elsewhere.

As another example, the national controversy over the safety of nuclear reactors began when the issue was introduced into the licensing hearings for particular reactors. Similarly, the local controversy in Colorado over the storage of nerve gas at the Rocky Mountain Arsenal served to dramatize the national debate over U.S. chemical and biological warfare policies. And finally, the national debate over the Sentinel and Safeguard antiballistic missile systems developed out of local campaigns against particular ABM sites in the Seattle, Chicago, and Boston areas.

One of the advantages of working locally is that a few scientists with a good case can not only get excellent local news coverage, but can also personally meet with and have an opportunity to convince local decision makers: mayors, town councilmen, and other municipal and state officials.

CREDIBILITY

From the first moment that he raises a criticism of an accepted government policy, the public interest scientist is confronted with the question: "Why should we take your word over that of government officials—who, after all, have the best experts at their disposal? How do we know that you're not some kind of kook?" Different groups have used different methods to combat this credibility problem:

- Rachel Carson published a compelling and well-documented book on the misuse of pesticides. It didn't convince everyone, but it made certain that her arguments received a hearing.
- The Herbicide Assessment Commission was sponsored by a recognized scientific institution, the American Association for the Advancement of Science.
- The Union of Concerned Scientists got excellent mileage out of quoting AEC-sponsored studies whose conclusions contradicted the official AEC line on reactor safety.

Yet another technique for dealing with the credibility problem is to shift the question to the opponent, as did the Colorado Committee for Environmental Information in the controversies over plutonium pollution and natural-gas stimulation. In each of these debates, the CCEI publicly challenged the responsible government agency to establish the basis for its assertions that the

public was not at risk. The Colorado group followed up its challenge with a specific list of technical questions, the answers to which would make possible an independent determination of public safety.

Public interest science is of course not without its "exaggerators." But there are surprisingly few. A scientist's reputation is his most precious possession, and the scientist who misrepresents the truth or makes unsound technical judgments calls down upon himself the censure of his colleagues. Furthermore, technical arguments presented in public can be rebutted in public, in the usual self-correcting manner of scientific discourse.

It is important that high standards be maintained by public interest scientists. They have enough difficulties as it is getting a hearing for important issues without adding a "credibility gap" to their problems. Obviously, the proper ethics for outsider science advising deserves discussion within the scientific community no less than do the ethics of insiders. Since in Chapter 9 we proposed two guidelines for federal executive-branch science advisors, perhaps we should add at this point two for public interest scientists:

1. A specialist should not use his authority to lend support to a political position without stating the technical grounds for his opinion.
2. The standards of accuracy to which a scientist adheres in public statements should be no lower than those he strives to attain in his scientific work.

It is also necessary for the scientist to maintain a sense of perspective; it is all too easy to exaggerate the significance of an issue with which one is concerned to the point where attention is distracted from what may be an even more important issue.

The News Media

As must be clear from our case studies, the news media's treatment of technological controversies determines to a large extent the effectiveness of public interest science efforts. Unfortunately, the media have not exactly covered themselves with glory in their reporting of technological controversies.

WHY THE MEDIA DON'T LIKE TO GET STORIES FROM INDEPENDENT SCIENTISTS

Few mass-media reporters have sufficient technical background or are allowed by their editors to specialize enough to become familiar with the issues in a particular area of technology. As a result, most of them do not have confidence in their ability even to separate crackpots from competent scientists and engineers—and checking around would take more time than they are given for a story.

The few trained science reporters generally stay away from the more

controversial areas of applied science and instead undertake to educate and entertain their readers with the latest nuggets from the research laboratories. Their stories range in style and substance from the "gee whiz" variety on death rays, test-tube babies, or the latest from the current space extravaganza to Walter Sullivan's excellent (albeit somewhat breathless) reports in the *New York Times* on the latest discoveries in astronomy or elementary-particle physics. This emphasis may partly result from scientists' reluctance to discuss with the press such issues as the side effects of cyclamates or the safety of nuclear reactors. Many scientists evidently regard such controversies as the dirty linen of science. Finally, editors usually have plenty of "real" news that will be of obvious interest to their readership—official corruption, rapes, inflation, and so forth—and a story on the possible effects on the arms race of a new strategic weapons system is less likely to "sell." If the story reports that some little-known self-appointed guardian of the public interest has attacked one of the nation's largest advertisers, that is an added incentive not to use it.

OFFICIAL SOURCES

A lot of what's happening in the country today, a lot of what's most vital in peoples' lives, isn't institutionalized, so there's no official spokesman for it. If you stick to covering the official sources, inevitably you miss a lot of important things that are going on elsewhere. So, for instance, the press largely missed one of the great migrations of human history, the migration of black people out of the South and into the cities, until Watts blew up in 1965. And until Ralph Nader made something sensational out of it, we missed the rise in consumer consciousness; now, ironically, we've made something of an official source out of Ralph Nader. It's the way we like to work.[1]

—Tom Wicker *(New York Times* editor and columnist)

Perhaps the biggest problem in trying to alert the press to important technological issues is that most reporters have too little time and know too few sources of information to do serious investigative reporting. As a result, reporters tend to rely largely, if not exclusively, upon "official sources" for such news—mainly government officials and corporation spokesmen. All too rare is the reporter who checks out a self-serving government report—even to the extent that Christopher Lydon did when the Department of Transportation announced that its technical advisors had concluded that the SST could be made as quiet as conventional jets. By the simple expedient of telephoning the chairman of the advisory committee, Lydon found that this noise reduction was to be achieved by the use of noise suppressors whose weight was nearly equal to the plane's entire payload.[2]

Ironically, one welcome by-product of both the Indochina war and the Watergate scandal has been the inculcation in the press of a wary and skeptical attitude toward official sources of news. But it is not enough merely to be critical in reporting official statements: as Tom Wicker points out in the passage

quoted above, it is also necessary to look at issues that officials are not even talking about.[3] And the indispensible role of the independent scientist-activists—the Rachel Carsons, William Shurcliffs, and Matthew Meselsons—is to bring such issues to our attention.

"OBJECTIVITY"

Probably the greatest difficulty confronting a scientist with a story that he wants to get into the press is the very definition of "news." His story may concern the air pollution from a particular industrial plant or the desirability of citizen intervention in the licensing of a new nuclear reactor, but as long as the headline is of the form "Scientist Says Such and Such," the story is likely to run on page 25, if at all. On the other hand, if the President blames the energy crisis on the environmentalists, the event itself is considered newsworthy. In other words, a problem must be associated with an "event" in order to be considered reportable: every story must have a "news peg." Most reporters and editors seem to feel that "objectivity" requires only that they report such "news"; "muckraking" seems to them too much like trying to manufacture news.

But scientists are temperamentally indisposed toward staging demonstrations or other pseudoevents in order to get news coverage. The most that they will usually do is release a report. Such a report, if it is covered at all, is at best the sensation of a day; if it is to have any impact it must be followed up by further reports or better yet by political or legal action.

Some scientists have succeeded in becoming recognized sources of news by banding together to form organizations like the Colorado Committee for Environmental Information and establishing a reputation for accuracy and newsworthiness, or else by working through established scientist "front" organizations, like the Federation of American Scientists, that already have such a reputation. An alternative is to seek support from recognized citizens' groups like the Sierra Club or Friends of the Earth, or perhaps to seek the assistance of Ralph Nader—as the Union of Concerned Scientists have done in their campaign for increased reactor safety. The traditional device of the petition, which was used by Meselson and his colleagues in calling for a Presidential reexamination of U.S. chemical and biological warfare policies, has fallen somewhat into disuse. It is now associated with quieter days, when policy for technology was relatively uncontroversial and it was a newsworthy event when a dozen Nobel Prize winners or a few hundred ordinary scientists disagreed enough with established policy to sign their names on a sheet of paper. Since it has almost become the norm for the majority of the population to disagree with established policy, more substantial protests are required to gain serious public attention.

LEADING THE WAY

In between the "popular press" and the scientific journals lies a third category of magazines, edited by scientists but aimed at scientists and laymen alike. Most notable among them are *Science*, *Scientific American*, the *Bulletin of*

the Atomic Scientists, and *Environment* in the United States and *Nature* and *New Scientist* in Great Britain. Some of the articles in these magazines (in the case of *Environment*, all the articles) relate to policy issues concerning technology. *Science*, in addition to publishing occasional articles from outside contributors on such subjects, has a full-time staff which concentrates on reporting on current controversies in the science and technology area. Articles in these magazines have played a crucial role in making debates on many technological issues accessible to the popular press. Often such an article has served to establish the credibility and importance of dissenting views on a particular issue, inasmuch as it is recognized that the article will have been reviewed by competent scientists, including the editors, who would presumably have rejected it if it were obviously in error or overly speculative.

The 1968 *Scientific American* article by Bethe and Garwin on the Sentinel ABM system is a notable example.[4] It explained, using nonclassified information but nevertheless in a specific way, how the Johnson administration's proposed antiballistic missile system could be penetrated by enemy missiles with relative ease. This article had a substantial effect in convincing other, previously uninvolved members of the scientific community that the ABM system, besides further escalating the arms race, would be a terrible waste of money and would become more and more expensive as the Defense Department tried to compensate for its intrinsic weaknesses. Many of these newly persuaded scientists then carried the issue to the public and to Congress.

The articles in the "News and Comments" section of *Science* have become steadily more important in bringing serious problems to public attention. For example, a series of investigative articles by *Science* reporter Robert Gillette on the nuclear reactor safety issue[5] effectively made that subject accessible to the press and probably played a crucial role in the later firing of AEC nuclear reactor czar Milton Shaw and the restructuring of his former empire. In another case, scientists muttered about "blacklisting" by the Department of Health, Education, and Welfare for years, and twenty professional societies even joined to petition HEW privately to discontinue the practice, but nothing happened until Bryce Nelson made the issue public in a series of articles in *Science*.[6] By obtaining a list of forty-eight blacklisted scientists, including one Nobel Prize winner, Nelson established that the blacklisting was actually a reality. In the six months following Nelson's first article in June 1969, more than a hundred articles and critical editorials appeared in newspapers and periodicals across the nation, and the issue was even discussed on network television. Congressional pressure developed—Senator Sam Ervin (D.-N.C.) twice emphasized to HEW Secretary Robert Finch that blacklisting is a "violation of constitutional principles which cannot be tolerated"—and in January 1970 HEW decided to abandon the practice.[7]

TALKING TO REPORTERS

There is little admiration lost between most reporters and most scientists. To reporters, scientists often seem preoccupied by details, and unable to communi-

cate what is really bothering them. On the other hand, scientists too frequently find that reporters miss the real point and can be restrained only by force from rushing off to publish a completely misleading story. Obviously, both sides must work to close the gap.

One might add the observation that papers with well-educated readerships like the *New York Times* and *Los Angeles Times* have sophisticated reporters who are ordinarily given more time to work up a story than the reporter on your local *Daily Advertiser.* In this connection the Colorado Committee for Environmental Information initially found it easier to get coverage in the national media than in the local Colorado papers. Peter Metzger summed it up with the biblical observation: "A prophet is without honor in his own land."[8] Finally, when dealing with the ordinary reporter, who has probably just returned from filing a story on a former poetry teacher who took off her bikini top in the center of the financial district, there is obviously no substitute for a brief, well-written press release containing the essential information.

NOTES

1. Tom Wicker, "The Reporter and His Story: How Far Should He Go?" *Nieman Reports,* Spring 1972, p. 15.
2. *New York Times,* March 1, 1971, p. 15.
3. Peter Sandman has pointed out that the press is much more effective in telling us what to think about than it is in telling us what to think. See "Mass Environmental Education: Can the Media Do the Job?", to be published in *Environmental Education,* William B. Stapp and James A. Swan, eds. (Beverly Hills, Calif.: Sage Publishing Company, 1974).
4. Hans Bethe and Richard Garwin, "Anti-Ballistic Missile Systems," *Scientific American,* March 1968, pp. 21-31. See Chapter 13.
5. See note 43, Chapter 15.
6. Bryce Nelson, "HEW: Finch Tries to Gain Control Over Department's Advisory Groups," *Science* 164 (1969): 813. See also *Science* 165 (1969): 269, and *Science* 166 (1969): 357, 819, 1488.
7. James Singer, "Pressure by Scientists, News Media Figured in HEW Curb on Blacklisting," *National Journal,* January 10, 1970, p. 73. See also Bryce Nelson, "HEW: Blacklists Scrapped in New Security Procedures," *Science* 167 (1970): 154.
8. Peter Metzger, "The Colorado Committee for Environmental Information," *Report of the Conference on Scientists in the Public Interest: the Role of Professional Societies* (Salt Lake City: Physics Department, University of Utah, 1974). (The conference was held at Alta, Utah, September 7-9, 1973, under the sponsorship of the American Academy of Arts and Sciences, Western Center, and the University of Utah.)

CHAPTER 17

Organizing for Public Interest Science

Traditionally, public interest science has been an activity carried on in an entirely ad hoc manner by full-time scientists and engineers who have taken time off from their usual pursuits. They don their white hats and gallop off to rescue imperiled Paulines just as doom seems imminent—and then they return to the laboratory.

It is important that such "amateur" public interest science continue. Until recently the scientific community delegated its public responsibilities mostly to official government science advisors. This was a mistake. As the histories of government regulatory agencies have repeatedly demonstrated, responsibility cannot successfully be delegated—it can only be shared. The unfettered spirit of part-time outsiders will always be required to keep the system honest.

But neither is a system in which public interest science is practiced only by volunteers satisfactory. Nothing less than a full-blown crisis is required to motivate a dedicated scientist to drop his usual work. By that time, it may be rather late to initiate corrective steps. It would have been far better, for example, if the adequacy of the AEC's reactor safety program had been subjected to independent review a few years earlier. This would have saved the large amounts of money which may be required to fit existing reactors with improved safety systems and would have reduced the risk—whatever it may be—to those persons who will be living near those reactors in the meantime.

In most of our examples of independent public interest science activities—regarding DDT, plutonium and nerve gas in Colorado, defoliation in Vietnam, and so on—independent scientists reacted only after years of government misconduct of technological programs. It should by now be obvious that if the public interest is to be adequately represented in governmental decisions on technological issues, public interest science must to some degree be institutionalized.

Institutionalizing the outsider role poses a great challenge to the creativity of