

**ADVISORY COMMITTEE  
FOR  
INTERNATIONAL SCIENCE & ENGINEERING (ISE)**

**National Science Foundation**

**MEETING MINUTES  
January 21, 2016**

**Committee Members Present**

Dr. Susan Avery, Chair, President Emeritus, Woods Hole Oceanographic Institution  
Dr. José Fortes, University of Florida  
Dr. Julio Ibarra, Florida International University  
Dr. Meg Lowman, California Academy of Sciences (by phone)  
Dr. George Middendorf, Howard University  
Dr. Anne Petersen, University of Michigan  
Dr. Winston Soboyejo, Princeton University

**Welcome/Introductions**

Dr. Susan Avery, AC/ISE Chair, opened the meeting and welcomed two new (Dr. Julio Ibarra and Dr. Meg Lowman) and two returning members (Dr. Steven McLaughlin and Dr. Anne Petersen). Current and new members then introduced themselves followed by staff and visitor introductions.

The minutes from the previous meeting were put on hold as the Chair felt that they did not fully capture the meeting's discussion.

**Emergent Strategy**

Dr. Rebecca Keiser, Head, Office of International Science and Engineering (OISE) presented her strategy for the Office moving forward. An important question to ask as we move forward is what are the trends (e.g. Where is Korea going? Where is robotics going?). Other questions to ask are: Where are we collaborating most? Where are the gaps? Do we have the right balance (e.g. research vs. students, are the funding levels correct)? We need to conduct an analysis of OISE's programs. The bottom line is that we need better data. Dr. Keiser also noted that she has re-established the International Coordinating Committee (ICC) and it will work with OISE on developing international engagement guidance and framing an international report out.

The discussion that followed generated the following questions.

*What motivates international collaboration?* International criteria will help guide us. We need to ask what's in it for us particularly when we are asked to engage in applied programs such as iCorps.

*Analytics:* The Committee has been asking for analytics for a while now. It is refreshing to see that analytics are on the table.

*Collaborative vs. extractive collaborations:* The Committee applauds the focus on collaborative vs. extractive collaborations. Dr. Keiser noted that this is also a concern for the National Science Board. Are the Directorates on board for encouraging the former rather than the latter?

*Partnerships are important:* We need to be inclusive. The best scientists are statistically dispersed around the world. We need to work with "local" scientists.

*Data collection:* It was suggested that we look outside of NSF as we begin to collect data on our international engagements (e.g. Man in the Biosphere). We should also look at collaborative agencies for historical data.

*Broadening Participation:* How do international collaborations fit into broadening participation? There needs to be guidance for BP for international collaborations.

*Museum world:* One of the missions of museums is the training of students and outreach efforts. Currently there is no museum strategy for international research. Five of the largest museums are planning a meeting to discuss an international strategy. China is opening a museum a day.

## **Establishment of Working Groups**

The Committee agreed to establish the following working groups to reach out to the US S&E community to further develop ideas and activities related to international collaborations.

1. Portfolio Balance
2. Topics for Studies/Foresight Analysis
3. Community Outreach/Workshops
4. Engaging the Diaspora

The working groups were agreed upon based on the Committee's discussion of what the U.S. scientific community wants to see with respect to international research and where it wants to go internationally. The Committee also discussed engaging the diaspora, developing countries, under-represented continents (e.g. Latin America, Africa) and the museum world. The Committee agreed that it is important to think about

different ways of doing science (e.g. recognizing the importance of observations on a daily basis, systems patterns, using indigenous knowledge). We should make small investments to change perspectives as to what is possible and not focus just on the technologically advanced.

Dr. Keiser noted that many scientists do not think about international collaboration. She highlighted that NSF's GROW (Graduate Research Opportunities Worldwide) program is undersubscribed. In speaking with university administrators, many question why students should go abroad to study as their advisors are here in the U.S. Attitudes differ by discipline.

**Antarctica:** One Committee member questioned whether international cooperation with Antarctica is possible. Dr. Keiser responded that there is a lot of movement and energy vis-à-vis Antarctica and noted that NSF will be hosting a meeting at NSF of Antarctic Treaty Members. Another concern raised was what we are doing to prevent extractive science that could wreak havoc locally in the Arctic.

**Data collection:** We need guidelines to clarify the data collection process and we need the metrics to know what is going on internationally. How are we going to influence policy? What are other agencies doing internationally?

**Emerging investments:** We should look at where other countries are investing. Where is the critical mass and what is the potential for the future (e.g. McDonnell Douglas/China, telecommunications/Africa).

**Realignment of OISE:** Dr. Keiser presented plans for realignment within OISE. She noted that a few years ago OISE had 57 people. OISE is currently lean with about 30 staff members and is not going to grow substantially. The Office currently has four regional clusters (Africa, Near Middle East and South Asia; Americas; East Asia Pacific; and Europe/Eurasia) and a Global Initiatives group. With the realignment, there will be three clusters (Countries, Programs and Analysis, Administrative) that will be matrixed. The Office expects three new program manager hires (two for the countries cluster and one for the programs and analysis cluster), a Deputy Office Head and a Supervisory Budget Analyst. The overseas offices will report to the Head of OISE.

**Planning for the Director:** The Committee members raised the following as topics to discuss with Dr. Córdova. They appreciate OISE's refreshing focus on strategy and would like to advocate for more resources – to explore the unexplored, not just to do more of the same. OISE needs to be integrated throughout NSF. It was noted that NSF funding of international has not grown in response to the importance of global research. There is no strategic effort within NSF for international engagement. Dr. Keiser responded that the Directorates (ADs) are looking to OISE for guidance and we are trying to demonstrate our role and importance. The Committee stressed that this is not a control issue, but one of leveraging. One Committee member proposed a three level strategy: 1) explore the unexplored, 2) leverage resources and 3) promote partnerships and interactions for greater impact.

## **Meeting with the Assistant Directors:**

Representatives from the NSF Directorates shared with the Committee highlights of their interactions with OISE and their own international activities.

*Dr. Roger Wakimoto (Assistant Director/GEO):* Appreciates the higher level of engagement with OISE and the placement of OISE as an Office. GEO operates a lot of facilities and finds that their programs are becoming more and more international. The challenges that GEO faces internationally include open access, data sharing, paying for data and moving equipment across borders.

*Dr. Barbara Olds (EHR):* Noted that Dr. Joan Ferrini-Mundy (Assistant Director/EHR) recently visited Thailand. EHR recognizes that Citizen Science is growing globally which raises data privacy issues. Dr. Ferrini-Mundy also visited Brazil and reported that Brazil has huge data on students which raises FERPA (Family Educational Rights and Privacy Act) issues. EHR has received requests from OECD for comparison projects. What should NSF's investment be in this and what's in it for us?

*Dr. Erwin Gianchandani (Acting Deputy Assistant Director/CISE):* CISE is very pleased with its collaboration with OISE. Dr. Gianchandani stressed that CISE's international engagements are intentional and they focus on concrete opportunities where they can capitalize. Two areas of interest are wired networking (Japan) and wireless innovation (Finland).

*Dr. Joan Frye (Acting Deputy Head/OIA):* OIA does not have a large international presence nor does it have many programs. The instrumentation OIA oversees is placed primarily in the US. An exception are the Science and Technology Centers (STC) which do have strong international partnerships.

*Dr. James Olds (Assistant Director/BIO):* Dr. Olds commented that international collaboration is his passion. He highlighted the following as being important to BIO: brain research, Ebola (working with NIH and RAPID awards), BREAD (Bill & Melinda Gates Foundation, food in developing nations), collaborating with the UK BBSRC on ideas labs and co-funding. He also noted that Finland, Singapore and China are important to BIO.

*Dr. Fleming Crim (MPS):* Dr. Crim noted that the difference between MPS and GEO is that MPS operates fixed facilities while GEO operates mobile operations. MPS oversees the Large Hadron Collider, ICECUBE, telescopes (Gemini). The partnerships are science driven. With respect to international collaborations, MPS does not start with an MOU. The partnership has to evolve from grass roots.

*General Discussion:* When should NSF engage internationally? Aspirational situations? Binary relationships? These are very delicate situations. Dr. Keiser agreed that the US has a difficult time saying no and suggested that the guidelines being

developed for international engagement should help. We need to engage in the best science. Should international partnerships be serendipitous or structured? Dr. Crim noted that DMS' relationship with France and Chile stem from the mining and engineering industries. The question of responding to geopolitical sensitivities was posed to GEO. How do we overcome resistance in this country? We opened an office in Beijing. We overcame the resistance, it took a lot of time, but we did open the office.

### **Meeting with NSF Director France Córdova and Chief Operating Office Richard Buckius:**

#### *Report Out by Committee Members:*

On behalf of the Committee, Dr. Avery thanked the Director for the realignment of OISE within the Foundation and noted that the group is re-energized. The Committee welcomes OISE' focus on analytics and developing guidance for international engagement. She also reported that the Committee has agreed to set up four working groups.

Dr. Soboyejo reported on the Committee's discussion of exploring unexplored areas. He described three potential themes that arose from this discussion: 1) the need to look for frontiers of global science all across the world, not only where GDP is highest, but where there is human potential; 2) leveraging resources – within NSF and outside NSF; 3) expanding the impact of OISE by creating incentives and new structures (e.g. supporting more workshops/fellowships/partnerships).

Dr. Lowman offered her perspective from The California Academy of Science whose mantra is "Explore the Unexplored." She stressed that we need to reward local partnerships, that there need to be incentives to work in remote areas and that broader impacts need to be refocused.

General: While the resources of the office are not growing along with the growth of global science the Committee is grateful for the dramatic transformation of OISE.

#### *Comments by the Director:*

Dr. Córdova thanked the Committee members for their comments and observations. She stressed that the National Science Board is also pleased with OISE's strategic outlook moving forward.

On the topic of NSF's overseas offices, she reported that the Europe Office recently moved from Paris to Brussels, that the Head of the China Office has been providing excellent summaries of news from China - presented in a perfect tone on sensitive issues. There will be changes made to our presence in Japan. We need to look critically at where else we want to set up offices - Latin America and Africa are possibilities.

Dr. Córdoba posed the following questions “What does success look like?” and “What is the impact of science on global policy and issues.” She noted that NSF’s focus on the food/energy/water nexus is important and has an impact on people. Where we fall short is in the area of global policy. The State Department is critical in bringing more science to the table. However, the report card is not stellar. The metric of success would be if NSF were invited to be at the table more.

It was noted that in the past, every US Embassy had a science attaché. This is no longer true today.

Another observation was that a lot of scientists don’t get training in policy and vice versa. One OISE staff member recently spent three years at State on detail and brought back different perspectives. A suggestion was made to have more sabbaticals – sending NSF scientists to State and bringing State Department staff to at NSF.

The Arctic and Antarctic are very critical to science. Dr. Córdoba noted that the Antarctic is so built up that there is a crisis looming if mining begins.

**Adjournment:** The meeting adjourned ½ day due to the impending snowstorm. A date for the next meeting was not selected.