
PART 7

Linking Science and Policy for Tomorrow's World

Introduction: Allan Hoffman

Allan Hoffman, a 1974–1975 Congressional Fellow sponsored by the American Physical Society, is now senior analyst in the Office of Planning, Budget, and Analysis in the Office of Energy Efficiency and Renewable Energy of the U.S. Department of Energy. From February 2002 through February 2004, Dr. Hoffman was on detail to serve as senior adviser to the Clean Energy Group of Winrock International, a nongovernmental organization promoting sustainable economic development in developing countries.

Before his detail, Dr. Hoffman directed the Country Studies Program, which focused on global climate change, in the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy. His previous assignments include serving as executive director of the Committee on Science, Engineering, and Public Policy, a joint unit of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine; executive director of the National Research Council's Office of Government and External Affairs; staff scientist for the U.S. Senate Committee on Commerce, Science, and Transportation; director of the Advanced Energy Systems Policy Division of the U.S. Department of Energy; assistant director for Industrial Programs in the Mellon Institute's Energy Productivity Center; and senior analyst in the U.S. Congress's Office of Technology Assessment.

Dr. Hoffman holds a bachelor's degree in engineering physics from Cornell University, a master of

science degree in physics from the University of Illinois, and a doctorate in physics from Brown University. He is a fellow of the American Physical Society and the American Association for the Advancement of Science.

As we draw to the close of some very rich discussions, Representative Rush Holt of the U.S. Congress will offer our concluding remarks. Before I introduce Rush, however, I would like to say how pleased I am that some young people from local schools could join in these discussions. It is extremely important to get the next generation involved in these issues, which they will inherit from us over the next 30 years. The really wonderful thing is that, when you talk to them, you find out they are a lot smarter than we are, and so there is some hope for the world.

It is my great pleasure to introduce Rush Holt, a pioneer and a good friend. We have known each other since 1982, when Rush came to Washington as a Congressional Fellow of the American Physical Society, and worked with the office of Representative Bob Edgar of Pennsylvania. In 1998, he became the first former Congressional Fellow elected to the U.S. Congress, and he serves as one of two physicists in the Congress, along with Vern Ehlers of Michigan, the other half of the self-anointed bipartisan physics caucus.

Rush, who was born in West Virginia and now represents the 12th Congressional District of New Jersey,

earned his B.A. in physics from Carleton College and his Ph.D. in physics from New York University. He served as a Congressional Fellow before assuming positions as an arms control specialist at the U.S. Department of State and as assistant director of the Plasma Physics Laboratories at Princeton University. Rush sits on the House Committee on Education and the Workforce and the House Permanent Select Committee on Intelligence.

Not only has he combined scientific knowledge and policy expertise in his own experience, he has provided a good model for many other young scientists who have worked in his office as Congressional Fellows. Recently one of Rush's former Fellows came to see me, thinking of getting into the field that I am involved in, and we

had a wonderful meeting. And as we were walking out, I asked him whether he enjoyed his time in Rush's office. He replied that Rush is a wonderful example to all of us young scientists of how we should operate.

I must mention the margins by which Rush has won his Congressional races. When first elected in 1998, he beat the other candidate by 5,300 votes in a very tight race. His reelection in 2000 was by 1,000 votes in an even tighter race. But the story had a different ending in 2002, when Rush was reelected to his third term with 60 percent of the votes cast. I therefore am honored and proud to present to you for this symposium's closing remarks the man we now refer to as Landslide Holt.

The Honorable Rush Holt

I am really delighted to be here. It's been by all accounts a fine program throughout the symposium, but more to the point, it's been a fine program for 30 years. I consider the opportunity to serve as a Congressional Fellow, now more than two decades ago, not only a turning point in my checkered career, but a great honor. It is a terrific program.

So many people come to my mind when I think back about my experience as a Congressional Fellow and to my progress into this work: Barry "Mike" Casper, who was one of the organizers of the initial Congressional Fellows program, through the American Physical Society; the late George Brown, a former representative, who championed the program; Bill Wells and Dick Scribner, whom so many of you know; and the students that I was teaching at Swarthmore, who more than my colleagues on the faculty told me it was all right, in fact desirable, to be involved in policy. Allan Hoffman is a giant in the fellowship program, and he goes back 30 years. When you go back that far, it's worth remembering the words of I. F. Stone, which are that youth get blamed for crimes they have never committed, and the old get credit for virtues that they have never had, so it evens out in the long run. Allan represents the fine record of the Congressional Fellows program. He helped to develop the Corporate Average Fuel Economy (CAFE) standards governing auto fuel economy, which have shaped the regulation of fuel consumption and air quality for 30 years.

You know, many Fellows along the way have done important things in their year on Capitol Hill, or at the State Department, or at the Office of Technology Assistance, rest its soul, or wherever they were. It is sometimes a difficult transition coming into the political world from the laboratory or the research institution, and there is a certain amount of nervousness. I certainly remember our orientation session when we had come to Washington—that place that John Kennedy called the city of Southern efficiency and Northern charm—and we were running through all the jokes we knew

about the politicians that we were coming to Capitol Hill to work with. You know, the politician is one whose favorite color is plaid. Or the story of Heywood Broun in the back of a room listening to the politicians speak, when another journalist nudged him and said, "That politician is murdering the truth." Broun replied, "Don't worry. He won't get close enough to hurt it."

But we all came to love the members for whom we worked. There's the story of the two Congressional Fellows standing in the back of the room, saying, "You know, my senator is really wonderful," and the other one said, "What do you mean? Your senator would sell his mother to get ahead politically." To which the first one answers, "Yes, but he'd deliver."

So, we got over the uneasiness about the transition from science to politics and, in fact, learned to love politics, at least some of us did. We also learned that the member is always right, and I have tried unsuccessfully to perpetuate that idea. There's the story of Wilbur Mills, who for various reasons was incapacitated one day and unable to show up at an event, and as an excuse he sent word that his wife had broken her ankle. Later that night the phone rang at the Mills house; Mrs. Mills answered, and a staff member said, "First of all, Wilbur is fine, but I have some bad news for you. We're going to have to come over and break your ankle."

When we're in this business in Washington, inside the Beltway, there is a certain atmosphere that breeds certainty and arrogance, and that's where the Congressional fellowship program comes in. It is an antidote to what is probably the worst affliction in Washington. The Fellows, as scientists, bring a number of things to Capitol Hill or to the other agencies where they work. One is a familiarity with the language, a willingness to deal with scientific terms and scientific issues. I used to say when I worked on Capitol Hill that I was the staff member who received anything written in scientific notation, whatever the subject matter. Certainly, Vern Ehlers and I, the two members of the bipartisan physics caucus, can talk to each other in shorthand, in a way

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that most members on the Hill cannot. You know, just the phrase “impedance matching” will mean something to a physicist or an engineer that it wouldn’t to the normal politician on the Hill.

Fellows also bring a familiarity with the knowledge, not just the terminology. Fellows are not just translators. They approach their work with one of the fundamental principles of science: that the world is intelligible. Now that’s actually a fairly special concept, which not everyone on Capitol Hill understands. Mark Twain is reported to have said that he found science so wonderful because it offered such a wholesale return of conjecture on such a trifling investment of fact. In fact, we see that as a wonderful thing. You can extrapolate from your science background to make sense of the world at large, all the time operating on the assumption that there is an intelligibility, a comprehensibility to the universe. That is a very useful outlook to bring to politics.

But more than translators or optimists, the scientists who come into the fellowship program are missionaries. You represent what is the fundamental essence of science, and I can describe that best by relating a story of I. I. Rabi, the Nobel Prize-winning physicist and adviser to presidents, who was once asked why he was a success as a scientist. He said, “Growing up in Brooklyn, all of the immigrant families wanted their kids to do well in school. But my parents were different. They made me a scientist without knowing it, because every day after school, when the other parents would ask their kids what they learned in school, my mother would ask, Izzie, did you ask a good question today?” And he said that made him a success as a scientist.

You see, in politics, the chair of the committee is always right. In science, a lowly clerk from a Swiss patent office can overturn conventional wisdom. Science is based on the premise that you may be wrong. It is, in other words, the antidote to arrogance. Now I’m not saying that there aren’t a lot of arrogant scientists. You know the scientists’ prayer: Lord, free me from arrogance. Now by arrogance, here’s what I mean...

Nevertheless, it is the structure of science to indeed free us from arrogance. Science is based on the idea that what you have is not the right answer. Scientists are much more comfortable with uncertainty and provi-

sional wisdom than the rest of society, and certainly more so than the politicians. Of course, the politicians have their own forms of arrogance. In fact, when I first arrived as a member on Capitol Hill, I remember Senator Alan Simpson telling us that those who follow the high road of humility won’t be bothered by heavy traffic.

But science is egalitarian. Going back to Galileo, scientists have democratized knowledge. They have taken this idea that the world is intelligible and said that, if you ask questions so that they can be answered empirically and verifiably, then you too can be a scientist. You too can join in this progression, this converging series toward the truth. Politics, in contrast, is a balancing of interests, not necessarily a converging toward the truth.

Science is dedicated to openness—in other words, to posing the question in such a way that it can be answered empirically and verifiably. To be verifiable, you have to publish, you have to state the answer in an open and intelligible way, and you have to look for an outcome that is not just a balancing of interests. Unfortunately, if left to ourselves, we politicians would end up just balancing interests. We would engage in what politicians call sound science, which is really more like assertive science, asserting a truth. So we would end up with advisory committees, where distinguished people who believe in climate change sit beside equal numbers of those who don’t—and that will be a good, balanced scientific committee, won’t it? Or we make sure that the committee that is developing standards for environmental lead exposure has enough members of the lead manufacturing industry to provide a good scientific assessment.

You see, politicians have a fundamental misunderstanding of science. For example, in the budget that’s going to be coming before us soon, an allocation of \$10 billion for a missile defense system is sound science for some people. However, it is more a faith-based initiative than a science-based initiative, because it hasn’t been subject to tests or, to the extent that it has been subject to tests, it has failed.

Sitting on the Intelligence Committee, I see that the intelligence that led up to the war in Iraq was again an assertive kind of fact-finding, rather than a questioning

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kind of fact-finding. It was asserted that there were weapons of mass destruction, that al Qaeda was rampant in Iraq, that Iraq had been associated with terrorism, and that we would be greeted with open arms if we invaded, but no one was questioning the assumptions. Just as, with the missile defense allocation, no one is really questioning the assumptions. In fact, they say, “Well, what do you mean? The only way we can test it is to deploy a full-blown system.” It’s a preposterous statement if you think of it as a bench scientist would think of it.

So, you former, current, and future Fellows are critically important on Capitol Hill. You are useful, yes, as translators. You are useful, yes, as optimists. You might differ with my terminology there, but you are useful in presenting the principle that the universe and our world are intelligible. It’s an attitude that came in handy during the anthrax scare. When anthrax spores were found on Capitol Hill, including in my office, we had to vacate for a number of months. In the days after that, a number of my colleagues said to me, “Well, you’re a scientist, you must know about anthrax.” And, you know, I scratched my head, thought back on the physics curriculum, and didn’t remember where the anthrax was. But, in fact, I do know more about anthrax than most of my colleagues.

Certainly, the Fellow who was in my office that year knows more about anthrax than other congressional staffers. The reason is as soon as this story started to break, we were eager to get articles from the *New England Journal of Medicine*, to call up the Centers for Disease Control to ask some questions based in science, and to confront the strange terminology of infectious diseases and microbiology, because we understand that there is a unity to knowledge. So you bring not only the skill of being a translator, but also the skill of making sense of things, by being willing to ask questions and learn something about anthrax, even if it’s not in your field.

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ifiably. Of course, you are not going to change the entire national culture—no 32 or 42 or 98 Fellows in Washington each year could accomplish that. I can assure you, however, that as Fellows you have not only produced some recognizable legislative accomplishments, such as Allan’s CAFE standards, but also provided a large measure of

real scientific thinking to the political process. You haven’t won every battle every year, but again, to paraphrase I. F. Stone, you fight battles not only for today, but often for the future. Furthermore, to quote the card that Esther Stone, the late wife of the late I. F. Stone, pasted on the wall above her desk, “Good news is on the way.”

Although you are a minority here in Washington, as scientists among so many politicians, we badly need you to keep advocating the idea that science is a democratic, questioning process. We need more of that kind of thinking institutionally, in the form of an agency like what used to be called OTA, which I am now calling in my new legislation the Center for Science and Technical Assessment. We need it in the advice that is given to us from the National Research Council, Carnegie-Mellon University, and think tanks around the country, but we especially need it in a personal form, in the form of Congressional Fellows.

The fellowship program has been one of the most important initiatives in good government in the past century. The AAAS is to be commended, as are those societies that have funded this program year in and year out, because it really is a great public service that is valued by many of us on Capitol Hill and, I’m sure, by others in the State Department, the EPA, and other agencies around town. We would be much poorer without it, and I thank AAAS for 30 years of good questions.

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