

**Meeting of the Advisory Committee for
International Science and Engineering
April 19&20, 2010
National Science Foundation, Room II-555**

SUMMARY MINUTES

Members Present:

Jean-Pierre Ezin, African Union Commissioner for Human Resources, Science and Technology, African Union Headquarters, Addis Ababa, Ethiopia.

Gretchen Kalonji, Chair, Professor of Electrical Engineering, University of California, Santa Cruz, CA.

George Middendorf, CEOSE Liaison, Professor of Biology, Howard University, Washington, DC.

Lueny Morell, Director of University Relations, Hewlett Packard Company, Palo Alto, CA.

Jeanne L. Narum, Founding Director—Project Kaleidoscope (PKAL), Senior Fellow—PKAL/Association of American Colleges & Universities, Director—The Independent Colleges Office, Washington, DC

Barbara Olds, Professor Emeritus, Division of Liberal Arts and International Studies, Colorado School of Mines, Golden, CO.

Saifur Rahman, Director, VT Advanced Research Institute, Arlington, VA.

Janis Weeks, Professor, Institute of Neuroscience, University of Oregon, Eugene, OR.

Lilian Wu, Program Executive, University Relations, Corporate Technical Strategy Development, IBM Corporation, Yorktown Heights, NY.

Members Absent: Several members were unable to attend the meeting due to the volcanic eruption in Iceland that forced the cancellation of flights from Europe.

Howard Alper, Chair / Président, Science, Technology and Innovation Council / Conseil des sciences, de la technologie et de l'innovation, Ottawa, Ontario, Canada.

Roddam Narasimha, Chairman, Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore, India.

Maresi Nerad, Director, Center for Innovation and Research in Graduate Education (CIRGE), Associate Dean, UW Graduate School, Associate Professor, Educational Leadership and Policy Studies College of Education, University of Washington, Seattle, WA.

Kevin Pilz, Commodity Security and Logistics Adviser, Commodities Security and Logistics Division, Office of Population and Reproductive Health, Bureau of Global Health, U.S. Agency for International Development, Washington DC.

Ismail Serageldin, Director, Library of Alexandria, Alexandria, Egypt.

Nicholas Vonortas, Director, Center for International Science and Technology Policy, George Washington University, Washington, DC.

Daniel Wubah, Vice President and Dean for Undergraduate Education, Office of the Provost, Virginia Tech, Blacksburg, VA.

OISE Senior Staff Present

Larry Weber, Director of OISE

Mark Suskin, Acting Deputy Director of OISE

The spring meeting of the Advisory Committee for International Science and Engineering (AC/ISE) was held at NSF in Room 555, Stafford II on April 19&20, 2010.

April 19, 2010

Opening Sessions

In order to enable the three AC/ISE Working Groups (Partnerships for International Research and Education (PIRE); Developing Countries; and Strategic Planning) to meet, the first 75 minutes of the meeting were set aside for the Working Groups to meet in concurrent sessions. In addition, an orientation session for new members was held at this time.

Welcome and Introductions

Dr. Gretchen Kalonji, AC/ISE Chair, called the meeting to order at 10:00 a.m. and welcomed the attendees. As this was the first meeting for several new members, she asked all the members to introduce themselves. She also mentioned that this would be her last AC/ISE meeting as Chair as she has accepted the position as Assistant Director-General for Natural Sciences at UNESCO.

Update on OISE and NSF

Dr. Larry Weber, OISE Director, provided a summary of senior staffing changes within NSF and OISE since the last AC/ISE meeting. He also presented detailed breakdowns of the OISE and NSF FY2010 budgets and the FY2011 request. In addition, a preview of the meeting agenda was presented.

Working Group on Partnerships for International Research and Education

Dr. Barbara Olds, Chair of the PIRE Working Group, introduced Dr. Libby Lyons, OISE PIRE Program Coordinator, who opened this session with a review of the lessons learned

from the three PIRE competitions. She mentioned that PIRE was at a critical juncture with respect to its future. She requested input from the AC/ISE on the following:

- Are the PIRE objectives still the right objectives?
- Is PIRE meeting the needs of NSF's communities?
- Is the emphasis on better project management appropriate?
- Guidance on the next PIRE competition (PIRE 4).

Topics/issues related to PIRE that the AC/ISE discussed:

- Enhancing the ability of US institutions to work internationally:
 - Need for best practices on the internationalization of institutions;
 - Gaps often exist within the bureaucracy of institutions: a PI and a provost may have very different views on what constitutes international engagement;
 - The University of Washington public health program is a possible model for a program that is well integrated at all levels and has a strong built-in international curriculum component.
- Management Issues:
 - The transition from a regular-sized award to a PIRE is not always easy; The PI often shoulders the added responsibility;
 - Management on the NSF side should be shared between OISE and the corresponding directorate(s). Time should be made available for the PI to meet with NSF program officers.
- Other Operational Issues Raised:
 - Preliminary proposals are viewed as highly valuable as they save everyone time;
 - Effect of intra-institutional competition on the types of PIRE proposals received;
 - Should PIRE be focused?: Topical vs. 100 flowers blooming
 - Advantages of focusing PIRE
 - Decreases in the number of applications;
 - Better defines the relationship between PIRE and the directorates (as the strength of these relationships is currently variable);
 - Allows for strategic pairing with US research priorities.
 - Disadvantages
 - May dampen efforts at getting the best ideas/best research for international collaboration;
 - May result in PIRE becoming the international arm of an existing program.
 - PIRE should consider partnering with entities/programs within and outside of NSF including:
 - The Science, Engineering and Education for Sustainability (SEES) Program;
 - Other government agencies, including USAID;

- Industry (by building on the model established with ERCs).
- Award size:
 - The range of funding requests was broad for PIRE 3;
 - Why did proposals with small budgets not succeed?
 - Is there a possibility to provide seed money for some proposals using a model similar to the Science of Learning Center's catalyst grants?

Working Group on Developing Countries

Dr. Saifur Rahman, Acting Chair of the Developing Countries Working Group, introduced Dr. DeAndra Beck, OISE Developing Countries Program Manager, who made a presentation that included examples of new NSF activities involving the developing world, an update on the NSF/USAID MOU for Cooperation, and a summary of the “Partners in Science for Development” initiative (i.e., US PIs with active NSF awards are eligible to apply for USAID-funded supplements in order to add a development-oriented dimension to their research efforts in priority areas, to be determined by USAID and NSF on an annual basis). In particular, Dr. Beck asked the AC/ISE to consider the following questions:

- Does the proposed “Partners in Science for Development” meet the needs of the US research community in a way that will facilitate collaboration with developing countries?
- If so, does the partnership provide additional benefits we have not considered?
- If not, what gaps exist, either for the US or developing country partners? Are there concerns?

Topics/issues related to Developing Countries that the AC/ISE discussed:

- Change the name of the program to “Partners in Science and Engineering for Development”.
- Need for a workshop/project to generate information on the role of science as a driver of economic development.
- Basic vs. applied research. Can NSF's mandate to support basic research be adequately coordinated with the need for applied studies in developing countries?
- Even when NSF supports work with developing country partners, it still wants equal partners. Thus, there is currently a need to build human capacity in developing countries. This falls outside the scope of NSF's mandate, but may be something that can be pursued via collaboration with USAID.
- A top priority of developing countries is job creation. It takes time to develop the talent needed for a skilled labor force. We need to make sure that our initiatives have a long-term vision that results in true collaborators on the other side.
- A model similar to “Partners” could be established with industry. Many corporations have a presence in developing countries. Fostering public/private partnerships may be an additional mechanism to provide support for developing country partners.

- The Taj connection (a recent expansion of the GLORIAD) was discussed as a model for public/private collaboration that will greatly expand scientific communication in several developing countries.
- The World Bank is a possible source for developing country support although historically they have been more interested in infrastructure than research.
- A workshop idea was discussed to determine best practices on the role of science as a driver of economic development.

Overseas Offices

Presentations were given by the heads of the Beijing, Tokyo, and Europe offices. Limited discussion took place during this session as most of the available time was consumed by presentations. All presentations mentioned the need to continue to stress an integration of international as part of NSF culture.

Alex DeAngelis, NSF Beijing Office:

- NSF is well-respected overseas. Are we using the NSF brand to its fullest?
- In US-China collaborations, all disciplines are not created equal:
 - The majority of collaboration is in geosciences, math, and physical sciences.
 - Some degree of collaboration exists in the social sciences including some studies on politically sensitive topics.
 - There is a lower level of collaboration in biology, and variation within different fields of biology: more collaboration in environmental biology than in molecular biology.
 - Citations of biology papers coming out of China are relatively high.
 - Does NSF/BIO know about these Chinese strengths?
 - There is very little, if any, collaboration in computer science and engineering.
- Data sharing/data ownership is an issue in China.
 - The GLORIAD project is greatly enhancing the flow of information into China.
 - Each week the equivalent of all information in the Library of Congress is transmitted to China.

Machi Dilworth, NSF Tokyo Regional Office:

- The new government in Japan is re-assessing its approach to S&T:
 - The current emphasis is focused on being the best in certain sectors, but the new government is considering a change;
 - The S&T budget under the new government is better than expected;
 - The administrative structure of S&T is now being reviewed.
- Japan is developing a new five-year strategic plan for S&T:
 - Emphasis on “green innovation” and “life innovation” that will address the aging population;

- There may be a shift in emphasis to research projects that can be rapidly commercialized.

David Stonner, NSF Europe Office:

- There are 42 NSF-counterpart agencies in the region plus the European Union, which funds roughly 10% of research in participating countries.
- The picture in Europe is currently changing:
 - It is increasingly difficult to coordinate funding because bureaucracies are not coordinated, local politicians have regional agendas, and there are varying levels of trust among EU countries;
 - In Europe, many PIs find the proposal review process(es) unfair, which is not the case at NSF;
 - The economic downturn had a negative impact on science in Europe. Many European PIs were envious of the ARRA funds that were made available in the US.
- OECD is working on best practices for funding collaborative research with developing countries. Partnerships with developing countries are considered very important in Europe. Europe is ahead of the US in this realm.
- Overall, the research topics in Europe have a high degree of overlap with those in the US.

Invited presentation: “A Perspective on International Scientific Collaborations: Opportunities and Pitfalls”, by *Katepalli R. Sreenivasan, Senior Vice Provost and University Professor, New York University*

Dr. Sreenivasan provided his perspective on many topics in recent, current, and future international scientific collaborations. Key issues included: the amount of research money that is required to have a true impact; the large variation in how that money should be targeted in different parts of the world; the need not only for research collaboration, but for sustained mentoring in many underdeveloped parts of the world; a discussion of the concern that an over-emphasis on diversity for its own sake could reduce overall quality of scientific research; his opinion that the NSF model of funding research and then “standing back” while the researchers carry out the project does not work well in underdeveloped countries due to the need for continual mentoring; the relationship between, and critical need for, science diplomacy and capacity building; and the recognition that topics to be supported must be tailored to the strengths of the location.

Topics/issues the AC/ISE and Dr. Sreenivasan also discussed:

The US recognizes a strong link between basic research and economic development. However, such a direct link is not so evident or understood in other parts of the world.

It is necessary to develop an adequate system for providing curious, intelligent people the tools and infrastructure they need to succeed. If the “system” within a country can do this, that country will prosper.

Discussion with Dr. Arden L. Bement, Jr., Director, National Science Foundation

Dr. Bement was accompanied by Dr. Cora Marrett, Acting Deputy Director, NSF.

Dr. Bement began by describing the ongoing process of determining NSF's budget. The 2011 budget markup is underway, but there is no indication as to when it will be finished. A Continuing Resolution is anticipated in early FY 2011.

The Presidential budget has increases for NSF, and NSF is pressing for more growth. NSF is looking at increasing funding for PIRE, Muslim-Majority Countries, and Developing Countries, including new mechanisms for helping countries that are unable to support their side of a collaboration with the US. An example of this is the new program Basic Research to Enable Agricultural Development (BREAD), and another is the MOU with USAID.

Dr. Bement said that across NSF, there is broad support for international programs, and noted Polar Programs as a particularly strong example, with enormous international cooperation.

As this was the last time that Dr. Bement will address the AC/ISE, he offered some reflections. He opined that the world was shrinking rapidly due the Internet. There are still major improvements coming, some of which we do not know about yet, and thus the world will continue to shrink for the foreseeable future. The need to be globally engaged is already very powerful and only growing more powerful. Video-teleconferencing has turned many scientific collaborations into 24-hour-per-day operations. Strong international interaction and connectedness will be critical for the US to stay competitive.

Dr. Bement also noted that science is a gateway to understanding and trust-building in the international community, and that NSF plays an important role in science diplomacy. NSF has both a duty and an opportunity as a premier science agency to be at the forefront in science diplomacy

Dr. Bement stated that international collaboration is critically important to US universities, which is where the real strength of the US resides. He singled out Purdue as one university in particular that has experienced huge growth both in, and because of, its international activities. He also noted the rapid increase in the number of US branch campuses opening around the globe.

Topics/issues the AC/ISE and Drs. Bement/Marrett also discussed:

Congress is still very much engaged in the message of the "Gathering Storm" report and is thus focused on competitiveness and innovation. NSF is the "go-to" agency for addressing these concerns through the combination of education, research, and preparing the workforce of tomorrow.

The world's expectations for US science and engineering leadership are growing much faster than NSF increases in support of it. NSF can support some new initiatives, but cannot support the entire enterprise.

Much international support from NSF comes from outside of OISE, and therefore the AC/ISE should provide guidance and suggestions on how OISE can more effectively leverage NSF-wide support.

Committee Discussion

The discussion began with how to make the three AC/ISE working groups more effective. There was general agreement that the chair of each working group needs to coordinate more closely with the OISE liaison to continue activities between AC/ISE meetings. Dr. Weber cautioned that it could reduce the effectiveness and utility of the working group if the OISE liaison were to play too large a role. It was decided that OISE working group liaisons would be called upon to help with the logistical issues (i.e., email exchanges and teleconferences) of enabling more working group activity between AC/ISE meetings, and that the chairs of each working group must assume a more active role in seeing that such activity occurs.

Discussion then ensued on how to better link the AC/ISE with the international working groups of other NSF ACs. It was agreed that it could be helpful to invite a member from each of those working groups to attend the AC/ISE meeting, and conversely, to send a member of the AC/ISE to each of those working group meetings. It was also suggested that the AC/ISE meeting might be scheduled consecutively with other AC's to better facilitate this activity. The discussion ended on the related topic of OISE's influence on NSF solicitations, with Dr. Weber noting that OISE is now "in the loop" on this; OISE can suggest international language in all new NSF solicitations.

April 20, 2010

Working Group on Strategic Planning

Ms. Lueny Morell, Chair of the Strategic Planning Working Group, invited Mr. John Tsapogas, OISE Program Coordinator for Global Initiatives, to summarize strategic planning activities at NSF and OISE. Mr. Tsapogas stated that a draft document prepared by OISE, in cooperation with other NSF offices, provides overall guidance for implementation of NSF policies and practices for international engagements. *NSF Policies and Practices for International Engagements* is under final review by the NSF Director's Office and is expected to be circulated to all NSF program managers in the near future. OISE chairs the NSF internal International Coordinating Committee that regularly coordinates a review of the Foundation's international policies and practices, and will update the policies and practices document as needed.

Mr. Tsapogas described OISE involvement with a twelve-agency Federal working group of the National Science and Technology Council that is developing standardized interim and final reporting requirements for principal investigators. OISE involvement is guided by the OISE strategic goal: "Inform – Knowledge Management for International Cooperation" which calls for OISE to "strengthen mechanisms for collecting, analyzing, and disseminating information that can facilitate international engagement." OISE requested that four items be included in the proposed Federal-wide "Research Performance Progress Reports (RPPR)":

- Persons and countries involved in foreign collaboration on the grant;

- Travel of PIs to foreign countries and duration of stays;
- Description and location of foreign and domestic partner organizations;
- Dollar amount of award budget being spent in foreign countries.

The RPPR is currently available for public comment and is pending approval by the Office of Management and Budget (<http://www.nsf.gov/bfa/dias/policy/rppr/index.jsp>). The AC/ISE was very pleased with this initiative and emphasized that “what is measured is valued.” Dr. Weber noted that implementation of the new reporting requirements will likely involve a “Dear Colleague” letter to the research community and revisions to the NSF Proposal and Awards Policies and Procedures Guide.

Dr. Mark Suskin, Acting Deputy Director of OISE, provided an update on the drafting of the NSF Strategic Plan for FY 2010-2015. The Plan is currently being circulated to all NSF advisory committees for comments and is expected to be presented to the National Science Board for approval to submit to the Office of Management and Budget. AC/ISE members raised several concerns and Ms. Morell distributed a draft set of comments to members to stimulate discussion. The Chair of the AC/ISE will finalize comments and submit them to the Office of the Director by May 7.

Science, Engineering, and Education for Sustainability (SEES): How can we promote productive international engagements?

Dr. Timothy L. Killeen, Assistant Director for Geosciences, described the President’s budget priority for advancing energy and climate security and its implications for international engagements. The *Science, Engineering, and Education for Sustainability (SEES)* portfolio at NSF totals \$765.5 million in the FY 2011 request. It includes an expanded commitment to global change research that will generate the discoveries in climate and energy science needed to inform societal actions for environmental and economic sustainability. He described a variety of opportunities for international collaboration, including bilateral agreements and a series of international meetings associated with the Conference on Global Challenges for Environmental Research Funders (“The Belmont Forum”). Dr. Killeen listed several reasons for international collaboration:

- Access to complementary expertise or facilities;
- New challenges presented to the traditional academic research agenda and supported by a new focus on “adaptation and mitigation,”
 - Seek global help for predictions and to provide input for policymakers,
 - Share practical knowledge, which may involve new partners in industry and local leaders,
 - Build expertise in multidisciplinary and translational research;
- Many issues and actions have global impacts.

Three major new NSF/GEO projects involve significant international partnerships:

- NEON (National Ecological Observatory Network);
- *Sikuliaq* (Alaska Regional Research Vessel);
- Ocean Observatories Initiative.

In response to AC/ISE comments, Dr. Killeen stressed the importance of participation from industry and the social sciences in the SEES initiative. He noted that the Advisory Committee for Geosciences has formed an international working group to pursue these and other initiatives and welcomes comments from OISE and AC/ISE.

Prospects for new models involving multilateral and multisector partnerships

This topic was introduced by Vanessa Richardson, OISE Director of Operations and Analysis. In her presentation and subsequent discussion, the following were mentioned:

- There are different classes of international scientific organizations
 - Grantmaking (e.g., Inter-American Institute (IAI));
 - Research Institutes (e.g., International Institute for Applied Systems Analysis (IIASA));
 - Data repositories (e.g., Global Biodiversity Information Facility (GBIF)).
- Is it still important for NSF to participate in these organizations?
 - Funding/dues currently come from several sources across the Foundation;
 - Many of these organizations support efforts that are consistent with NSF's mandate, for example, the inclusion of women and underrepresented groups;
 - Knowledge of these organizations may be lacking among the NSF PI community. Currently, information is disseminated through professional societies, the OISE webpage, and word of mouth.
- Scientific organizations can play a role in addressing the non-scientific elements of scientific research.
 - Perhaps NSF should play a greater role in addressing issues that interfere with research;
 - IAI founding document mentions customs and permits;
 - ICSU has a committee on the responsible conduct of science.
- One AC member mentioned the Canada-California Strategic Innovation Partnership (CCSIP) which is a bilateral agreement for science funding between Canada and California.
- The US should actively collaborate more with the EU.
 - US is more like a continent than a country when compared to Europe;
 - There was a recent NSF/EPA/DOE solicitation with the EU on nanotechnology;
 - Aligning the timing of funding and research priorities is a challenge for US-EU collaboration;
 - Should US-EU models eventually be expanded to include the African Union?

Wrap-up Discussion by the Committee

Dr. Kalonji identified two action items for AC/ISE:

1. Prepare AC/ISE comments on the draft NSF Strategic Plan, FY 2010-2015;
2. Continue the work of the three AC/ISE Working Groups through a series of teleconferences (one every other month) prior to the Fall 2010 AC/ISE meeting.

Dr. Weber stated that the OISE Strategic Plan would be aligned to be congruent with the new NSF Strategic Plan. He suggested that that AC/ISE Strategic Plan Working Group shift its attention to revision of the OISE Strategic Plan after the NSF Strategic Plan is approved. He also suggested (and it was agreed by the AC/ISE) that the PIRE Working Group expand its focus to address other OISE programs and new models for international partnerships; the new name for this working group would be the Program Working Group. Drs. Narum and Morell offered to send the committee copies of corporate models and programs for international cooperation. AC/ISE members will be polled for interest in serving on working groups, with consideration of the approaching end of some member's terms of service.

Committee Business including next Meeting Date

The committee was reminded that a Committee of Visitors (COV) review of OISE will be held in FY 2011. The COV is chartered as a subcommittee of the AC/ISE and at least one member of the AC/ISE member must be a member of the COV. Dr. Olds described her positive learning experiences as Chair of the 2008 COV.

Dr. Ed Murdy, OISE Liaison to AC/ISE, conducted an informal poll of members to establish a date for the Fall 2010 AC/ISE meeting. September 20–21 and September 27–28, 2010, were identified as the two sets of dates with the fewest conflicts for the AC/ISE members present. All members will be contacted before a final date is determined.

The Spring Advisory Committee meeting was adjourned at 12:15 pm.

APPROVED:

Gretchen Kalonji, Chair

Date