

NSB-01-189

**APPROVED¹ MINUTES
OPEN SESSION
365th MEETING
NATIONAL SCIENCE BOARD**

The National Science Foundation
Arlington, Virginia
October 11, 2001

Members Present:

Eamon M. Kelly, Chairman
John A. Armstrong
Nina V. Fedoroff
Pamela A. Ferguson
Mary K. Gaillard
M.R.C. Greenwood
Stanley V. Jaskolski
George M. Langford
Joseph A. Miller, Jr.
Diana S. Natalicio
Robert C. Richardson
Michael G. Rossmann
Vera Rubin
Maxine Savitz
Luis Sequeira
Daniel Simberloff
Bob H. Suzuki
Richard Tapia
Warren M. Washington
John A. White, Jr.

Rita R. Colwell, NSF Director

Members Absent:

Anita K. Jones, Vice Chair
Jane Lubchenco
Chang-lin Tien
Mark S. Wrighton

¹ The minutes of the October 11 meeting were approved by the Board at the November 15, 2001 meeting.

The National Science Board (NSB) convened in Open Session at 11:35 a.m. on Thursday, October 11, 2001, with Dr. Eamon Kelly, Chairman of the Board, presiding (Agenda NSB-01-164). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

Dr. Kelly asked all present to rise and observe a minute of silence in honor of the dead and missing in the terrorist attack of September 11.

AGENDA ITEM 3: Open Session Minutes, August 2001

The Board APPROVED the Open Session minutes of the August 2001 meeting (NSB-01-149, Board Book Tab B).

AGENDA ITEM 4: Closed Session Items for November 2001

The Board APPROVED the Closed Session items for the November 2001 Board Meeting (NSB-01-1163, Board Book Tab C).

AGENDA ITEM 5: Chair's Report

a. 2002 Meeting Calendar

Dr. Kelly reminded Board members that at the August meeting they had decided to postpone their policy meeting and retreat usually held near the end of January and to consider moving up the March meeting to reduce the gap between the November and March Board meetings. After a poll of Board members indicated that attendance would be reduced if the March meeting dates were changed, it was decided to keep the March meeting as originally scheduled, for March 13-14, 2002. The Executive Committee will handle any National Science Foundation (NSF) business that arises between the November and March meetings. Committees and task forces can determine how best to handle their business during that time. At a later date, the Board Office will poll members about possible retreat dates.

b. Vannevar Bush Award 2002 Committee

Dr. Kelly reported that the solicitation for new nominations for the 2002 Bush Award had been mailed. He reminded Board members to submit nominations by the deadline of December 14. Dr. Kelly announced that Dr. George Langford, who chaired the committee last year, would again serve as chair. Also serving would be Drs. Michael Rossmann, Vera Rubin, and Maxine Savitz. The committee's work will culminate with a recommendation to the Board at its March meeting. Dr. Kelly asked Dr. Langford to comment.

Dr. Langford stated that, although the committee will have a list of nominations from last year, new nominations would be welcome. He urged Board members to encourage their colleagues to submit nominations and to consider making their own submissions.

AGENDA ITEM 6: Director's Report

a. Staff Introductions

Dr. Rita Colwell, NSF Director, announced several staff appointments: Dr. Esin Gulari, Acting Assistant Director for Engineering; Dr. George Strawn, Acting Assistant Director of Computer and Information Science and Engineering; Ms. Amy Northcutt, Deputy General Counsel; Dr. James A. Yoder, Director of the Division of Ocean Sciences.

b. Announcement about Nobel Laureates

Dr. Colwell announced that of the 12 Nobelists recently named, 8 were supported by NSF at some time in their careers, and 5 currently receive NSF funding. Most of the laureates serve regularly as reviewers of NSF proposals. The Director noted that physicist Carl Weiman was honored earlier this year as recipient of the 2001 Director's Award for Distinguished Teaching Scholars, NSF's highest honor for excellence in both teaching and research, and that physicist Eric Cornell was honored by NSF in 1997 as recipient of the Alan T. Waterman Award for Outstanding Young Scientists.

c. Congressional Update

Dr. Colwell reported that on September 6 the Research Subcommittee of the House Science Committee held a hearing on NSF's large facilities management plan. Dr. Colwell testified, along with Dr. Anita Jones, the Board's Vice Chair, and Dr. Christine Boesz, NSF's Inspector General. Members of the subcommittee were supportive of NSF's management of large research facilities, and there was extensive discussion about how priorities are set for projects within the Major Research Equipment (MRE) account. On September 25 Dr. Mary Clutter, Assistant Director of Biological Sciences, testified before the Research Subcommittee on NSF's basic research programs relevant to agriculturally important crops and NSF's support of collaborative research in biotechnology issues in developing countries.

Dr. Colwell reported that three bills mentioning NSF had been introduced since the Board's August meeting. H.R. 2795, the Agro-Terrorism Prevention Act of 2001, is designed to protect and promote the public safety and interstate commerce by establishing Federal penalties for threats or destructive acts against plant and animal research facilities. S. 1389, the Homestake Mine Conveyance Act of 2001, provides for the conveyance of certain real property in South Dakota to the state with indemnification by the U.S. Government. H.R. 2912 authorizes NSF to establish a grant program for partnerships between U.S. research organizations and those in developing countries for research on plant biotechnology.

The Director reported that the conference report on H.R. 2620, the VA/HUD and Independent Agencies Appropriations Act, is anticipated before the expiration of the first continuing resolution on October 15.

d. Robots Used in Recovery Effort

Dr. Colwell stated that the knowledge embodied in U.S. academic and scientific research institutions is a valuable asset during troubled times. She noted that NSF is in a unique position to identify individuals and groups with specialized expertise and talent. Following the terrorist attacks on September 11, NSF made small grants for exploratory research that enabled engineers to go to the World Trade Center in New York City to assist in recovery efforts and to assess damage with the goal of improving future building construction. Dr. Colwell introduced a video clip of NSF-funded robots being used at the World Trade Center.

AGENDA ITEM 7: SPI Report – Approval

Dr. Kelly, chair of the Committee on Strategic Science and Engineering Policy Issues (SPI), presented the draft final report, “Federal Research Resources: A Process for Setting Priorities,” for Board approval. He reminded Board members that they had approved the text as a draft interim report in August. Since then, the committee has prepared an executive summary, several appendices, and other materials that have been sent to Board members for comment. Board comments have been incorporated into the final draft.

The Board APPROVED “Federal Research Resources: A Process for Setting Priorities”(NSB-01-156) for printing and distribution, subject to final edits at the discretion of the Chair.

Dr. Kelly thanked members of the committee—Drs. John Armstrong, Rita Colwell, M.R.C. Greenwood, Anita Jones, Joseph Miller, Robert Richardson, and Warren Washington—for their dedication and hard work. He also thanked the committee’s executive secretary, Jean Pomeroy; all Board members who participated; NSF staff, especially the staff of Science Resources Statistics, International Programs, and Administrative Services; representatives of other Federal agencies and other governments; congressional staff; members of the science policy, engineering, and academic communities; the Board Office staff; and all others who participated in special meetings and made contributions to the report.

AGENDA ITEM 8: SEI 2002 Review

Dr. Kelly asked Dr. Richard Tapia to report on the status of “Science and Engineering Indicators–2002.”

Dr. Tapia reported that Mr. Rolf Lehming, Director of the Integrated Studies Program, Science Resources Statistics, briefed the subcommittee on Federal agency comments received on the “Orange Book” draft of “Indicators 2002,” and on the authors’ responses to those comments. Mr. Lehming stated that there has been a delay in getting data released from the National Center for Education and Statistics for inclusion in “Indicators 2002.” The subcommittee agreed to proceed with publication, subject to Board approval,

and to include a statement that the education data will be released at a later date at a specified website. The subcommittee and later the Education and Human Resources (EHR) Committee approved the draft "Indicators 2002" for recommendation to the Board.

Mr. Lehming also reported on progress related to the feasibility of including a chapter on the environment in "Indicators 2004." Dr. Tapia added that, in response to a letter from Dr. Greenwood, the subcommittee intends to expand the attention given to the science and mathematics teacher workforce, especially on issues of teacher preparation, in "Indicators 2004."

Dr. Marta Cehelsky, Executive Secretary of the Board, led a discussion on a possible companion piece for "Indicators 2002." After discussion, the subcommittee recommended that the topic of the companion piece be science in support of national security. There was no consensus, however, about the time frame for publishing the companion piece. In a subsequent meeting, subcommittee members and staff will discuss data and time constraints and reach a decision about the production schedule for a companion piece.

At the recommendation of the subcommittee, and with the approval of the EHR Committee, the Board APPROVED Resolution NSB 01-177:

The National Science Board approves the publication of the report; authorizes that the report be rendered to the President for submission to Congress; and authorizes the Chairman of the Subcommittee on Science and Engineering Indicators of the Committee on Education and Human Resources and the Chairman of the Board, jointly, to approve such further reasonable modifications to the report as may be deemed necessary or desirable in view of review comments such as those of the Office of Science and Technology Policy, the Office of Management and Budget, and other Federal agencies as well as any additional comments by Board members or the addition of new or updated data and information.

Dr. Kelly thanked Dr. Tapia and members of the subcommittee: Drs. Richardson, Savitz, Daniel Simberloff, and John White, and Norman Bradburn, NSF liaison to the subcommittee. He also thanked the parent committee, EHR, chaired by Dr. Bob Suzuki, for its guidance; and Ms. Mary Poats who served as the subcommittee's executive secretary. Dr. Kelly noted the expertise and hard work of the Division of Science Resources Statistics staff and thanked Dr. Lynda Carlson, Director of Science Resources Statistics, and Mr. Lehming for their leadership.

AGENDA ITEM 9: Presentation: Merit Review Criterion on Broader Impacts

Dr. Colwell introduced the topic of merit review criteria and asked Dr. Thomas Cooley, Director of the Office of Budget, Finance and Award Management, to comment on the broader impacts criterion. After his remarks, Dr. Armstrong, chair of the Committee on Programs and Plans (CPP), called attention to guidance for proposal writers and

reviewers and a list of examples that had been discussed by CPP. He also submitted a resolution on merit review criteria.

After a brief discussion, the Board APPROVED Resolution NSB 01-167:

The National Science Board affirms the significance of both the intellectual merit and the broader impacts of projects supported by NSF, and endorses actions to raise awareness of the importance of both merit review criteria. These actions should include wide dissemination of generic examples of activities that address the broader impacts criterion, and amendments to policies and procedures for proposers, reviewers and NSF Program Managers on the use of both criteria in the proposal and award process.

ADENDA ITEM 10: Committee Reports

a. Audit and Oversight (A&O)

Dr. Stanley Jaskolski, committee chair, reported that the committee received several reports. Dr. Colwell discussed NSF's efforts to develop an action plan addressing the top ten management challenges facing the agency and noted NSF's role in addressing concerns that emerged from the September 11 events. Mr. Richard Hastings, Acting Division Director of Contracts, Policy and Oversight, provided an update on the steps completed and under way on the Gemini Audit Corrective Action Plan, and Dr. Colwell noted the scientific success of the telescopes. The committee also received an update on the status of an investigation and two recently initiated audits.

b. Committee on Programs and Plans (CPP)

Dr. Armstrong, committee chair, reported that the committee discussed the merit review criterion on broader impacts, received a presentation on the Large Hadron Collider, and discussed issues related to priority setting for MRE and facilities items. CPP and the Committee on Strategy and Budget are jointly preparing guidelines to clarify the criteria used in setting the priorities among these important projects.

Dr. Armstrong offered a resolution affirming that the MRE items presented in the budget are the Board's highest priorities.

After a brief discussion, the Board APPROVED Resolution NSB 01-180:

The Board's highest MRE priorities presented in the budget are ALMA Phase II, EarthScope, and NEON.

It was noted that the listing is alphabetical.

Dr. Armstrong reported that Dr. Margaret Leinen, Assistant Director for Geosciences, briefed the committee on progress in implementing the Board's recommendations in the report *Environmental Science and Engineering for the 21st Century*.

c. CPP Subcommittee on Polar Issues

Dr. Washington, subcommittee chair, reported that the subcommittee heard updates on South Pole modernization and operations, a technical review of Ice Cube, a report on the research voyage of the U.S. Coast Guard icebreaker Healey, outreach efforts dealing with the surface heat budget of the Arctic Program, and health and safety program improvements. He noted several ways in which the events of September 11 had affected polar operations.

d. CPP Task Force on Science and Engineering Infrastructure (INF)

Dr. White, task force chair, reported that the task force reviewed and revised the table of contents for its draft report and is committed to having a draft for CPP to review in March. The November meeting will be devoted to obtaining additional information and testimony needed to produce the draft report.

e. Education and Human Resources Committee (EHR)

Dr. Suzuki, committee chair, reported that the chair and vice chair of NSF's Advisory Committee on Equal Opportunities in Science and Engineering (CEOSE) briefed the committee on current plans and activities, and reviewed the recommendations from the 2000 CEOSE report. The committee and CEOSE intend to work closely together in the future. Dr. Judith Ramaley, Assistant Director of Education and Human Resources, and Dr. Norman Fortenberry, Acting Director of Human Resource Development, gave an overview of NSF's current programs and activities in support of diversity, the challenges facing diversity efforts, and areas in need of more attention. The committee asked to be briefed in more detail on NSF's activities, including assessments of their efficacy, at future meetings.

The committee reviewed the latest draft of "The Road to Excellence: The National Science Foundation's Leadership in K through 16 Science, Mathematics, Engineering and Technology Education." The report will be used by the committee as a guide for its reviews of current and future NSF programs. The report will not become a Board report.

Dr. Ramaley gave a brief update on the status of the Math and Science Partnerships Initiative, including pending legislation and NSF's current plans.

f. EHR Task Force on National Workforce Policy (NWP)

Dr. Miller, task force chair, reported that the task force discussed the revised draft report framework, which draws heavily on "Science and Engineering Indicators-2002" data. Data indicate that the United States has been underdeveloping its domestic human

resources in science and engineering relative to demand. The task force is therefore moving toward a keystone finding that in order for the United States to maintain a fundamentally strong position in science and engineering, it must develop its domestic human resources at a greater level than is currently the case. The task force also discussed the challenges of motivating individuals to focus on science and engineering, meeting the educational needs for formal schooling and continuous development, and balancing short-term and long-term workforce needs.

g. Committee on Strategy and Budget (CSB)

Dr. Washington, reporting in the absence of Dr. Jones, committee chair, stated that the committee discussed how best to fit the committee's annual cycle of activities to strategic budget issues and how to provide effective guidance on priorities to NSF. The committee also heard presentations on two surveys on NSF award size and duration, an overview of the dynamics of NSF core activities and related priority areas, and an update on the FY 2002 and 2003 budgets.

h. Task Force on International Issues in Science and Engineering (ISE)

Dr. Diana Natalicio, task force chair, reported that the main focus of the task force meeting was a review of the consolidated final report, which combines the earlier transition report and the guidance report requested by the NSF Director. After the events of September 11, the task force reviewed the report to determine whether any changes were needed. The task force added a stand-alone section that specifically mentions the September 11 events and points out that implementation of the recommendations, which remain unchanged, is even more compelling than when they were originally drafted. Because the task force believes that current circumstances have increased the urgency of finalizing and distributing the report, the final draft for comment will be distributed simultaneously to the full Board and to participants in the task force's deliberations. The task force expects to ask for Board approval of the final draft at the November meeting.

Dr. Kelly urged Board members to submit their comments on the draft as quickly as possible so that the final report can be presented to the Board for approval in November.

i. Committee on Strategic Policy Issues in Science and Engineering (SPI)

Dr. Kelly, committee chair, reported that the committee had discussed distribution of "Federal Research Resources: A Process for Setting Priorities." He reminded Board members that the preliminary recommendations were widely distributed to stakeholders through the Board's web page in March, and they generated considerable interest and comment. The May symposium was attended by more than 200 members of Federal agencies and other stakeholder groups. More than 20 organizations and individuals provided written comments. The committee plans to distribute the final report by posting on the Board's web page, mailings, courtesy meetings with policy makers, briefings with the Academies, and outreach to the media. Dr. Kelly encouraged additional ideas for enhancing distribution or targeting groups that would give the report greater impact. He

reminded the Board that Congressional committees and the Office of Management and Budget had requested or strongly encouraged the study, and he had held preliminary meetings with chairs of appropriate Congressional committees to give them a preview of the report.

AGENDA ITEM 11: Other Business

After thanking the many NSF staff members who helped prepare for and who participated in the meeting, Dr. Kelly adjourned the Open Session at 12:45 p.m.

Janice E. Baker
Policy Writer/Editor