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Source: BioScience, 56(4) : 287-288

Published By: American Institute of Biological Sciences

URL: https://doi.org/10.1641/0006-3568(2006)56[287:WGISSS]2.0.CO;2

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When Government Ignores Science, Scientists Should Speak Up

JAMES R. KARR

Despite the post–World War II boom in science and technology, recent headlines suggest that science and scientists play less of a role in government policymaking than ever before. Consider, for example, the August 2005 postponement by the US Food and Drug Administration of a decision to switch emergency contraception to nonprescription status, countering the recommendations of an independent panel of health researchers; the deletion by the White House of the climate change chapter from the *Draft Report on the Environment 2003,* prepared by the US Environmental Protection Agency (EPA); and President Bush's concurrence with the suggestion that intelligent design be presented in science classes.

When politicians and government institutions either misrepresent or ignore scientific findings and conclusions, scientists find themselves in a quandary. Should they stay disinterested and neutral, and defer to the policymakers, thereby risking science that may be distorted or hidden? Or should they speak up and try to educate policymakers and the public, whose ecological, economic, and social well-being may be threatened when scientific facts and lessons are misrepresented? Should doctors be neutral about the lives of their patients? Should lawyers profess neutrality about justice and injustice? I think not, and I also contend that scientists should speak up. Not speaking up would be tantamount to dereliction of duty (Karr 1993).

First, science is central to policy decisions with immense societal impact. Whether US policymakers are setting NASA's budget, determining how to dispose of nuclear waste, or protecting the nation's soil, water, and living resources, science is central to the decisions they make, and scientists are uniquely qualified to apply that science to the decision-making process. Scientists do more than collect data. Their training, and the day-to-day practice of their profession, centers on gathering evidence for and against hypotheses, weighing that evidence, and drawing conclusions based on the evidence. Their analytical expertise, coupled with detailed knowledge in particular fields of study, equips them to understand and explain scientific conclusions and describe how that information is relevant to a specific policy context or situation. Ornithologists may not be experts on NASA's budget, for example, but they certainly have insights into the risks of pandemic flu posed by migrating wild birds. As practitioners of science, scientists have a unique and valuable perspective on which policies benefit the public interest. Their expertise complements that of politicians and policymakers. Given the complexity of the 21st-century world, either party would be remiss to ignore or marginalize the other.

Second, vast sums of government dollars go to fund academic and government research. Even if the government chooses to ignore the results of that research, scientists have a responsibility—what Jane Lubchenco, former president of the American Association for the Advancement of Science, called a social contract—to communicate the lessons of their research to the public. A majority of scientists, including me, have also been educated at public institutions. The public whose dollars pay for educational institutions and government granting agencies have a right to expect some public good from action based on scientific findings. They cannot benefit if scientists do not speak up and use their knowledge to inform and influence the policy process. After the atomic bomb, Albert Einstein did not shy away from what he perceived as an ethical responsibility to speak out on the consequences of tapping nuclear energy. Rachel Carson's eloquent call for scrutinizing the effects of pesticides helped curtail the use of chemicals harmful to humans and wildlife. Scientists' discovery that migrating waterfowl were eating and retaining poisonous lead shot in their gizzards—and dying even when not otherwise injured by hunters—caused a mandatory shift from lead to steel or other nontoxic shot for hunting, saving thousands of wetland birds every year. And as the public has learned the truth about the health effects of tobacco smoke, indoor smoking bans are proliferating, with potentially far-reaching health benefits.

Third, the training that scientists receive—to question the assumptions and conventions of science—also equips them to challenge the assumptions of public policy, the law, and implementation of the law, especially when that implementation violates both science and common sense. One Washington State Supreme Court decision (*Rettkowski v. Department of Ecology,* 122 Wn.2d 219, 858 P.2d 232, 1993) violated common sense in concluding that ground and surface waters were not connected, although the name—Sinking Creek—of the stream in question might have hinted at a different, more realistic conclusion. Similarly, when I argued in 1973 for shifting EPA's approach to implementing the Clean Water Act from an emphasis on chemical measures of water quality

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to biological measures of water body condition, an EPA official dismissed my concern, saying, "We [at EPA] are not responsible for biology." But how can environmental protection not involve responsibility for biology? EPA now recognizes the importance of a biological perspective in protecting the public's interest in water resources (USEPA 2005). Scientists can work within the legal and political systems toward ensuring that both science and common sense underpin decisionmaking. Not doing so makes scientists de facto advocates of the status quo, especially in a political climate where the powerful ignore or distort the lessons of science.

Fourth, when scientists fail to make a strong case for decisions based in science, the long-term costs often outweigh the short-term economic arguments for *not* using scientific insights. In a 1979 speech to the Consumer Federation of America, then EPA administrator Douglas Costle cited examples of our propensity to "save ourselves broke" by deferring regulation for short-term economic gains. A North Carolina trucker, for example, illegally dumped PCBs along roadsides instead of spending $100,000 to dispose of the waste properly. The cost of cleanup was estimated at nearly $12 million. An investment of $200,000 at a plant in Hopewell, Virginia, would have made it safe to produce the insecticide kepone. Instead, workers, a water treatment plant, and the James River were contaminated. Known judgments against the company in 1979 exceeded $12 million, and EPA estimated a total cleanup cost of $8 billion, if cleanup could even be done. When regulations are ignored despite the scientific lessons available to all, both dollar and societal costs can devastate economies and communities.

Fifth, as threats to Earth's living systems—human and nonhuman—continue to mount, timing matters. "Ecology is a discipline with a time limit, because much of what we study, upon which society is dependent, is fast disappearing" (Bazzaz et al. 1998). At a minimum, Bazzaz and colleagues note, "informing the general public about the relevance and importance of our work" must be added as a basic activity of science. Disenfranchised members of human and nonhuman communities, entities that often cannot speak for themselves, deserve nothing less from science and scientists.

Speaking up, of course, is not without risks. Agency scientists who speak up may risk their jobs. When academic scientists speak up—or host their own television shows, as Carl Sagan did—they may find their reputations among academics damaged or their ability to obtain research grants compromised. Academic scientists taking stands on public policy issues risk their credibility, according to one view; they may be labeled pejoratively as an "advocate" or as "unethical" (Mills 2000). Special interests label any judgments or expressions of scientific opinion as "advocacy," making advocacy a line that truly professional scientists ought not cross (e.g., Wooster 1998). The word *advocacy,* however, has other important connotations: of responsibility; of support; and of bearing witness to the evidence that, as a scientist, one has gathered and weighed.

Each scientist must weigh these real risks. But the risks incurred by silence are also great—too great to be ignored by the scientific community and by society at large. Perhaps we need Courts of Science in government and Departments of Foresight in academia that would weigh the issues without political and ideological distortions. Perhaps truth telling would emerge for all to consider.

In closing, I return to the unwritten but no less important social contracts implicit in the relationships among taxpayers, governments, and scientists, which should not be taken lightly by any of the principals. The contract between scientists and society derives from scientists' long-standing agreement to accept public funds to support their education and research. At the same time, citizens have a contract with government, which is expected to use collected taxes to understand the world and to use knowledge to make decisions that will protect the public's well-being. Both government and scientists have a duty to make the science available to citizens and to inform the public about the scientific consequences of human actions. When scientists do not speak up, the message seems to be that science is irrelevant and that scientists do not matter. Yet science has never been more relevant or more essential.

References cited

Bazzaz F, et al. 1998. Ecological science and the human predicament. Science 282: 879.

Karr JR. 1993. Advocacy and responsibility. Conservation Biology 7: 8.

Mills TJ. 2000. Position advocacy by scientists risks scientific credibility and may be unethical. Northwest Science 74: 165–167.

[USEPA] US Environmental Protection Agency. 2005. Use of Biological Information to Better Define Designated Aquatic Life Uses in State and Tribal Water Quality Standards. Washington (DC): Office of Water. EPA 822-R-05-001.

Wooster WS. 1998. Science, advocacy, and credibility. Science 282: 1823–1824.

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