An Interview with John H. Marburger, Outgoing US President's Science Advisor

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John H. "Jack" Marburger has served as science advisor to President George W. Bush from 2001 to the present, making him the longest-serving science advisor since the position was established in 1957. Now in the final weeks of the Bush Administration, Dr. Marburger has graciously agreed to answer a few questions about his accomplishments, the science advisor's role, and the politicization of science.

You can see my 2005 interview with Dr. Marburger, as well as interviews with six other previous science advisors, at this web site: http://sciencepolicy.colorado.edu/scienceadvisors/

These interviews, along with several analytical and historical essays, are the basis of a new book on presidential science advice that I co-edited with Bobbie Klein, which will appear in 2009.

Interview with John H. Marburger
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What do you see as the most significant legacies of your term as science advisor?

My OSTP [Office of Science and Technology Policy] colleagues and I worked to maintain US leadership in science and technology into the future. We worked on so many issues that it is hard to pick the "most significant." They were all significant to some sector of the economy or the science community or they wouldn't have reached the White House level. A short list would include: helping to establish a science agency within the Department of Homeland Security, working to prevent the reaction to 9/11 from undermining our participation in global science (student visas, "science vs security" issues), helping to develop a rational vision for space exploration, responding to international challenges to US leadership in high-end computing, preserving the independence of Internet governance, freeing up large blocks of the broadcast spectrum for commercial wireless applications, negotiating IPCC [Intergovernmental Panel on Climate Change] assessment reports that could form the basis for US climate policy, getting action on a Next Generation Air Transport System, developing Executive Orders on Aerospace R&D, Broadband, Manufacturing R&D ... The list is very long. We played a major role in developing the president's American Competitiveness Initiative (ACI) and significant roles in energy-related initiatives including ITER [International Thermonuclear Experimental Reactor], Hydrogen, Advanced Energy Initiative, and the Climate Change Technology Program. I am also pleased at the response to my plea for a strengthened "science of science policy."

What advice do you have for your successor?

Hire good people, insist on the highest technical quality of all work that comes through the office, and confine your advice to technical issues, not veering onto the turf of other policy shops without a technical reason to do so. Respond quickly to requests for advice from any source, and make sure work products are synchronized with the budget cycle or the deadlines of the "customer." Deliver the advice in language the user can understand, and don't make it too long.

What advice do you have for the US scientific community for interacting with the highest levels of government?

Only a few scientists are likely ever to interact with "the highest levels of government," and what is most effective depends on whom you interact with and what the topic is. I recommend reading some good books on the subject of science advice, my favorites being Bruce L.R. Smith's *The Advisers: Scientists in the Policy Process*, and Dan Greenberg's *Science, Money, and Politics: Political Triumph and Ethical Erosion*. I also recommend Aaron Wildavsky's The *Politics of the Budgetary Process*. Recently I recommended your book, The Honest Broker, to an audience of scientists. Its academic style makes it harder to read than the others, but it has important ideas that scientists should know about. Scientists are most effective as members of advisory committees, and least effective when they engage in electoral politics. In between these roles is a wide spectrum of behaviors that diminish in impact in proportion to their increasing distance from technical expertise.

What do you see as the outcome of the battles over the "politicization of science" that took place during the past eight years?

I think these "battles" had very little long-term significance. A more serious problem is the exploitation of science by anyone and everyone who has something to sell, whether it's a product, a program, or a point of view. Everyone wants their argument to be backed up by "science," so we see marketing or advocacy language that redefines issues to look like science issues whether they are or not. Your book describes this phenomenon in a political context, but it's really a marketing strategy that applies to all kinds of products.

One of your important legacies is the creation of an initiative on the Science of Science Policy. What are your hopes for its continued development and role in science policy decision making?

My vision for the science of science policy is that it might become an academic field of study with its own status within the social sciences, complete with degree programs, endowed chairs, journals, conferences, and an accumulating literature. The idea is to provide a much stronger empirically oriented context of theory and data for science policy making. The field would produce both scholars and practitioners who would help make new tools and findings available to decision makers, raise the quality of science policy discussions, and narrow options for prioritization. Policy makers in public health, finance, labor, and other economic fields seem to have a much richer context for supporting decisions in their fields than science policy makers do. Given how much our society spends on research and development, science and technology decision makers deserve similar support. Existing science policy studies tend to be *ad hoc*, non-cumulative, and weak on empirical validation. Part of this is owing to lack of data and accepted theoretical structures, and these are missing because of the small community of science policy makers it serves and the expense of defining and gathering the needed data. There has not been a strong "market pull" for improved science policy tools. I think the market is there and growing, and new information technology capabilities make this a good time to build new tools. I say more about this in an OECD [Organization for Economic Cooperation and Development] publication, *Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs* (OECD Publishing (2007); Chapter 2: "The Science of Science and Innovation Policy," page 27).

What do you hope to see in future international collaborations on science and technology policy?

Today's major economies are "globalized," and they have a strong technology component. Consequently, science and technology policy - usually coupled with "innovation policy" - has become more important in international affairs. Policies on technical workforce development, for example, cannot ignore the global mobility of work and workers. Empirically validated policies, therefore, require comparable data from many different nations. That cannot be achieved without strong international collaboration on data definitions. The OECD can play an important role in encouraging such collaboration, and in promulgating best practice. Their success depends on a larger activity where scholars from different countries

collaborate on specific case studies and related work. I hope to see such collaborations supported by the major science-sponsoring nations.

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