

# COMMITTEE ON EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING

## Meeting Minutes

June 29-30, 2009

### Meeting Site

National Science Foundation (NSF), Room 1235 S; 4201 Wilson Boulevard; Arlington, Virginia  
22230

### Meeting Participants

#### Members Present:

Ms. Sandra Begay-Campbell, Sandia National Laboratories, Albuquerque, NM (*virtual Participant*)  
Dr. Wesley L. Harris, Massachusetts Institute of Technology, Cambridge, MA  
Dr. Mae C. Jemison, The Jemison Group, Houston, TX (*Virtual Participant*)  
Dr. Richard E. Ladner, University of Washington, Seattle, WA (*virtual Participant*)  
Dr. Marigold Linton, University of Kansas, Lawrence, KS  
Dr. Theresa A. Maldonado, CEOSE Chair, Texas A & M University, College Station, TX  
Dr. William C. McCarthy, New Mexico State University, Las Cruces, NM  
Dr. Samuel L. Myers, Jr., HHH Institute of Public Affairs, University of Minnesota,  
Minneapolis, MN  
Dr. Maria Ong, TERC, Cambridge, MA  
Dr. Muriel Poston, Skidmore College, Saratoga Springs, NY  
Dr. Alex Ramirez, HACU National Headquarters, San Antonio, TX

#### Member Absent:

Dr. Joseph S. Francisco, Purdue University, West Lafayette, IN  
Dr. Evelyn Hammonds, Harvard University, Cambridge, MA

#### CEOSE Executive Liaison/CEOSE Executive Secretary:

Dr. Margaret E. M. Tolbert, Senior Advisor, Office of Integrative Activities, NSF

#### OIA/NSF Primary Support Staff Members

Ms. Geraldine (Geri) Farvés, IT Specialist, Office of Integrative Activities/NSF  
Ms. Patricia A. Ferguson, Sr. Program Assistant, EPSCoR, Office of Integrative Activities/NSF  
Ms. Denita Y. Norris, Program and Technology Specialist, Office of Integrative Activities/NSF

#### Non-Members Who Presented or Attended the Meeting:

<p>Dr. Shirley Adelstein, LWPR Dr. Bernice Anderson, OAD/EHR/NSF Mr. Thomas Anderson, Fluor Ms. Victoria Anderson, OAD/EHR/NSF Ms. Lida Benison, NSF/BIO/DBI, QEM Intern Dr. Katie E. Blanding, U.S. Army (Federal Liaison to CEOSE) Ms. Elizabeth Buechler, Academy/HRM/OIRM/NSF Ms. Christine Cataldo, HRM/ORIM/NSF Mr. Francisco Cervantes, NSF/OISE, HACU Intern Dr. Julia V. Clark, DRL/EHR/NSF</p>	<p>Ms. Preyanka Makadia, Science Magazine/AAAS Dr. Cora B. Marrett, OD/NSF Dr. J.V. Martinez, Office of Science/DOE (Federal Liaison to CEOSE) Dr. Thomas Merrero, University of Missouri Ms. Tiah E. McKinney, George Mason University Mr. Shawn L. Murray, OEOP/OD Dr. Sally O'Connor, DBI/BIO/NSF Ms. Giabriella Orona, NSF/BIO/MCB, HACU Intern Mr. Jairo Pava, NSF/ENG/EEC, HACU Intern Dr. Carl Person, NASA (Federal Liaison to CEOSE)</p>
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<p> <b>Ms. Brittany Cole</b>, NSF/DMS, QEM Intern  <b>Dr. Walter V. Collier</b>,* Beyond The Bottom Line, Inc.  <b>Dr. Ted A. Conway</b>, CBET/ENG/NSF  <b>Dr. Kelsey Cook</b>, CHE/MPS/NSF  <b>Dr. Teresa (Terry) Davies</b>, OLPA/NSF  <b>Ms. Corinda Davis</b>, Beyond The Bottom Line, Inc.  <b>Dr. Jessie DeAro</b>, HRD/EHR/NSF  <b>Dr. LaJoyce H. Debro</b>, MCB/BIO/NSF  <b>Dr. Beverly Early</b>, Captioner, Metro Reporters, Inc.  <b>Mr. Ashlee Edwards</b>, NSF/IIS, QEM Intern  <b>Dr. Cinthia J. Ekstein</b>, ET/CBET/ENG/NSF  <b>Mr. Eric Esparza</b>, NSF/OLPA, HACU Intern  <b>Dr. Michael Fredenberg</b>, TCUP/HRD/EHR/NSF  <b>Dr. Arlene Garrison</b>, EPSCoR/OIA/NSF  <b>Ms. Sherrie Green</b>, OIA/OD/NSF  <b>Ms. Cheneyce Haney</b>, NSF/EHR/DUE, QEM Intern  <b>Dr. W. Lance Haworth</b>, OIA/OD/NSF  <b>Ms. Janelle Holt</b>, NASA  <b>Ms. Martha James</b>, HRD/EHR/NSF  <b>Dr. Sylvia M. James</b>, DRL/EHR/NSF  <b>Dr. Sean L. Jones</b>, DMR/MPS/NSF  <b>Dr. Fae Kosmo</b>, OD/NSF  <b>Dr. Carylynn Kemp Larson</b>,  Academy/HRM/OIRM/NSF  <b>Dr. Mark Leddy</b>, RDE/HRM/EHR/NSF  <b>Dr. Noemie Levy</b>, NSF/OLPA, Rice Intern  <b>Dr. Lisa E. Lewis</b>, BD/BFA/NSF  <b>Dr. Frances Li</b>, OISE/OD/NSF  <b>Dr. Carmiña Londoño</b>, OISE/OD/NSF  <b>Ms. Victoria Macias</b>, NSF/OISE, HACU Intern </p>	<p> <b>Dr. Kitchka Petrova</b>, GK-12/DGE/EHR/NSF  <b>Ms. Megan Planas</b>, NSF/CBET, QEM Intern  <b>Ms. Claudia Postell</b>, Veterans Administration  <b>Dr. Earnestine Psalmonds</b>, DGE/EHR/NSF  <b>Dr. Joye Purser</b>, U.S. Representative Eddie Bernice Johnson's Office  <b>Ms. Isha M. Renta</b>, NSF/GEO/ATM, HACU Intern  <b>Ms. Tonya J. Rose</b>, NSF/DRL, QEM Intern  <b>Ms. Maude Rowland</b>, NSF/ENG/CBET, Rice Intern  <b>Dr. Ann Russell</b>, DEB/BIO/NSF  <b>Dr. André H. Sayles</b>, Diversity Office/U.S. Army  <b>Dr. Edward Seidel</b>, Office of Cyberinfrastructure  <b>Dr. Xiomara Sinisterro</b>, USAID  <b>Dr. Kathryn Sullivan</b>, OIA/OD/NSF  <b>Dr. Judith S. Sunley</b>, SBE/NSF  <b>Ms. Sandra Thomas</b>,* Institute for Broadening Participation  <b>Dr. Jennifer Thornhill</b>, OAD/SBE/NSF  <b>Dr. John Tsapogas</b>, OISE/NSF  <b>Dr. Patricia J. Tsuchitani</b>, BD/BFA/NSF  <b>Dr. David J. Verardo</b>, ATM/GEO/NSF  <b>Dr. Uma Venkateswaran</b>, EPSCoR/OIA/NSF  <b>Dr. Wanda E. Ward</b>, EHR/NSF  <b>Ms. Kierra Ware</b>, OEOP/OD/NSF  <b>Dr. Susan C. Weiler</b>, ATM/GEO/NSF  <b>Ms. Chavon Renee Wilkerson</b>, CHE/MPS/NSF  <b>Dr. Sally L. Wood</b>, EEC/ENG/NSF  <b>Mr. Adam Zimmerman</b>, AAUW  <b>Mr. Patrick Zongo</b>, NSF/IIS, QEM Intern </p> <p> <hr/> <i>*Virtual Participant</i> </p>
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## Meeting Notes

### Monday, June 29, 2009

The welcome and opening remarks were given by **Dr. Theresa A. Maldonado**, CEOSE Chair. Members concurred with the approved minutes of the February 19-20, 2009 meeting and did not indicate the need for any changes. **Dr. Maldonado** reported on her June 5, 2009 telephone conference call with **Dr. Cora B. Marrett**, Acting Deputy Director, National Science Foundation. **Drs. W. Lance Haworth, Margaret E. M. Tolbert, and Fae Korsmo** participated too. The telephone conference call covered the following topics: Stimulus funding; webcast listening session on Hispanic Serving Institutions with reference to the America Competes Act; grants for stipends; the need for Agencies to work together on common interests (e.g., broadening participation in STEM) and to avoid program duplication; recommendations from CEOSE pertinent to the mini-symposium on Native Americans in science and engineering; the roundtable discussions by NSF senior managers held at CEOSE meetings (the best strategy for obtaining the most value from interacting with senior managers is being sought); the data chapter and the desired involvement of SBE in the preparation of the 2009-2010 CEOSE biennial report; the CEOSE Subcommittee on Communications, Accountability, and Evaluation (e.g., interest in having this subcommittee involved in NSF evaluations); CEOSE membership vacancies; and a review of the CEOSE meeting agenda for June 29-30, 2009. **Dr. Marrett** expressed her delight in being invited to have a conversation with CEOSE members on the first day of its June meeting.

**Presentation: *The Intersection of Science and Engineering with Diversity and Inclusion* by Dr. André H. Sayles, Brig. Gen. (Ret.), Deputy Director, Army Diversity Office, U.S. Army**

**Dr. Sayles** offered that the U.S. Army has been a leader in equal opportunity since the fifties, and there is much to share on this topic. He spoke of a statement by **Dr. Samuel L. Myers, Jr.**, former CEOSE Chair, on the STEM end state: “A point at which there is sustained change for the better. A time in which the culture will be more receptive to diversity, and there will be substantial improvements to broaden participation through institutional transformation.”

Since equal opportunity alone is not enough, the Army is building what will be a world class diversity program. There is a need to take a holistic approach to STEM outreach efforts, including K-12 and colleges and universities. The Army will continue to develop strategies that promote education. A concern is the shortage of STEM graduates and the extent to which the government can compete for those decreasing human resources on a salary basis. The culture of the STEM community, along with related professions, needs to be transformed so that diversity of thought and background has a higher value. This change will become a reality through education on cultural, generational and other differences across the U.S. and global populations. Our STEM community will be more receptive to diversity, resulting in substantial improvements that broaden participation. **Dr. Sayles** reviewed a number of diversity examples in various settings and spoke about initiatives of the fifties through the nineties. He referred to the Michigan Law School case as a very important milestone in diversity. This was a case focused on the diversification of the classroom for a better experience for students who need to be prepared for practice in a diverse world.

In presenting a selection of diversity related milestones, **Dr. Sayles** mentioned the Workforce 2000 publication by the Hudson Institute in 1987, which he viewed as the beginning of sustained diversity initiatives, especially in corporations. Diversity is a practice based discipline. Essentially, diversity is about differences in people—different attitudes, experiences, and backgrounds. Inclusion is an environment in which all people feel valued, have a sense of belonging, and know that their thoughts and perspectives are appreciated. This supports a high performing organization through inspired contributions. So, when it comes to looking at the world through a diversity lens, as opposed to an equal opportunity lens, you include many more factors in order to better understand how differences can enhance mission accomplishment. **Dr. Sayles** suggested that diversity should be viewed as a process or a journey. Efforts should be made to understand differences in others. For example, it might prove of greater interest to the younger generation if STEM is cast as way of helping people while contributing to our national security.

There are numerous potential outcomes of diversity: 1) Enhanced communication, 2) Valued personnel—improved performance, reduced conflicts, reduced absenteeism, and enhanced teamwork, 3) Better products and solutions as a result of taking advantage of ideas from people of different backgrounds—creativity and innovation, 4) An environment with inspired individuals, 5) Expanded links to broader American society, 6) An inclusive workplace that enhances overall mission effectiveness, and 7) Enhanced ability to operate in an international environment through better understanding of global cultural differences. **Dr. Sayles** concluded that a national strategy to address high school graduation rates will contribute to STEM outcomes. Our education crisis is much bigger than STEM, although the impact of STEM shortages is imminent. A stand-alone STEM strategy may have limited success due to dependence on inputs from the K-12 educational systems. If we are not graduating, we will not be STEM students in college. For those who attend college, more inclusive environments within the STEM professions will enhance interest, retention and productivity across diverse populations. With or without

role models, inclusiveness can make a difference. We must understand how to create and maintain inclusive environments in our academic institutions. Education, including STEM components, has national security and global economic implications.

**Dr. Sayles** advised that the Army's mission is to support and defend the Nation, which includes global operations and the ongoing war. Before Soldiers and Army Civilians deploy, they go through cultural awareness training. This enables them to better understand the cultures in other countries and better accomplish their mission. Understanding differences works the same way in academic institutions and the workplace.

**Presentation: *Women and Underrepresented Minorities in STEM: a Science Policy Perspective* by Dr. Joye E. Purser, Senior Legislative Assistant for Congresswoman Eddie Bernice Johnson**

**Dr. Purser** spoke of the work of **Congresswoman Eddie Bernice Johnson**, a founding Member of the House Diversity & Innovation Caucus and Member of the Congressional Black Caucus. **Congresswoman Johnson** represents the 30<sup>th</sup> Congressional District of Texas (Dallas area) and has for 17 years served on the House Committee on Science and Technology. She is engaged in science policy supporting the inclusion of women and underrepresented minorities in careers in science, technology, engineering, and mathematics (STEM). **Dr. Purser** has been working with **Congresswoman Johnson** since 2005 with specific assignments on Science Committee business and other issues such as healthcare, energy, environment, and agriculture.

**Dr. Purser** discussed the competitiveness challenges that are faced by the nation; among those being a lack of diversity in our nation's workforce in STEM. She referenced NSF data on the disproportionately low percentage of employed African American PhD engineers. She mentioned the National Academy of Sciences report, "Beyond Bias and Barriers", which was published in 2006. The report states that women face a lifetime of gender bias that discourages their participation in STEM careers; and the report provides specific recommendations to universities, federal agencies, and Congress on how to mitigate this bias. **Dr. Purser** commented that the prevailing tone of a more recent report, "Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty," differs from that in "Beyond Bias and Barriers." Another report of interest is The National Action Council for Minorities in Engineering's report, "Confronting the 'New' American Dilemma - Underrepresented Minorities in Engineering: A Data-base Look at Diversity." This report was authored under contract to the Commission on Professionals in Science and Technology. Additionally, another report, which is being prepared by the Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline, is anxiously awaited from The National Academies. **Dr. Earnestine Psalmonds** of NSF and **Dr. Peter H. Henderson** of the National Academies are actively engaged with others in the committee to finalize the report. This report was requested in The America Competes Act, and it should contain recommendations on policy changes for greater support for the inclusion of women and minorities in STEM careers.

**Dr. Purser** presented information on K-12 students, referencing comparison studies conducted at the University of Texas at Austin. Mathematics scores of White and African American third graders are comparable; however, by the time that they reach fifth grades, there is a dramatic drop in test scores for African American students. On numerous occasions, **Congresswoman Johnson** has stated that we lose children in terms of their interest in science and math as early as elementary and middle school.

Legislation of interest to some members of the Congressional Black Caucus and the Diversity and Innovation Caucus includes the America Competes Act, which was passed in 2007 and signed into law (the Noyce Teacher Training Program received significant emphasis in the America Competes Act and

was slated for large increases in funding, but those increases have not materialized. The Higher Education Act that passed last summer included specific programs dealing with minorities and STEM. Other legislation includes HR1144, the, “Fulfilling the Potential of Women In Academic Science and Engineering Act.” This bill, which was introduced to the 110<sup>th</sup> Congress by **Congresswoman Johnson**, had eleven co-sponsors. It was reintroduced this year and is being considered by the Science Committee. This legislation resulted from National Academies report, "Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering", recommendations. The development of the bill is pending discussions with the academic- and education communities as well as with industry.

In reference to other legislation, the FY10 Commerce, Justice, and Science appropriations bill passed the House of Representatives. **Congresswoman Johnson** introduced an amendment to secure \$32 million for undergraduate programs at Historically Black Colleges and Universities. She is hopeful that the provision will succeed following Conference of the legislation.

**Dr. Purser** then discussed the Diversity and Innovation Caucus, a bipartisan group of more than 60 members of the House of Representatives. This Caucus was created three or four years ago for greater engagement of members of Congress in minority inclusion and broadening of STEM careers and innovation. It was formed by **Congressman Sylvester Reyes** of Texas, several other Members including **Congresswoman Johnson, Congressman Honda, Congressman Hinojosa, Congressman Butterfield, and Congresswoman Lofgren**. In 2007, the Caucus invited stakeholder groups, members of federal agencies, scientific organizations, and others to attend a meeting to voice their priorities in terms of STEM education policy. More than 100 groups responded either in writing or in person. This input was compiled, and it serves as guidance for the Caucus today.

**Dr. Purser** stated that the Diversity and Innovation Caucus sent a letter on January 16, 2009, to **Dr. John Holdren**, who is currently the Director of the White House Office of Science and Technology Policy. In that letter, the D&I Caucus asked the Administration to make the inclusion of women and minorities a greater national priority. The letter contains an 8-point policy agenda including support for recruitment, retention, and professional development of well qualified STEM teachers in high-need schools; rigorous STEM curriculum; hands-on laboratory experiences; and informal learning and other methods that increase interest and academic performance in STEM areas. Other points included in the agenda include 1) ensuring that all schools are identifying and mitigating gaps in student performance in STEM education; 2) increasing STEM academic and research capacity at minority serving institutions (a point that aligns with **Congresswoman Johnson's** amendment in the Appropriation Bill); 3) strengthening the STEM pipeline; 4) strengthening and re-examining oversight of existing legislation aimed specifically at broadening participation by underrepresented groups in STEM fields; 5) supporting a systematic approach to changing for the better the face of STEM careers in the public view via policies that strengthen mentoring programs for women and minorities and a federal marketing campaign for STEM careers; and 6) supporting efforts to centralize, publicize, develop, and maintain a database of STEM organizations, research, scholarships, awards, programs, jobs, and best practices from federal and non-federal sources. The D&I Caucus met with an employee of the Office of Science and Technology Policy (OSTP) this spring to follow up on the letter and discuss ways that the Administration and Congress can work together to decrease racial and gender disparities in STEM. A formal response from **Dr. Holdren** has not been received. **ACTION: Dr. Purser** suggested that CEOSE strengthen its lines of communication with OSTP. This will help to promote the CEOSE mandate both within OSTP and at the White House.

In the spring of 2009, some members of the Diversity and Innovation Caucus sent a letter to the Chair and Ranking Members of the Budget and Appropriations committees about specific federal programs that promote STEM diversity. **Dr. Purser** stated that there will likely there will be a greater role for OSTP in coordinating federal programs that address the inclusion of women and minorities in STEM careers. The NAS report is anticipated to serve as guidance on policy development in this area.

At the request of **Dr. Purser, Dr. Psalmonds** commented on the types of data gathering that is being done in preparation for the NAS report; however, she was not in a position to comment on details about the report. **ACTION:** It was suggested that CEOSE reach out to **Congresswoman Johnson's** office and the House Science Committee for information on developments in reference to women and minorities in STEM legislation.

During the question and answer period, **Dr. Purser** responded to questions from CEOSE members on a variety of issues relative to the content of her presentation. Also, **Mr. Adam Zimmerman**, Regulatory Affairs Manager of the American Association of University Women (AAUW) delivered a short statement on some of the work of the organization. The focus was on what AAUW is doing to promote opportunities for women and girls and other underrepresented populations in STEM fields. He advised that AAUW has been known to go “out on a limb” for efforts in STEM. Years ago, this organization made an award to **Dr. Marie Curie** to purchase radium for use in her research. Today, AAUW provides about \$3 million annually for women scholars and for Tech Savvy camps for girls across the country. These and other efforts help secure American competitiveness. He spoke of the status of women in the computer science and math workforces, degrees awarded, and earnings. To help close the gap, AAUW has launched, with the aid of NSF awards and other resources, a number of efforts (including the preparation and distribution of a report on girls and women in STEM, initiatives to enhance gender equity, and initiative to train teachers to better educate girls) to encourage girls and other underrepresented groups to pursue stem careers—a priority of **President Obama's** administration. **Mr. Zimmerman** noted that CEOSE continues to play a role in fostering the refinement of STEM related projects and programs that will lift the economic standing and position the United States has as a driving scientific force in the 21st century. Further, he stated: Many smart motivated women are ready with focus and determination to work with AAUW and CEOSE, as well as other groups to ensure that the next generation of technological pioneers are given the tools they need to succeed and thrive. Following **Mr. Zimmerman's** statement, he responded to questions from CEOSE members. One meeting attendee spoke of the urgent need for legislation to address the problems of children in elementary school so that they can be prepared to enter science, technology, and engineering fields in the future.

### **A Conversation with Dr. Cora B. Marrett, Acting Deputy Director of the National Science Foundation**

**Dr. Marrett** gave brief remarks prior to responding to questions from CEOSE members. She commented on the budget as well as the American Recovery and Reinvestment Act, and she encouraged CEOSE members to continue to address diversity in STEM as a part of the national conversation on competitiveness and the role of universities.

During the question and answer period, the following was addressed by **Dr. Marrett** with input from **Dr. Fae Korsmo**: 1) Progress in implementing the Broadening Participation Working Group's framework for action, including updating the broadening participation portfolio and website; modifying the electronic reviewer system to broaden the pool of reviewers and panelists; training of NSF executive and non-executive staff; and networking and brown-bag sessions among program officers and division directors on broadening participation. Recommendations from the CEOSE mini-symposium on Native Americans were raised at one networking session, for example. 2) **Dr. Marrett** mentioned the pending recruitment of a director of the NSF Office of Equal Opportunity Programs (OEO). The new OEO director will be a key leader in NSF's efforts to enhance diversity. 3) In response to a question about the level of support to generate the needed number of STEM high school teachers, **Dr. Marrett** commented that this is an important issue that cannot be addressed by a single agency in isolation. NSF is working with others on this, for example, the U.S. Department of Energy and the U.S. Department of Education. Also, within NSF, the directorates and major offices are collaborating on STEM education topics. **Dr. Marrett**

suggested that CEOSE help NSF think about what the agency is best positioned to do in STEM teaching and learning to ensure the advancement of all of our nation's talent. 4) In response to the question about the status of the CEOSE letter about the definition of Broader Impacts that was submitted to NSB by **Dr. Bement, Dr. Marrett** advised that it was submitted to the NSB and that the board is prioritizing its agenda. 7) In response to a question, **Dr. Marrett** provided additional information about recommendations received in reference to the mini-symposium on Native Americans in STEM. She spoke of efforts to compile programs and activities that are already in place and efforts to identify what is missing from the portfolio. She promised to have more details on this topic, as well as others (e.g., HSI program), at a later date. 8) Interactions of CEOSE with OSTP were discussed. **ACTION: Dr. Marrett** indicated that she will work with OSTP to raise awareness of CEOSE and inquire as to how OSTP would like to interact with CEOSE. 9) In reference to the planned CEOSE Mini-Symposium on Women of Color in STEM, which is to take place on October 27-28, 2009, a question was raised on how CEOSE should work with NSF on this endeavor. **Dr. Marrett** proposed that CEOSE set up a connection with the White House Council on Women and Girls. NSF has representation on the Council.

**Discussion: *Plans for the CEOSE Mini-Symposium on Women of Color in Science and Engineering and Key Points from the "Understanding Interventions that Broaden Participation in Research Careers Conference"*, Discussion Leader: Dr. Maria (Mia) Ong, CEOSE Member**

**Dr. Ong** reported on the Third Annual Conference on Understanding Interventions that Broaden Participation in Research Careers. This conference took place on May 7-9, 2009, in Bethesda, Maryland. It was organized primarily by the American Association for the Advancement of Science (AAAS). The focus was on college and university programs designed to broaden participation in research careers. There were numerous discussions and plenary sessions, as well as break-out sessions on this topic. The emphasis was on development, implementation, scalability, building capacity, as well as how to involve students in various parts of the education spectrum. Several agencies (including NSF), organizations (National Center on Women and Information Technology), and universities featured their programs. Also, **Dr. Kellina Craig-Henderson** of SBE/NSF gave a presentation on the science of broadening participation, a program that is seemingly well underway in development in SBE/NSF. CEOSE was given credit for encouraging and promoting this development. Another NSF program officer, **Dr. Janice Cuny** of CISE/NSF, spoke on the importance of broadening participation in computing. She credited the contents of a *CEOSE Biennial Report to Congress* with causing more focus on K-12 education, which resulted in the provision of more resources for this educational level. The only person at the conference who discussed women of color in STEM and the importance of community colleges was **Dr. Marie-Elena Ryes** from the Frida Kahlo Institute for Women at the Borderlands, an organization in New Mexico. Of course, there were other speakers of importance. There is a post-conference website on which details of the conference are presented. A book will be published on this conference, and it will be provided free to those who request it.

On another topic, **Dr. Ong** provided information on the planned CEOSE mini-symposium on women of color in STEM. She thanked **Dr. Margaret E. M. Tolbert** and **Ms. Denita Norris** for facilitating the establishment of dates and the securing of space for this event. Further, she thanked **Dr. Tolbert** for assisting with the identification of mini-symposium attendees and financial support. **Dr. Ong** advised of plans for the mini-symposium, which will begin on October 27, 2009, following the CEOSE meeting and end on the afternoon of the 28<sup>th</sup>. She has been working with **Dr. Evelyn Hammonds**, the mini-symposium co-organizer. **Dr. Ong** thanked CEOSE members who provided names of potential speakers and attendees. The effort is to have a diverse group of people (especially those included in the CEOSE congressional mandate) from different fields present and discuss a variety of issues pertinent to women of color in STEM. This mini-symposium will be educational and is anticipated to result in the identification

of potential actions that CEOSE can consider in its development of recommendations to NSF to improve the position of women of color in STEM. As the question and answer period unfolded, several meeting attendees provided comments. For example, **Dr. Katie Blanding** of DOD called attention to the need to include in the mini-symposium a representative from the rural community. **Dr. Wesley Harris** called attention to some facts about MIT women of color: 1) They graduate in smaller numbers than men of color; 2) They graduate sooner and with higher GPAs than men of color; 3) They have fewer problems with the Committee on Academic Performance than men of color; 4) Yet, they do not go on to careers as exciting as some of the men of color. In this lies a gender issue. One could ask if there is an environmental issue that impacts men of color versus women of color. What do we need to understand about women of color at an institution like MIT? In response, **Dr. Ong** briefly described her research. She then focused her attention on national data, which paint a different picture than that at MIT. For instance, at the national level women of color outpace men of color at the Bachelor's Degree level, and this continues to the career level. She advised that her work is dedicated to figuring out why this is the case and what can be done to support women. She acknowledged the importance of studying the issues surrounding women of color versus men of color in STEM. However, this is a potential topic for a future symposium, as is the topic of cultural issues of inclusion on different campuses. **Dr. Myers** spoke of the importance of personal narratives. **Dr. Poston** called to the attention of all the principal investigators' meeting of the ADVANCE Program, which follows the mini-symposium. **Dr. J.V. Martinez** of DOE spoke of the results of a generational study and the identification of differences in the ideology and value systems of different generations of the workforce. **Dr. Jemison** commented on careers that do not require four-year college degrees, and **Dr. Ramirez** reminded CEOSE members of the importance of having statistics, as well as narrative reports presented at the mini-symposium. Members discussed holding a session on the Hill to highlight the work of CEOSE.

**Presentation: *Race, Gender, Ethnicity, and Disability in China – A CEOSE Member's Perspective* by Dr. Samuel L. Myers, Jr., CEOSE Member**

**Dr. Myers** began his presentation by noting that he returned to the United States only 70 hours earlier to participate in this CEOSE meeting. He advised that he was invited to reflect on his Fulbright Fellowship year spent at the Chinese Academy of Social Sciences where he conducted research on ethnic minority groups in China. There are 55 officially recognized ethnic minority groups in China; most of these groups include people (e.g., Mongolians, Hui, Miao, and Uyghurs) who historically have been on the periphery of the existing Chinese empire. These groups have experienced various forms of discrimination by virtue of not being Han, the majority group. A complex issue is there are some groups among the minority that are economically or educationally disadvantaged, and there are others who are not so disadvantaged. The main data set used by **Dr. Myers** is the Chinese Household Income Project Survey, with which he was able to analyze differences in income by ethnicity, gender and disability.

**Dr. Myers** described the relationship between the Chinese Academy of Sciences and Social Sciences, the National Science Foundation of China, and the National Social Science Foundation of China.

The Chinese Academy of Sciences was established at the time that of the Chinese Communist Revolution and the formation of modern day China. In 1949, the 80 institutes focused on a range of areas, including physics, chemistry, and mathematics. The Chinese Academy of Sciences—unlike the National Academy of Sciences in the United States—enrolls thousands of graduate students divided evenly between those earning Master's and Ph.D. degrees. There is one graduate school, which is under three units: Graduate School of the Chinese Academy of Sciences, University of Science and Technology of China, and the Beijing Institute of Management. In some respects the Chinese Academy of Sciences is a major research university. Social sciences were once a part of the Chinese Academy of Sciences. The Institute of Ethnic Study was established in 1958. This evolved into the Institute for Ethnology and Anthropology. This is the institute in which **Dr. Myers** served his one-year tenure.



The Chinese Academy of Social Sciences was developed out of the Chinese Academy of Sciences in 1977. In the Chinese Academy of Social Sciences, there are 36 institutes and about 1,000 graduate students and more than three thousand researchers, and the researchers have the ranks of assistant professor, associate professor, and full professor.

**Dr. Myers** gave a brief overview of his interesting findings during his research tenure in China. In the United States, the period between 1991 and 2007 was one of sustained economic growth. The only exception is 2001 when there was no positive rate of real growth in the Gross Domestic Product (GDP). Note that there were recessions in 1975, 1980, 1982, and 1992. Throughout the years, there have been fluctuations in economic activities and long periods of economic growth. Between 1970 and 2007, the annual rate of growth in the United States was 3.3%. In contrast, China did not have a negative rate of economic growth between 1978 and 2007. The fact of the matter is that it had a 9.74% rate of economic growth in that period. However, the GDP in China is lower than that in the United States, and China has more money to spend.

In presenting a picture of domestic expenditures on research and development as a percentage of GDP, **Dr. Myers** advised that the results could be best presented as the ratio of total expenditures on resources and development to GDP. This ratio is higher for Japan, the United States, and the European Union than for China. However, the ratio for China is increasing whereas for the United States it is relatively stable. As the data are reviewed, one needs to take into account the types of expenditures and whether the expenditures are government or industry when comparing the rates for different countries.

The wide disparity between non-minorities and minorities with degrees in science and engineering fields observed in the United States is not seen in China. The push to get into the education pipeline is strong. Chinese people make huge investments in their children, especially given the fact that there is only one child per household. Having that child accepted into one of the regional universities is critical.

In reference to income and equity, **Dr. Myers** spoke of the following. In 1970, China had one of the lowest measures of income and equity among the newly industrialized countries in the world. By 2007, the level of inequality in China was approaching that of the United States. There was very little property ownership. Now, one takes into consideration property ownership, wages and salaries, and stocks and bonds. In China, stock investments are largely government-owned corporations or partnerships between government-owned corporations and foreign corporations. But, there is a growing gap between the most and the least wealthy people; there is an expansion of expenditures and consumption of things that Chinese never would have spent money in the 1980's. A good example is that the bicycle was the major mode of transportation in the 1980's whereas big vehicles are the mode now.

General inequality is increasing, but the question is focused on what is happening to racial ethnic inequality. There is a big difference in income between minorities and non-minorities, and there is a wide income difference between people living in rural versus urban areas. **Dr. Myers'** work focused on decomposing the gap between minorities and non-minorities into portions explained by rural/urban location and portions that were unexplained by observed human capital measures. A key finding of the research is that there remains a nontrivial minority-nonminority gap in per capita household income even after one controls for location of residence and human capital measures.

Because of shortness of time, Dr. Myers did not discuss his research findings on gender inequality in China.

**Dr. Myers** discussed his research on persons with disabilities in China. He found that in China a disability is considered to be a major stigma. To many Chinese people, it did not make sense that **Dr.**

**Myers** is a disabled person but also a well educated (an MIT trained economist) person who holds a high ranking position at his university. According to the CHIPs data, 3.1% of the Chinese population is disabled. In the urban areas, the percentage is higher—6.1%—than in the rural areas. This is the opposite of what was expected based on the differences in healthcare and accident rates, etc. The percentage of persons with disabilities was higher for members of the Communist Party and for women and for urban residents. Research focused on the disabled is lacking in China, and the people might not be truthful in their responses in reporting due to the fact that the results might bring dishonor to their families or other reasons. One of the reasons for the low reports of persons with disabilities might be that the babies are abandoned or the fetuses aborted.

**Dr. Myers** advised that it was a great honor to have had the “doors open” to him in China and that he will endeavor to keep them open through several activities (e.g., hosting students and scientists from China, participating in scientific meetings, and continuing to give lectures). Following the presentation, **Dr. Myers** responded to questions and comments from CEOSE members and the audience in general.

**Presentation: *The 2007-2008 CEOSE Biennial Report to Congress* by Dr. Muriel Poston, CEOSE Vice Chair**

**Dr. Poston** discussed with committee members the draft *CEOSE Biennial Report to Congress*, which covers activities for the years of 2007 and 2008. CEOSE members had reviewed prior drafts of this report for which Beyond the Bottom Line, Inc. serves as contractor to assist in its preparation. Congressional requirements for the biennial reports are that committee members include perspectives focused on underrepresented groups that cover the previous two years and that they present recommendations that arose from CEOSE work over that same period. Additionally, there must be included an assessment of trends in the participation of underrepresented groups in science and engineering and the impact of NSF policies on these groups. Details on the requirements are in 42 U.S.C, 1885d as presented in the NSF Statutory Authority. CEOSE biennial reports have been required since the establishment of this committee in 1980. **Dr. Poston** advised that CEOSE must assure that its goals pertinent to biennial reports are to show how they map to those of the NSF Strategic Plan (Discovery, Learning, Research Infrastructure, and Stewardship). **ACTION: Dr. Poston** asked members to review recommendations that recur in the reports to determine how the committee might leverage work with regard to other Federal agencies and Congress.

**Dr. Poston** called the attention of the committee to the first chapter of the report, which contains the overview of the status of broadening participation in the United States. She made the observation that the committee has focused on undergraduate and graduate education, but is has not focused on K-12 education; however, this is covered in the report. She suggested that CEOSE might consider giving some attention to that part of the education continuum. As she “walked committee members through the report”, she pointed out parts that require attention. **ACTION: Dr. Poston** advised CEOSE members to determine which analyses would be most effective in terms of telling the CEOSE story in future biennial reports. Further, she suggested that future reports be consistent in the presentation of data.

Note was made of the interest of SRS/SBE/NSF in facilitating the development of Chapter 1 of future biennial reports. In discussing the other chapters of the report, **Dr. Poston** noted that Chapter 2 devotes considerable space to broadening participation activities of the NSF working group. Programs and, hence, funding for broadening participation activities is covered in this chapter too. Demographic information on awards to principal investigators over the two years, 2007 and 2008, were covered in this chapter. She suggested that in the future, this type of information needs to be categorized by NSF directorate/major office. Among the topics suggested for the next biennial report is a section on changes with regard to funding levels for principal investigators from underrepresented groups or from institutions that serve underrepresented student populations (e.g., Hispanic Serving Institutions, Historically Black

Colleges and Universities, and Tribal Colleges and Universities). Additionally, she suggested the following topics: mid-career principal investigators who need access to new technologies and better infrastructure to conduct research and NSF programs that have changed to address particular underrepresented issues. She noted that program evaluation and the kinds of metrics and measures used to determine effectiveness were discussed in the biennial report. **ACTION:** In discussing the CEOSE biennial report, **Dr. Poston** encouraged members who serve as liaisons to the various directorates and major offices to report on activities that have been highlighted during advisory committee discussions with the objective of using appropriate parts of those reports in the next biennial report.

After covering the contents of other chapters of the report, **Dr. Poston** highlighted several recommendations and discussed their significance and status relative to the NSF response. Committee members discussed various points about the *2007-2008 CEOSE Biennial Report to Congress*, including the timeline for its release in September.

### **Concurrent Meetings and Reports of CEOSE *Ad Hoc* Subcommittees**

The CEOSE *Ad Hoc* Subcommittee chairs (**Drs. Harris, McCarthy, and Poston**) initially met together and discussed subcommittee structure and membership, as well as general committee membership. CEOSE will have five membership vacancies by the end of September 2009. Therefore, the discussion on general membership was critical. Nominees identified in 2008 and 2009 were reviewed by a subcommittee consisting several CEOSE members (**Drs. Harris, Maldonado, Myers, Poston, and Ramirez**), led by **Dr. Maldonado**. This group will continue its review of the nominees and develop a short list for consideration by and comments from all CEOSE members and NSF senior managers. As CEOSE members discussed the strengths and weaknesses in memberships, they considered whether to focus on individual qualifications and accomplishments of the nominees or the institutions that they represent. These are equally important. Further, they identified the need to have representatives from community colleges, K-12 education, and professional organizations in STEM. In keeping with the membership matrix prepared by **Dr. Tolbert**, the subcommittee agreed that the focus should be on gender and geographical balance, as well as discipline, race, and ethnicity. They stressed the need to identify nominees who have the interest and time to serve on the committee. **AGREED:** The process used last year will be used in identifying members to recommend to **Dr. Bement**, NSF Director, for appointment to CEOSE membership.

Following the above discussion, members met in their subcommittee (CEOSE *Ad Hoc* Subcommittee on Accountability, Evaluation, and Communications, **Dr. Harris**, Chair; CEOSE *Ad Hoc* Subcommittee on Broadening Participation, **Dr. McCarthy**, Chair; and CEOSE *Ad Hoc* Subcommittee on Strategic Planning, **Dr. Poston**, Chair) groups for a short period. Among the points from their reports were the following:

Members acknowledged the establishment of the NSF broadening participation website, which contains the framework for broadening participation and the *Dear Colleague Letter* on the submission of nominations for CEOSE membership. As a result of the *Dear Colleague Letter*, several persons have made use of the self nomination option. Committee members also discussed the topic of “Implicit Bias”, which was the topic of a presentation at another CEOSE meeting. During this discussion, there was a focus on the value of having a set of metrics for NSF that would facilitate a consistent way of evaluating progress in broadening participation in STEM across federal agencies to show increases in or the development of broadening participation. They also discussed the need for broadening participation evaluation strategies, data collection, the value of having data on small underrepresented groups, a later review of the NSF staff, the NSF applicant pool, the NSF peer review process, and the science of broadening participation, other science, and policies pertinent to broadening participation. They addressed how to be more quantitative in working with NSF. Also, included in the discussion were the

following: The interest of the Advisory Committee on the Government Performance Act, the presentation made last year by **Dr. Harris** to the OSTP Committee on Education, and information from the earlier inter-federal agency study that was conducted by CEOSE with the assistance of C&A Technologies. **AGREED: Drs. Harris and Maldonado** will work together to develop a releasable summary of that report.

### **Adjournment**

The meeting was adjourned by **Dr. Maldonado** at 5:30 p.m.

## **Tuesday, June 30, 2009**

### **Opening Statement & Discussion**

**Dr. Maldonado** called the session to order and invited **Dr. Harris** to present information on the inter-agency study, which was discussed yesterday. Dr. Harris advised of the following: 1) there are inconsistencies in the meaning and interpretation of broadening participation at the various agencies. Therefore, CEOSE should ask for assistance from the various federal agencies in finding common ground, definitions in terminology, and a set of metrics on broadening participation. The results will enable forward movement with more concrete ideas on the concept and greater opportunities for the agencies to form partnerships with NSF to advance broadening participation in STEM. 2) **Dr. McCarthy** called for acceptance of the draft inter-agency report by CEOSE. **Dr. Harris** formalized the motion to do this, and **Dr. Myers** seconded his motion. **ACCEPTED:** The vote by CEOSE members to accept the draft inter-agency report, "Joining Forces to Broaden Participation in Science and Engineering: Strategies for Inter-Agency Collaborations", was unanimous. **ACTION: Dr. Maldonado** agreed to form a committee of cross agency representatives (especially those who regularly attend CEOSE meetings) to study the draft report and provide insights and next steps.

Upon completion of **Dr. Harris'** comments, the draft *2007-2008 CEOSE Biennial Report* was discussed. **ACTION:** All CEOSE members who have comments on the draft *2007-2008 CEOSE Biennial Report* are to send them to **Dr. Tolbert** with a copy to **Dr. Maldonado** by July 2, 2009. Members discussed CEOSE membership and the process to be used to identify new members. **Dr. Myers** was presented with a Certificate of Service to CEOSE and NSF by **Dr. Maldonado**. She also presented a Certificate of Service to **Dr. Jemison** who participated in the meeting by telephone. Her certificate will be mailed to her. Both membership terms will end on September 30, 2009.

**Presentation: *NSF Academy Approaches to Broadening Participation* by Dr. Carylynn Kemp (Larson), Organizational Psychologist, NSF Academy, with Ms. Christine Cataldo, Senior Advisor in the Division of Human Resource Management/NSF, and Ms. Elizabeth Buechler, Human Resource Specialist, NSF Academy**

**Ms. Cataldo**, who has managed various NSF training programs and executive personnel activities in her 25 years at NSF, gave introductory remarks on behalf of the Director and Deputy Director of the Division of Human Resource Management. She provided a history of the NSF Academy and pointed to the new Academy Branch Chief, **Dr. Douglas L. Deis**, and his efforts to re-energize and reshape the Academy. **Ms. Cataldo** introduced the speaker, **Dr. Carylynn Kemp (Larson)**, and stated that **Ms. Elizabeth Buechler** would join her and **Dr. Larson** in responding to questions throughout presentation.

**Dr. Kemp's** presentation focused on what the Academy is doing to promote broadening participation as NSF's in-house provider of learning and development initiatives. She stated that the Academy's offsite Program Management Seminar clarifies the concept of broadening participation and helps attendees understand the context of broadening participation within NSF and beyond. This 4-day seminar is currently the Academy's primary avenue for training new Program Officers. However, the Academy is developing a comprehensive Program Management curriculum to include activities, resources, and best practices on the merit review process. The Academy will ensure that these activities/resources address how to reach underrepresented groups throughout the merit review process. The Academy is also developing competency-based training to help employees harness the benefits of diversity and inclusion (e.g., leadership, teamwork, creative thinking, consensus building, networking skills). As these new development opportunities are introduced, the Academy will strive to develop a community of practice on specific issues, some of which will relate to broadening participation (e.g., recruiting reviewers from underrepresented groups).

In order to promote efficient and effective use of Academy resources, the Academy plans to develop guides to direct employees to the most relevant curriculum and/or courses, based on their position and on knowledge and skill gaps. The Academy will evaluate all sponsored initiatives to identify what is working well, what needs to be improved, and to make adjustments as necessary. **Dr. Kemp** concluded by stating that the Academy's programs are works in progress, and input from CEOSE is welcome.

During the presentation CEOSE members asked if there is a broadening participation module in the Academy training portfolio or if broadening participation concepts are included in various Academy training and development activities. **Dr. Kemp** clarified that the Academy is incorporating broadening participation concepts into relevant facets of Academy activities, but may also develop a stand-alone briefing on broadening participation. CEOSE members also asked whether the Academy has its own definition for broadening participation, to which **Dr. Kemp** responded that the Academy utilizes existing definitions. Another question was whether the Academy reaches external audiences as well as internal ones, to which **Dr. Kemp** responded that the Academy's mission is to train NSF employees, although in doing so they will provide training on how employees can discuss broadening participation with external audiences (panels, principal investigators, etc.). In response to other inquiries, **Dr. Kemp** stated that the Academy is developing training on the meaning of broadening participation, implicit bias, and equal opportunity for supervisors. She also stated that the Academy hopes to facilitate higher levels of strategic planning and succession planning (both incorporating diversity). The committee recommended that the Academy utilize the broadening participation Working Group as they move forward in developing their various curricula. Finally, there was a short discussion about the need to incorporate broadening participation into performance reviews such that employees are held accountable for results in this domain.

### **Reports by CEOSE Liaisons to NSF Advisory Committees**

Note: Some of the CEOSE liaisons did not give reports due the dates of the advisory committee meetings to which they are assigned versus the date for the CEOSE meeting.

**B&O AC Dr. Wesley L. Harris**, CEOSE Member: **Dr. Harris** reported on the meeting of the Business and Operations (B&O) Advisory Committee for which he serves as CEOSE Liaison. The meeting was held May 19-29, 2009, while he was in Korea. However, a summary of the meeting was provided by the B&O office. The four main topics were: The American Recovery and Reinvestment Act, RESEARCH.GOV, Prem Management, and the 2013 Lease Expiration on the NSF Building. The topic of "Broadening Participation" was not discussed.

CISE AC **Dr. Richard E. Ladner**, CEOSE Member: **Dr. Ladner** reported on the Computer and Information Sciences and Engineering Advisory Committee meeting held May 1, 2009. This five-hour meeting was held via telephone conference and the web. A number of topics were covered, including new social computational systems and the new data intensive computing program, stimulus funds from the Recovery Act, initiation of a post-doctoral program, computer problems resulting from research conducted in the field, etc. During this meeting, **Dr. Ladner** gave a presentation on CEOSE. **Dr. Bement** participated in this meeting too.

SBE AC **Dr. Samuel L. Myers, Jr.**, CEOSE Member: **Dr. Myers** presented four recommendations based on the Social, Behavioral and Economic Sciences Directorate (SBE) Advisory Committee meeting held May 21-22, 2009. **RECOMMENDATION:** The search for a new Assistant Director (AD) for SBE has been extended. As soon as the new AD is identified, he/she should be invited to have a conversation with CEOSE about new and long-term SBE programs that focus on broadening participation in STEM. **RECOMMENDATION:** It was recommended that better guidance be given to people who serve on Committees of Visitors on how to assess broadening participation. **RECOMMENDATION:** SRS, which is a division of SBE, is extraordinarily valuable to CEOSE. It provides data and data analyses for a number of organizations, including CEOSE. However, it is in need of additional staff and other resources to adequately address its workload. It is recommended that resources be provided by NSF to SRS as needed for its increased workload due to the influx of stimulus funds, the rise in the use of SRS data within NSF, the federal government, and the scientific and engineering communities. **RECOMMENDATION BY DR. HARRIS:** The SBE initiative on broadening participation is so important that it warrants the attention of a major organization. Therefore, **Dr. Harris** recommended that CEOSE suggest to NSF that it commission the National Academy of Science to conduct a study of the Science of Broadening Participation. **RECOMMENDATION:** It is recommended that SBE develop a Science of Broadening Participation Program and that CEOSE join with SBE in addressing questions about this science. **RECOMMENDATION BY DR. RAMIREZ:** CISE and SBE should collaborate on the new developments regarding social aspects of computing. **AGREED:** CEOSE members approved the above recommendations and agreed to refine them and develop a path forward prior to the October 2009 meeting.

OPP AC **Dr. Marigold Linton**, CEOSE Member: **Dr. Linton** reported that the Office of Polar Programs (OPP) Advisory Committee met on May 4-5, 2009, and she presented a list of topics (e.g., clean energy initiatives, the Arctic council and Antarctic Council Treaty, Follow-up activities to the International Polar Year activities, broader impacts, initiatives involving Alaskan Natives and climate research education programs, transformational research, and strategic planning) discussed at this meeting. At that advisory committee meeting, she raised the question about diversity and was told that everything is in order. However, there is room for improvement. Racial/ethnic diversity is needs improvement in reference to positions in the programs of OPP. She suggested that if each current staff member were to serve as mentor to an underrepresented minority, then the problem of very few of them being in polar fields would be solved.

ACERE **Ms. Sandra Begay-Campbell**, CEOSE Member: Ms. Begay-Campbell reported that the last three meeting of the ACERE Advisory Committee were focused primarily on a report called “The Green Report”, which will be released in September. There are several members of this advisory committee who are conscious of broadening participation and have assured, along with me, that this topic is addressed appropriately during the meetings.

ACGPA **Dr. Maria (Mia) Ong**, CEOSE Member: **Dr. Ong** reported that the Government Performance and Results Act Performance Assessment (GPA) Advisory Committee met on June 19-20, 2009. The charge of this advisory committee is to assess three NSF strategic outcome goals—Discovery,

Learning, and Research Infrastructure. The focus of the meeting was on performance highlights, which had been submitted by NSF awardees. She served on the Learning Subcommittee. A select group of highlights in the three categories were summarized by each subcommittee. Note was made of the fact that 57% of the selected Discovery, 100% of the Learning, and 63% of the Research Infrastructure highlights emphasized broadening participation in science and engineering. The subcommittee reports will be used in the preparation of a report, which will be available in July. Also, the advisory committee discussed alternative ways of evaluating NSF performance. A recurring theme of the meeting was on the investment of people who do STEM. Several members discussed the recruitment and training of underrepresented minorities and persons with disabilities for the express purpose of achieving an elite American STEM workforce and achieving innovation in transforming science. Advisory committee members reviewed the June 11<sup>th</sup> memorandum, *Planning for the President's Fiscal Year 2011 Performance and Budget Plan*, from the Office of Management and Budget. **RECOMMENDATION BY DR. ONG:** It is recommended that CEOSE provide the NSF Director with suggested goals, metrics, or accountability relative to broadening participation in science and engineering.

ACCI **Dr. Alex Ramirez**, CEOSE Member: **Dr. Ramirez** reported on the Cyberinfrastructure Advisory Committee meeting. After explaining the uses of cyberinfrastructure, **Dr. Ramirez** discussed computational science and changes within the Office of Cyberinfrastructure (OCI). **Dr. Edward Seidel**, a physicist, will begin serving as Acting Assistant Director for the Mathematical and Physical Sciences Directorate. When this change takes place, **Dr. Jose Munoz** will begin serving as Acting Director of OCI. Prior to his departure from OCI, **Dr. Seidel** will put into place the task forces in six areas such as uses of cyberinfrastructure in learning, workforce development in computational sciences, broadening participation, data and data visualization, campus bridging, grand challenges in cyberinfrastructure, etc. ACCI will serve as the lead committee for these task forces. **Dr. Ramirez** spoke of the invitation that was extended to him to serve as the co-Chair of the ACCI. He advised that OCI will focus on Terra Grid Phase 3, which has emphasis on broadening participation in science and engineering.

MPS AC **Dr. Theresa A. Maldonado**, CEOSE Chair: **Dr. Maldonado** spoke of his opportunity to speak to the Mathematical and Physical Sciences Directorate (MPS) Advisory Committee during its meeting on April 2-3, 2009. During her presentation, she spoke about the *2007-2008 CEOSE Biennial Report to Congress*, the importance of having input from NSF senior managers in the preparation of the next biennial report, and other matters that are the foci of the CEOSE congressional mandate.

BIO AC **Dr. Muriel Poston**, CEOSE Vice Chair: Dr. Poston reported on the Biological Sciences Advisory Committee meeting of April 29<sup>th</sup> through May 1<sup>st</sup>. She stated that Dr. James Collins, the Assistant Director of the Biological Sciences Directorate, is preparing to return to his home institution since his term will end soon. As the advisory committee focused on BIO programs, it was interesting that they discussed the intersection of biology with math and math engineering, computer sciences, geosciences, environmental sciences, and engineering. In essence, the areas of all of the directorates were covered. A topic that is of interest is the sand pit module about the intersection of life and physical sciences in the context of synthetic biology, giving rise to an initiative of joint programs of molecular and cellular sciences and other opportunities for collaboration involving the NSF priority of climate change. Dr. Poston spoke of a number of programs and activities of and updates (e.g., *National Research Council 21<sup>st</sup> Century Biology Report*) on BIO. Further, she noted that broadening participation was not a part of any of the reports given during the two days that she attended the meeting; however, CEOSE was included in the undergraduate biology education report. BIO sees this as broadening participation.

**DISCUSSION:** CEOSE members discussed the suggestion of having a scorecard on a DASHBOARD to rate advisory committees on broadening participation in science and engineering and on diversity issues. As a result, color codes could be used in indicating the status of the different offices and directorates of

NSF. Committee members also discussed the diversification of the various directorates and the percentage of women, underrepresented minorities, and persons with disabilities who are receiving degrees and entering the workforce.

**Dr. Myers** thanked everyone for the intellectual stimulation that has been provided over the years. He stated that he hopes that CEOSE will give some thought to establishing a grading system to assure accountability for advisory committees. The instrument should be pre-tested, and different constituencies need to provide input on it before it is used. The instrument selected might require a year for the process of review, debate on inputs (the diversity of staff versus the committee members itself understanding of broadening participation) and outputs (limitations of program transformation), and revision before it can be used.

**Presentation: *Broadening Participation at the National Science Foundation and the Impact of the American Recovery and Reinvestment Act and the America Competes Act* by Dr. Wanda E. Ward, Assistant Director (Acting), Education and Human Resources Directorate (EHR)/NSF**

**Dr. Ward** presented information on the NSF framework to broaden participation, new and future directions for accelerating NSF broaden participation efforts, and the influence of the America Competes Act and the American Recovery and Reinvestment Act.

She advised that NSF has a portfolio of broadly inclusive programs as she discussed pertinent portions of the NSF strategic plan and the framework for action on broadening participation. Some of the programs of interest are termed “Focused”, and others are “Emphasis” programs. She highlighted EHR embedded broadening participation programs that impact the instructional (e.g., NOYCE and the Math and Science Partnerships programs) and the science and engineering STEM workforces (e.g., ATE, STEP, IGERT, GRF, and other to be developed programs).

**Dr. Ward** discussed direct and indirect funds for EHR from the American Recovery and Reinvestment Act (ARRA). Also, she spoke of the impact of funding on NSF efforts to broaden participation on new and future directions: 1) Innovation and Inventiveness, 2) Institutional Integration, 3) International Engagement, 4) Teacher Education and Partnerships in K-12 Education, 5) Technician Education, 6) Career Development and Advancement for Young Investigators, 7) Hispanic Serving Institutions and Community Colleges, and 8) Connectivity and Leveraging. On the horizon is a seamless system of transformation for ensuring quality, diversity, and competitiveness. A number of productive activities are taking place. Evaluation findings and input from various sources will facilitate the directorate in accomplishing its goal. As the programs go through this evolution, it is noted that most learning throughout life occurs in informal settings.

EHR is holding joint retreats with a number of other directorates. At these retreats, discussions of collaborations are held. For example, persons who manage CREST, which is an EHR program, have been working collaboratively with Partnerships for Research and Education in Materials Program officials. The goal is to have CREST awardees graduate into the larger scale center activities. In the Engineering Directorate, a CREST Awardee has moved into the position of obtaining funding to be an Engineering Research Center. Other examples of this type can be cited. **Dr. Ward** stated that “We are calling it broadening participation across seamless transitions. In these cases all of the institutions are coming together in holistic integrative activities. New activities can be built on the current ones. Future directions of EHR include focusing on community colleges and Hispanic Serving Institutions.” Note was made that the Tribal Colleges and Universities and the Historically Black Colleges and Universities programs already exist. New ideas for growing and strengthening and expanding programs are welcome. She also mentioned that EHR is the leading directorate in co-funding with EPSCoR.



**Dr. Ward** participated in a stimulating question and answer period, and at one point, **Dr. Bernice Anderson** provided her insights on the evaluation of programs. The discussion also covered a number of other topics, such as standardized tests for all states, field of research and scholarship that could be brought together, etc. In response to a question, **Dr. Ward** mentioned that there are discussions being held about an analog to ADVANCE, which focuses explicitly on women, to address underrepresented groups. **Dr. Ward** advised that while NSF has a leadership role in facilitating and stimulating and supporting the upward trends in helping the nation address its diversity challenges, there is a lot to be done, and NSF cannot do it alone. United States talent is critically important to the scientific enterprise and economic competitiveness. **Dr. Ward** indicated that efforts are being made to learn from lessons resulting from prior programs as they go through evolutions. She also advised that the image of science and scientists is of concern. While some NSF programs “speak” to this, none of them are exclusively devoted to image improvement.

### **Concluding Statements:**

**Dr. Haworth** updated the committee on the status of recruitment activities in various parts of NSF. The search for a new Assistant Director for the Social, Behavioral and Economic Sciences is almost complete. **Dr. David Lightfoot** is the current Assistant Director who will be leaving NSF in approximately two months. **Dr. Tony Chan**, Assistant Director for Mathematical and Physical Sciences (MPS), has accepted the position of President of Hong Kong University of Science and Technology. He will begin his tenure in at the university in September. So, the search for a person to fill that position is ongoing. Meanwhile, **Dr. Edward Seidel** who is the current Director of the Office of Cyberinfrastructure will serve as Acting Assistant Director of MPS as the search continues. **Dr. José L. Muñoz** will serve as Acting Director of the Office of Cyberinfrastructure while **Dr. Seidel** serves in the above named position in an Acting capacity. **Dr. Muñoz’s** appointment to serve adds continuity to the office since he has served in that capacity in the past and since he is currently the Deputy Director of the office. **Dr. Larry H. Weber** has been confirmed as Director of the Office of International Science and Engineering. Prior to that appointment, he was serving in an Acting capacity. **Dr. James P. Collins**, Assistant Director for the Biological Sciences Directorate, will be leaving this fall; therefore, the search has begun to recruit a new Assistant Director. Recommended nominees for the vacant positions from CEOSE members would be appreciated.

## **CERTIFICATION OF THE ACCURACY OF THE CEOSE MEETING MINUTES**

**Dr. Theresa A. Maldonado**, Chair of the Committee on Equal Opportunities in Science and Engineering, approved the meeting minutes on September 28, 2009, with an e-mail message to **Dr. Margaret E.M. Tolbert**, CEOSE Executive Liaison.