

## **Luncheon Speech** Former Congressman Bill Green

COLE: We're fortunate to have with us today former Congressman, always Congressman to me, Bill Green, who represented Manhattan's East Side and Midtown in Congress, and is really one of the more actively interested members of Congress, former members, in almost every aspect of science and technology. He's going to give a brief talk and is then willing to entertain questions from this group on re-designing the science structure of the US Government.

I could go through a very, very long list of credits and background information on Bill Green – but that has actually been handed out. I think you will find it an extraordinarily impressive list of accomplishments. Let me simply say that he served in the US House of Representatives for eight terms, from February 14, 1978 to January 3, 1993. And from 1981 on, he served on the House Appropriations Committee and was ranking Republican member of its VA-HUD-Independent Agencies Subcommittee, which covered the VA, HUD, NASA, EPA, the National Science Foundation, the Federal Emergency Management Agency, and numerous smaller agencies. He always served on the Foreign Operations Appropriation Subcommittee during 1991-92.

From personal knowledge of the activities that Bill Green has been involved in, few congressmen, however favorably predisposed toward science and technology, really understand the process of discovery and the way federal resources can and have been used to improve the social economic welfare of our citizenry through those investments. Bill Green is absolutely one person who as a member of Congress really did understand it. He understood the virtue of the partnership between the federal government, the research universities, and industry.

And since he has left Congress, I should say he continually comes to Columbia, and undoubtedly other educational institutions, and follows the new developments in science, technology and other areas of education and continues to be a very, very articulate voice for the values that were originally expressed with Bush and which have been articulated really as recently as Alice Huang's comments that immediately preceded lunch.

It's therefore an enormous privilege for me to have Bill here. And I give you Congressman Bill Green, who will speak on re-designing the science structure of the US Government, all in 20 minutes or so or thereabouts. And then he will then be more than happy to answer a few questions before he has other obligations. So, Bill, good to have you here. (applause)

GREEN: Probably not since the period after World War II, the era of Vannevar Bush's *Science: The Endless Frontier* (1945) and William T. Golden's report to President Truman recommending the creation of the post of Science Advisor to the President, has there been as much discussion as in recent years on the structure of science within the United States government (Golden, unpublished). Examples of works that have played significant roles in that discussion are the collection of essays edited by Golden in 1988, *Science & Technology Advice to the President, Congress and Judiciary*, the reports of the Carnegie Commission on Science, Technology, and Government, and the National Research Council's report, *Allocating Federal Funds for Science and Technology* (Press 1995), which was produced by a very distinguished committee chaired by

Frank Press, president of the National Academy of Sciences from 1981 to 1993, and before that President Carter's science advisor.

For 12 of my 15 years in the House of Representatives, in my role as ranking Republican on the House Appropriations Subcommittee on Veterans Affairs, Housing and Urban Development, and Independent Agencies, I faced many of the issues from the current debate. In addition to the two cabinet departments, the independent agencies for which we originated appropriations included the National Aeronautics and Space Administration (NASA), the Environmental Protection Agency (EPA), the National Science Foundation (NSF), and the Federal Emergency Management Agency, as well as a host of smaller entities with some science and technology responsibilities, such as the Office of Science and Technology Policy (OSTP) and the Council on Environmental Quality (CEQ), both part of the Executive Office of the President, and the Consumer Product Safety Commission.

Thus, in originating our appropriations bill, which annually accounted for approximately 30 percent of the nation's domestic discretionary spending, we had to deal with both competition for funds among scientific disciplines and the claims of science and technology versus those of other parts of the federal government. Those problems were aggravated by the fact that during the 12 years that I served on the subcommittee, the Consumer Price Index rose by 59 percent while our allocation of funds from the full Appropriations Committee rose by only 17 percent. The pressure on our allocation did not represent any hostility towards us by the full Appropriations Committee. Instead, it represented the crowding out of all discretionary federal spending by the entitlement programs, most notably Medicare, Old Age and Survivors Insurance, and Medicaid. That was a decision made annually by the full Congress in its budget resolution.

One idea that has gained prominence in recent years as a means of restructuring the government's science enterprise is the creation of a Department of Science and Technology to encompass all the science and technology functions now spread about the executive branch. That would be followed by science and technology authorizing committees in the House and Senate that would take over all the science and technology jurisdictions of the other committees and similar appropriations subcommittees.

The idea has obvious appeal. It is, at least on initial contemplation, simple, and appears to improve accountability. It may, however, fall into the category which I think H. L. Mencken once described when he said that every problem has an answer which is obvious, simple, and wrong.

Moving things around is always a temptation. At one point in my Congressional career, I was vexed with NASA for seeming to give priority to putting people in space rather than maximizing the science return from space. I contemplated introducing legislation to move NASA's science responsibilities and funding to the NSF, leaving NSF grantees the option to hire NASA, private sector, or even Soviet cosmonauts in furtherance of their research.

My staff ultimately persuaded me that such a shift was unlikely to change the political and public relations pressures that drove the manned space program, and was just as likely to result in less space science as in more. The only sure outcome was that the shift would have disrupted space

science for at least a year as the change was made. But there are larger reasons why I am skeptical of a Department of Science and Technology. The fact is that federal agencies do science and technology for many reasons, reasons that may be important to an agency mission though they would not be to a science department. Should an EPA, for example, have to justify to a Science and Technology Department funding research on the clean-up of a particular kind of hazardous waste site that the agency feels is a major problem?

The fact of the matter is that the two agencies would have different criteria in making decisions and there would be no reason to expect a Science and Technology Department to have expertise on all the issues EPA must consider in setting its priorities.

Let me give another example from our subcommittee. The VA runs a medical research program, funded at around a quarter of a billion dollars. Though to some degree it focuses on rehabilitation medicine and obvious VA interests, that is far from being the exclusive focus of the program. Even without a Science Department one might ask why this program stands alone at the VA instead of being folded into, and subject to the priorities of, the National Institutes of Health.

There is a reason. The funds are used as bait for medical schools to affiliate with VA hospitals. Since studies have clearly shown that VA hospitals with medical school affiliations perform better than those without them, this inducement to medical schools to affiliate with VA hospitals is an important element in maintaining quality in the VA's \$17 billion a year medical system, the nation's largest single health care system. The quarter of a billion dollars is modest science funding, at least by Washington standards, and certainly if measured by the scale of NIH, but for the VA, it has a very large payoff for the department's mission, a payoff that would be totally lost in a shift to a Science Department.

That is not to say that there are not places where consolidation or revamping of federal science activities might not be beneficial. One place that comes to mind is science education. Both the Department of Education and the NSF have programs in this area, and other federal agencies also see it as a responsibility. Thus *Science in Air and Space: NASA's Science Policy Guide* notes that, "throughout most of its history, NASA has explicitly undertaken a major role in the support of graduate education and the education and training of graduate students." The report goes on to propose that "NASA and its research community must become more actively involved in pre-college education." If there was any coordination among these various education programs, it was certainly not evident to those of us who were in Congress, and it might well make sense to have some sort of coordination.

The real issue facing the United States government in relation to its science and technology effort is how much money science and technology are to get as a whole, and how to divide up that money among the various claimants in the science and technology community. Creating a Department of Science and Technology would not by itself resolve those questions any more than the existence of NSF today tells us what its overall appropriation should be or how to divide that appropriation among its several directorates.

Another example of the difficulties in deciding how to allocate funds among claimants, even in a narrow range of disciplines, is the report *Setting Priorities in Space Research: An Experiment in Methodology* (National Research Council 1995). The group involved in the effort was unable to arrive at a consensus on procedural instruments to be used to make allocations in this field.

At the outset of my recommendations on these issues, let me note that I have been very favorably impressed by the mechanisms that are in place to get advice on priorities and funding needs within individual disciplines. The agency advisory committees and peer review mechanisms, the OSTP and the various White House advisory committees, and the National Research Council system seem to me in general to do an excellent job, and I found their work very helpful when I was in Congress.

Candor requires me to state that the National Research Council has appointed me to its Space Studies Board, but I can assure you that I reached my conclusions well before that appointment. In my view, both initial budgetary decisions (how much to propose *in toto* for science and technology) and at least the first cut as to how funds should be divided up by disciplines, must be determined by the White House. In that respect, science and technology are not different from other areas of federal activity.

For example, it is the White House that decides how much to propose for transportation infrastructure and how to divide it up among the several transportation modes. Who at the White House should have primary responsibility for recommending those decisions to the President? The two obvious players are the OSTP and the Office of Management and Budget (OMB). I would see the internal White House process as a joint effort of the two, as indeed I believe it is now and has been for some time.

Because the head of OSTP, the Science Advisor, is something of an advocate for science to the President, I would see OMB as having the larger role in balancing science's claims against other claims on the federal list. Once that choice has been made, I should think that OSTP, because of its expertise, would have the larger role in making the decisions among the science and technology disciplines.

Still, to decide who is responsible for decisions does not tell us how it should be done. White House budgeting will function within a larger process, such as zero-based budgeting or management-by-objectives, which are examples of approaches that the White House has used to operate its overall budgeting system. How are the specific science and technology choices to be made? I have found the recommendations in the National Research Council's Press report, to which I have previously referred, an excellent start. Though by its own terms more suggestive than prescriptive, the Press report recommends that a science and technology budget be an integral part of a federal budget. That contrasts with the current system, in which the science components spread throughout the many agency budget requests are pasted together after the presidential budget recommendation is completed.

Under the system proposed in the Press Report, science and technology funding levels would be decided by determining what was necessary “to maintain a world-class position in fundamental science and technology and a leadership position in select fields.” OMB calls to agencies to start

the budget process, and agency responses would reflect that premise. Congressional budget procedures would be changed by having the Budget Committees track the extent to which individual appropriations bills meet administration requests.

Finally, having such a device to provide a rationale for the administration's science funding requests would strengthen them in competition with other claims on federal funds. But to be candid, it would not truly tell us what to do when there just is not enough money to go around – another way of saying when the political system decides it has other priorities.

In the end, given our democratic system, whatever process we choose for making government science and technology decisions is always going to be messy. As E. M. Forster put it, two cheers for democracy. We are, after all, dealing with a perfectly normal situation in which the useful things on which we can spend money require more money than we have to spend. For those of us with an economics background, it was always difficult for government entities not subject to the marketplace to make such decisions in the absence of a means of determining the marginal benefits and the marginal costs of various alternative programs.

There is, of course, another way of looking at the problem. It is Robert Browning's observation in his poem "Andrea del Sarto", "Ah, but a man's reach should exceed his grasp, or what's a heaven for?"

ADAMS: Dorothy Adams from Columbia University. Please pardon my naivete. But is there a possibility that in the future we might take the funding for science out of discretionary funding and make it regular and just give us a slice of the pie that rides with the GNP?

GREEN: Well, that's always a possibility. And I think every group that comes to Congress for funding tries to become an entitlement program, if it can. I'd have to say to you that as Congress has seen its control over the budget process deteriorating because of the growth of the entitlements and the crowding out of the discretionary spending that I described, there has been increasing resistance within the Congress to that kind of approach. But if you want to try, good luck. (laughter)

SILVER: I'm Howard Silver from the Consortium of Social Science Associations. Good to see you again. As you sat across the table from me, when I was trying to make the case for science in the Appropriations Subcommittee hearings – as you did many times – what from your point of view as a member of Congress were the most effective arguments that were being made?

GREEN: Well, first of all, the groups that were really savvy always had a witness from the chairman's home state (laughter) and preferably sitting by his side was a witness from the ranking minority member's home state. There is some of that, I must say, in the way Congress operates.

Seriously, I think different members had different interests. Perhaps to me, it was easy to sell the idea of knowledge for its own sake. Others were very, very interested in the competitiveness issue, particularly in the early '80s, when it was perceived that we were wonderful at pure science but that somehow the Japanese were perceived as being better at taking the pure science

and turning it into salable products. That mystique may have eased somehow, but certainly at that time, that was a major, major influence.

There are those who are primarily military oriented, the Star Wars types. And I guess they would see that as their Holy Grail. So, I don't think there's any one issue that appeals to every congressman. We all have different interests, different priorities. And the way you put together a winning coalition in Congress is by trying to bring enough of them together to get a majority.

QUESTION: Mira Tadari, City University of New York. Some of my colleagues pointed out that some of their projects are long-range and that they have a very short time for review and re-funding by Congress compared to people in other countries. From your vantage point, is this a real problem that should be addressed?

GREEN: It is. I'm currently, as I mentioned, on the Space Studies Board, and the project at which I'm particularly working is with a group of Americans and a group of Europeans, trying to figure out what has worked and what hasn't worked, by way of European/American cooperation in space science. And certainly, the US annual funding process, as opposed to longer term funding of the European Space Agency, is an issue in those discussions.

I should point out that multiyear contracting, multiyear appropriations are certainly permitted under the federal system. Congress again is not eager to give away that annual review, but the administration has asked for an increase in that kind of funding. I know there are a couple of accounts in NASA where the administration is newly seeking multiyear funding. So it is not impossible to achieve.

Also, while the funding for an account may be on the basis of an annual appropriation, the agency may still be allowed to make a multiyear grant or a multiyear commitment. Now, obviously, to the extent that it makes a multiyear commitment, it makes fewer commitments than if it makes a lot of single-year commitments. And there's always that tension, in terms of the agency and its constituency. But there are ways to deal with what I acknowledge is a problem.

QUESTION: As you recall, a couple of years ago, a very remarkable debacle, a big project we worked on for ten years – I think more than \$2 billion was invested – was cancelled by a vote of Congress. Is there any political lesson that you would draw from this about how scientists behave or misbehave, or should behave?

GREEN: You're talking of the superconducting supercollider, I assume. Well, that was an interesting case. It was a very popular program while 40 states were competing for it. Once one state won, it didn't have quite as many friends. NASA had the other so-called "big science project" – although I've never really thought there was much science to do with the space station – and was able to come to the floor and point to subcontracts in 40 states in trying to woo votes for that one.

So I would have to say that the mood of the Congress and the pressures of the budget in the year that was killed – '93, was it? – were such that it was clear to me at any rate that it was either

going to be the station that went down or the superconducting supercollider. There weren't going to be two of these mammoths occupying the budget stage.

And, you know, I think that's unfortunate. I think they got the wrong one, because I always thought the superconducting supercollider was true science, even if it was going to be in Texas and not New York (laughter) – whereas I didn't see the space station, even though at the time Grumman, a New York company, was coordinating the work, as offering as much in the way of true science as the collider.

(OFF MIC QUESTION)

GREEN: Well, I think the science community was unwilling to face the fact that it had to make a choice and that the political climate was such that it was not going to get both. Now, in fairness to the space station, the micro-gravity work both in terms of the life sciences and materials is important to a group of scientists. So I don't expect that it would have been possible for the science community to achieve unanimity. But I think if the science community had chosen to back the superconducting supercollider and say, we'll give up the station, that would have had a powerful impact.

COLE: Why don't we have three more questions. And maybe we should have them together and then Congressman Green can answer.

QUESTION: International cooperation in large science and medium-sized science projects has been discussed as a possible route to reducing the costs of big science. Looking at the prospects of that from a congressional viewpoint, do you see that there are some viable political mechanisms for which the executive branch and the Congress can cooperate so that the U.S. can take a consistent and credible commitment position in order to enter into a larger number of those agreements?

MITCHELL: Tyrone Mitchell from Corning Incorporated, the glass company. My question is around the dual-use concept out of the Defense Department, which was probably unilaterally determined by the Defense Department as a way of staying military-ready and having industry make whatever they needed. Don't you think a better model might be to just let the Defense Department do business as usual at the reduced funding level that's required to maintain whatever defensive readiness that we have and use those extra funds to put back into programs like maybe the infrastructure of the country, something that benefits everybody, bridges, roads, tunnels, or mass transportation?

QUESTION: Jay Hauben. In the unfolding of society, the little person has very little say, except through the vehicle of his government. And so the government should be as big and powerful as possible, so that the little person has a chance to make an input. But how does the little person get to his Congressman and have the Congressman represent the need for as much science and technology as possible, so that life can be better in the future?

GREEN: Let me go in reverse order. I'm not sure that everyone would agree that the little person is protected by having government as big and powerful as possible. I don't think that's what the

Founding Fathers quite had in mind. But the question, of course, is: as government does get big and takes jurisdiction over more and more areas of our life, how does the individual deal with that? One answer that political scientists would give, I guess, is to try to devolve as much as possible back to the state and local level. And that's the theory of many who favor essentially a block grant type of assistance for the federal government or going back to the Eisenhower days and the Kastenbaum Commission, actually having the federal government give up some taxes.

And some of you may remember that President Reagan had a similar proposal early in his administration. Of course, the tax that he proposed to give back was the windfall profits tax on oil, which phased out over a period of years, so the states weren't very eager to grab it. On the other hand, what he proposed to pick up from the states was Medicaid. And I bet most of the states wished they had taken the bargain for that reason.

So that's one way to do it. If you're asking how do you lobby effectively, I think it is inevitable that a letter to your own congressman and your own senators has weight. Obviously, your participation in national groups that can speak collectively for a lot of people also has weight. And I think it's very much in the American tradition, the de Toqueville theory, that when we perceive a problem, we get together in groups. And it's those groups that energize our government.

As to the question of the allocation of the funds to DOD and whether the dual-use funds might not be better taken away from DOD and spent elsewhere that Congress proposes to use them, I guess I would have to say it depends on what funds you have in mind.

I remember some years ago, the Defense Department had a program for the garment industry, in which they were trying to keep our garment industry competitive, so that if they suddenly had a mobilization and needed lots of uniforms, we wouldn't have to bring them in from Hong Kong, in order to dress our army. So at the Fashion Institute of Technology downtown, they had demonstrations for the local garment manufacturers on how to use lasers to cut cloth uniformly. And maybe that's something that is within the Defense Department's purview and will have to stay there, even though it may have beneficial uses in civilian life.

Finally, the issue of international cooperation. I'm never totally comfortable with the large science versus small science dichotomy, although obviously the problem of funding individual investigators is an important one. On the other hand, I'm also reminded that the National Science Foundation set up supercomputing centers, which you might regard as big science, and yet a significant part of the purpose was to give access to supercomputers to individual investigators, who obviously couldn't afford one full time and didn't need one full time, but for whom some time on a supercomputer would be useful.

I think international cooperation is a way of sharing costs on projects that are going to have international benefits or are going to broaden the world's knowledge. I think international agreements have probably been useful in selling Congress on projects, at least under some circumstances. Certainly, in votes in '91 and '92 on the space station, the fact that we did have international agreements and that we would be subject to international criticism if we terminated the program, that was a telling point in the arguments of those who favored funding. So, it's no

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panacea. It does depend on funding and the will to proceed. But I think, by and large, it is useful and I think Congress recognizes that use. Again, thank you all very much for your attention.  
(applause)

COLE: Again, I want to thank Congressman Green for joining us on this gorgeous autumn afternoon and for talking to us about his thoughts on various subjects involving the science structure in the U.S. government. We now move on and I hope that you'll stay with us, because we have some very good stuff coming up, where we will be talking about civilian technology policy. It is an issue that was raised earlier today. May I ask that the participants join me. Michael Crow will be doing the honors of introducing our panelists and our designers.