Q&A: Neal Lane

Many of the issues of concern to the FAS founders exist today. Neal Lane, senior fellow in science and technology policy at the James A. Baker III Institute for Public Policy at Rice University, is also the Malcolm Gillis University Professor. From 1998 – 2001, he served as Assistant to the President for science and technology and director of the White House Office of Science and Technology Policy. He is also a former director of the National Science Foundation (NSF).

Prof. Lane is a former FAS Board Chair and long time supporter of FAS and was interviewed and supplied his answers to FAS questions via email.

Learn more about Neal Lane by visiting: http://bakerinstitute.org/personnel/fellows-scholars/nlane.

In the Fall 2011 issue of Issues in Science and Technology, you wrote that to develop a more rational national science and technology policy, the federal government needs an interagency mechanism to coordinate science and technology related activities, share information, and work with Congress to fund interagency projects. How do you envision this interagency mechanism working?

There are a number of interagency cooperative activities and coordinating committees that operate under the umbrella of the National Science and Technology Council (NSTC), which operates under executive order. The NSTC is a high level committee (cabinet secretaries of all departments with significant S&T activities, plus several agency heads like the directors of the National Science Foundation and National Institutes of Health) chaired by the president. But, given how busy these officials are and the fact that S&T issues are usually not crises or high on the political agenda, this high-level body rarely meets. I think consideration should be given to obtaining Congressional authorization for the NSTC. This might elevate, somewhat, the important strategic S&T policy issues that top federal officials should be thinking about. Then, when the Secretary of Energy, for example, is testifying before Congress, he or she might get a question about how the DOE coordinates its R&D activities with NSF, NIH or other agencies. While there are many examples of interagency cooperation, such matters usually don't get the attention of the person at the top.

Today, Congress has no means of evaluating the entire science and technology portfolio or of having a serious discussion about national priorities. How would funding a renewed Office of Technology Assessment alleviate this void? Could a revived OTA review the entire federal science and technology portfolio and serve in an advisory capacity to Congress?

OTA was an important agency, and it served Congress well. It was responsive to questions from the Congress, called on experts in the S&T community for advice, and wrote balanced and well-researched reports. Once OTA was eliminated, Congress really had no place to go for that kind of advice.

I hasten to mention that the National Academies continue to carry out studies and write excellent reports on all manner of S&T (and health and medical) matters, through the Academies' operating organization, the National Research Council. Those reports are important and many of them have impact, e.g. the recent "Rising Above the Gathering Storm." But these studies usually take several years and are not an effort to answer a specific question from a member of Congress.

OTA should be funded. Its authorization legislation is still in force, so all it needs is an appropriation. Congressman Rush Holt (D-NJ) and colleagues have been trying to make that happen. A revived OTA could help analyze the federal S&T portfolio and give objective advice. The problem is that when an OTA report has findings that influential members of Congress don't want to hear, they begin to find ways to undermine its credibility and even kill its funding.

In addition, we do need to consider a new kind of organization to develop policy options for both the White House and Congress. I believe it will need to be a non-government, non-partisan policy organization, but supported by all three sectors: Government (federal), University, and Industry (GUI). It would not recommend policy, but rather collect and analyze data, provide information to all parties and the general public, and develop policy options (also shared with the public), based on the analysis, but that range over the political spectrum. It would be intended to complement, not replace, other policy centers and policy activities of various professional societies, the National Academies, American Academy of Arts and Sciences, etc. But as it builds wide ownership and credibility, it could compare policy recommendations from various organizations, using its data and analysis. All very tricky! I have described this proposed GUI policy organization in a recent article I wrote for *Issues in Science and Technology* (Fall 2011). The late John (Jack) Marburger, Science Advisor to President George W. Bush, noted that policy making is in need of serious research and called for a "science of science policy." Perhaps a new GUI policy organization along the lines I am suggesting could help move Jack's idea along.

What is your advice to scientists who want to get involved in policy?

My advice is —- get involved! But everyone doesn't need to try to do the same thing. Also, heavy involvement doesn't make sense for early-career researchers, unless they are considering a move into a policy career, e.g. by competing for a Congressional Fellowship. The latter is an excellent way to try total immersion for a year or so. And many Congressional Fellows end up in Washington - and the ones I know are very happy.

For scientists and engineers who are not ready for a career change, there are many ways to influence policy from outside government: visit agency and White House officials and members of Congress; conduct journalist interviews and write op-eds on important policy matters; write books for the general public, including some issues at the science/policy interface; serve on advisory committees; join studies by the National Academies' NRC, American Academy of Arts and Sciences, American Physical Society, American Chemical Society and other professional societies; engage in policy research, in collaboration with scholars at policy centers and institutes on many campuses; include a lecture (maybe visiting lecturer) on some aspect of policy in mainstream courses for SE majors as well as non-majors; visit K-12 classrooms (talk about science, but include some related policy topic); speak to clubs, community groups, churches (talk about science but touch on related policy matters).

This is the notion of a "civic scientist." And even if you don't have the time now, or are not inclined to do any of these things, encourage and support the efforts of others. It will pay off for science and for the American public down the road.

In 1945 Vannevar Bush stated that it is vital for the United States to renew its scientific talent. The Organisation for Economic Co-operation and Development (OECD) published a report in 2009 that ranked students' proficiency in mathematics and science from 65 countries. Students from China, Finland and South Korea were ranked in the top three respectively in math and science. American students ranked below the OECD average in mathematics with the United States at the 32nd spot. And in science, American students came in at 30th. What must be done to improve STEM education in the United States?

Widespread ignorance in the United States (especially in STEM, but in other fields as well) is the most serious challenge the nation faces.

If we are unable to produce large numbers of young women and men who are much better educated than their predecessors, it is difficult to see how America will continue to lead the world in important ways. There have been many efforts to reform K-12 education but few successes.

One president after another has had a plan, but the test scores remain embarrassing. And in our form of representational democracy, as soon as one political figure (at any level of government) has an idea, an opponent finds a way to keep it from moving forward. President Obama has an impressive strategy to improve STEM education and an outstanding team of experts to implement it, e.g, his Secretary of Education, Arne Duncan; Director of NSF, Subra Suresh; White House Science Advisor and OSTP Director John Holdren; OSTP Associate Director for Science Carl Wieman (Nobel Laureate); and many others. But, the opposition in Congress has made clear that it will block any progress that might be attributed to the president. Even if this were not the problem, there is no quick fix.

K-12 education is a local matter, by and large. My personal view is that colleges and universities should get far more involved in K-12 education than they do now. They have a big stake. They have to deal with large numbers of entering freshmen who do not have basic knowledge or skills. Meanwhile, there are many science, mathematics and engineering faculty who do spend time in K-12 schools, proving curriculum material, advising teachers, even giving classes. This is another important "civic scientist" contribution.

In 2008, you coauthored a report of science and technology recommendations for the next administration. One of the suggestions called to enhance federally funded science and engineering research and development. In light of a skittish economic recovery and contentious debate to cut the budget and reduce the U.S. deficit, how would you advise the United States in terms of its investment in science and technology? Where would you focus more money?

I'm not smart enough to answer this question, at least, with any confidence. Rather than try to pick out a field, let me refer to a report of the American Academy of Arts and Sciences, Advancing Research in Science and Engineering ("ARISE"), which you can find on-line at http://www.amacad.org/arisefolder/default.aspx. The study committee (chaired by Tom Cech) that wrote that report concluded that there were two big policy matters that needed attention: support for early-career investigators and support for high-risk, potentially transformational research.

I agree with those findings.

Also, I would say that by failing to coordinate the R&D programs of the various federal agencies (discussed in the first question above), we are likely missing some opportunities and efficiencies. For example, some of the most exciting fundamental research questions lie at the interface between the physical sciences and biomedical sciences. And while NIH (which allocates nearly 50% of all federal research funds) does cooperate with NSF, DOE and other agencies that support the physical sciences and engineering, there are many policy barriers to expanding that cooperation. This is a science policy topic that is ripe for serious study.

What issues should the Federation of American Scientists tackle in the next 65 years?

FAS has a long and distinguished record of achievement in areas of science and technology policy, especially nuclear arms control and non-proliferation, that are vital to the nation's security and other interests. National (and domestic) security will remain critically important policy areas far into the future.

In addition to expanding its programs to include cybersecurity and biosecurity, FAS can be the organization that identifies emerging technologies that pose, or could pose, future threats to the welfare of the United States and its people.

FAS has the "brand" and it should use that to expand the scope of its programs, as it takes advantage of new opportunites to fund its important work.