

Reports

NSB-98-83
(revised)

RICHARD N. ZARE

CHAIRMAN, NSB MAY 1996- MAY 1998

REPORT TO THE NATIONAL SCIENCE BOARD
MAY 7, 1998

Winston Churchill said, "Success consists of going from failure to failure without loss of enthusiasm." In that spirit let me describe to you what progress I think the National Science Board has made during the time I was its chairman. To me, the most significant change has been a reaching out by the Board to address issues bigger than the immediate concerns of the National Science Foundation. As you know, the Board has by statute a dual role, namely, to set policy for the National Science Foundation and to report to the President and to Congress on the state of health of the nation's science and engineering enterprise. It is in that second realm, I believe, that the Board has assumed a much larger presence.

NSB Oversight of the National Science Foundation

I will not recite a litany of standard though important activities, such as approval of the NSF budget, work on long-range planning, approval of various large NSF awards and programs, supervision of the Inspector General, approval of the Vannevar Bush and Waterman Award winners, etc. Instead, let me highlight some specific items from NSB's special responsibility to oversee NSF. The Board has taken its responsibilities most seriously, approving several actions of consequence. It has:

- Revised the criteria for merit review of all NSF proposals, reducing the number from four to two and sending a clear message that what counts, in brief, is a proposal's intrinsic excellence and impact;
- Established that the default policy on renewal awards is that all expiring awards be recompeted unless it is judged in the best interest of US science and engineering that they not be;
- Approved a Science and Technology Centers Program and provided guidelines for its management that stress educational outreach and the creation of partnerships;
- Approved NSF's participation in the Large Hadron Collider project, which involves multi-agency support of a large facility not located in the US;
- Approved a major revamping of the nation's supercomputer activities which has broadened from centers to partnerships enlarging the base of supercomputing and the reach of this program;
- Issued policy guidance on NSF's role in the assignment of domain names;

- Participated in a multi-agency discussion of what is scientific misconduct and how misconduct proceedings should be carried out in general;
- Provided oversight, through an NSB/NSF staff working group, for the development of the NSF Strategic Plan and NSF Performance Plan under the Government Performance and Results Act; and
- Approved a resolution on the proposed National Institute for the Environment that actively supports the Foundation's role in fundamental environmental research but does not support a separate, stand-alone organization for this purpose.

Reform of NSB Operations:

We began, under the most able leadership of our Vice-Chair, Diana Natalicio, by significantly revising Board operations, particularly its calendar.

- We agreed to reduce the number of Board meetings to five and to have one of these meetings each year in a location outside NSF and the Washington, DC area;
- The Board made an important decision about its organization in addressing NSF responsibilities by agreeing to have non-overlapping memberships in its three standing committees: Audit & Oversight (chaired by Charles Hess), Education & Human Resources (chaired by Shirley Malcom), and Programs & Plans (chaired by John Hopcroft). These standing committees have been put on a comparable footing with various task forces reporting to each standing committee. It is my impression that this division of labor has served us quite well;
- We delegated additional responsibility to the Executive Committee, specifically, the authority to approve the budget that NSF submits to the Office of Management and Budget each year;
- We have moved to modernize the NSB meeting procedures, encouraging reliance on information technology to conduct our work; and
- We have produced an election protocol for filling the positions of Chair, the Vice Chair, and four of the five positions on the Executive Committee.

NSB National Policy Role:

I turn to activities "external" to NSF. To provide a quick summary, we:

- Established a National Science Board Public Service Award, to be given annually to an individual and to a group who foster the public's understanding of science and technology;
- Produced a Working Paper on Federal Support of Science Research that called for more understanding of the methodology of priority setting;
- Held our first off-site policy meeting in Houston, Texas, on the campus of the University of Houston on the subject of the Federal role on graduate and postdoctoral education;
- Produced a National Science Board Paper entitled "The Federal Role in Graduate and Postdoctoral Education." This work came out of our meeting in Houston, Texas, and responded to the Presidential Review Directive to contribute to this assessment process. It also came out of the continuing NSB-GUIRR project on

Stresses on Research and Education in Higher Education Institutions. This project has gone through two phases and has so far involved a total of 25 universities and colleges that are prominent in science and engineering research and education and that have participated in campus discussions and in one or both national meetings in Washington, DC;

- Approved a resolution confirming NSB's intention to prepare analyses ("occasional papers") for input to the process of developing the Federal budget for science and engineering research and education;
- Prepared and approved for release the paper "Industry Reliance on Publicly Funded Research," which should be available in the next few weeks;
- Worked to revise and improve *Science & Engineering Indicators*, which will also be available in a few weeks;
- Published a collection of papers delivered at the NSB symposium on the University of the 21st Century, held during the March 1996 NSB meeting at the University of California, Davis, chaired by Dr. Frank Rhodes, just before I became chair;

A good measure of our desire to reach out can be found in the attached [Appendix](#), which lists the invited visitors and speakers we have had at NSB meetings or functions during the past two years. I think that this collection of people is very revealing of our intentions.

We know that it is easy for people to stumble and fall when they seek to follow a new path. In particular, we have become aware that it is awkward for the NSF Director, as a member of the Board, to vote on the clearance and approval of NSB reports on national research and education policy that may affect Federal agencies other than NSF. These considerations have led us to urge the Director to abstain as a matter of principle from such votes. In this regard, we are also developing a separate Board logo (not yet approved) to help distinguish ourselves from NSF in this new policy role. To me, these are clear signs that we are breaking new ground, but we have much more to do and to learn before we become really effective. It is my belief that the Board's appetite has been whetted for this new role and that there is now no turning back.

Reflections and Comments:

Let me add a more personal note on what being Chair of the Board has meant to me. These past years have been my most rewarding experience of public service of any type. The more I gave, the more I received from others. During this period I authored seven editorials (two in *Chemical and Engineering News*, two in the *Journal of Chemical Education*, one in *Science*, one in *The Scientist*, and one in the *New York Times* Op Ed page). I appeared five times at Congressional hearings and I twice had the misfortune of traveling across the country to attend hearings that were cancelled at the last moment -- something I call painful loss of hearing! I also made official visits to New Zealand (where I had the pleasure of dedicating a C-130 transport), to Antarctica, to Mexico, and to China.

This "burst of activity" by the Board would not have occurred without strong support

from others, especially the NSF Director, Neal Lane, who let it happen, and Dr. Marta Cehelsky, NSB Executive Officer, who provided the Board and me with huge assistance in spite of being quite understaffed to handle an activist Board trying to blaze new trails.

What advice might I offer future members of the National Science Board? When I reflect on what needs to be done to sustain our progress, I recall a powerful statement whose source is unknown to me: "To succeed in politics, it is often necessary to rise above your principles." When I first heard these words, I thought them strange. They are quite different from what Groucho Marx said: "Those are my principles, and if you do not like them, well, I have others." The statement about the need to rise above principles, I have come to realize, contains special wisdom. I suggest that future Board members must be guided by their principles in carrying out all the tasks of the National Science Board, but once the Board has decided on a course of action, its members must learn to pull together in support of one another provided that our decision is not offensive to our most deeply held principles. Too often consensus is equated with near unanimity. We must learn how to reach consensus and then move on to do other business. The National Science Board is not a faculty senate meeting in which those who do not get their way remain free to object indefinitely, a behavior pattern not limited to those in universities.

It has been a true pleasure and a high privilege for me to have had this opportunity to serve on the National Science Board for six years and as your Chair for the past two years. I will miss the good companionship it has provided me, and the opportunity for my own personal growth. In following along these new paths, the National Science Board can make an even more positive contribution to the nation.

Richard N. Zare
Chairman, 1996-1998
ADDENDUM, May 8, 1998

To complete the record for this term, after this report was written, during its May 6-8 meeting, the Board:

- Approved a logo for the NSB; and
- Met with Newt Gingrich, Speaker of the House of Representatives.

Appendix to NSB-98-83

A PARTIAL LIST OF INVITED VISITORS AND SPEAKERS AT
NSB MEETINGS OR FUNCTIONS
MAY 1996 - MAY 1998

Arthur I. Bienenstock, Associate Director for Science, OSTP

William F. Brinkman, Vice President for Physical Sciences, Lucent Technologies, Inc.

Lewis M. Branscomb, former Director, National Bureau of Standards, former Chairman, NSB, and currently Aetna Professor of Public Policy and Corporate Management, JFK

School of Government, Harvard University

Robert Curl, Jr., Rice University (Chemistry Nobelist)

Edward David, Jr., President, EED Inc. and former Science Advisor to the President

James J. Duderstadt, President Emeritus, University of Michigan, and former Chairman,
NSB

Vernon J. Ehlers, member of U.S. House of Representatives

Craig Fields, Chair, Defense Science Board

Jacques Gansler, Vice Chair, Defense Science Board

John H. Gibbons, Director, OSTP and Science Advisor to the President

Thomas J. Glauthier, Associate Director, Natural Resources, Energy and Science, OMB

Ralph Gomory, Executive Director, Sloan Foundation

Thomas Kalil, Senior Director, National Economic Council

Martha Krebs, Director, Office of Energy Research, DOE

David Lee, Cornell University (Physics Nobelist)

Robert Lichter, Executive Director, Dreyfus Foundation

W. Carl Lineberger, Department of Chemistry and JILA, University of Colorado

Chris Llewellyn-Smith, Director General, CERN

Douglas Osheroff, Stanford University (Physics Nobelist)

Kathleen Peroff, Deputy Associate Director, Energy and Science Division, OMB

Frank Press, Senior Fellow, Carnegie Institution of Washington, President Emeritus of
the National Academy of Sciences, and former Science Advisor to the President

Ken Prewitt, Executive Director, Social Science Research Council

Frank Raines, Director, OMB

Robert Richardson, Cornell University (Physics Nobelist)

Steve Schiff, members of U.S. House of Representatives

James Sensenbrenner, member of U.S. House of Representatives

George Singley, Acting Director, DDR&E, DOD

Richard Smalley, Rice University (Chemistry Nobelist)

Harold Varmus, Director, NIH

In addition, we had as our guests at our off-site meeting in Houston, Texas, the following individuals:

John Alderete, University of Texas Health Science Center

Thomas Applequist, Dean, Graduate School, Yale University

Marvin Cassman, Director, Institute of General Medicine, NIH

Paul Cuneo, Director of Technology, Shell Oil Products Co., Houston, Texas

James Decker, Deputy Director, Office of Energy Research, DOE

Marye Anne Fox, Vice President for Research, University of Texas at Austin

Malcolm Gillis, President, Rice University

Stuart Rice, Department of Chemistry, University of Chicago

David Sanchez, Department of Mathematics, Texas A&M

Brian Schwartz, Senior Assistant to the Executive Director, American Physical Society

Roy Schwitters, Department of Physics, University of Texas at Austin

Michael Smailey, Texas Instruments, Inc. and adjunct professor, Rice University

Arthur Smith, Chancellor/President, University of Houston

Robert Trew, Director of Research, DDR&E, DOD

Karan Watson, Associate Dean, College of Engineering, Texas A&M University

Henry Yang, Chancellor, University of California at Santa Barbara

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