

National Science Foundation
Directorate for Social, Behavioral, and Economic Sciences (SBE) Advisory Committee
December 14-15, 2015; NSF Headquarters, Stafford I, Room 1235
Meeting Summary

SBE Advisory Committee (AC) Members Present: Dr. Emilio Moran (Chair), Center for Global Change and Earth Observations and Department of Geography, Michigan State University; Dr. Joseph Altonji, Economics Department, Yale University; Dr. Kenneth Bollen, Department of Sociology, University of North Carolina, Chapel Hill; Dr. Karen Cook, Department of Sociology, Stanford University; Dr. Nilanjana Dasgupta, Department of Psychological and Brain Sciences, University of Massachusetts at Amherst; Dr. Ruth DeFries, Department of Ecology, Evolution and Environmental Biology, Columbia University; Dr. Catherine Eckel, Department of Economics, Texas A&M University; Dr. John Gabrieli, McGovern Institute for Brain Research, Massachusetts Institute of Technology; Dr. J.W. Harrington, Vice Chancellor for Academic Affairs, University of Washington, Takoma; Dr. Jon A. Krosnick, Department of Communications, Stanford University; Dr. Arthur Lupia, Department of Political Science, Institute for Social Research, University of Michigan; Dr. Thomas McDade, Department of Anthropology, Northwestern University (via phone); Dr. Joanna Morris, School of Cognitive Science, Hampshire College; Dr. William Riley, Office of Behavioral and Social Sciences Research, National Institutes of Health (*Ex officio*); Dr. Steven Ruggles, Minnesota Population Center, University of Minnesota; Dr. Lydia Villa-Komaroff, Massachusetts Life Center (Committee on Equal Opportunities in Science and Engineering, CEOSE, liaison).

SBE Advisory Committee Members Absent: Dr. Martha Farah, Center for Neuroscience and Society and Department of Psychology, University of Pennsylvania.

NSF Staff in Attendance: Dr. Richard Buckius, Chief Operating Officer; Dr. Fay Lomax Cook, Assistant Director (AD), SBE; Dr. Kellina Craig-Henderson, Deputy AD, SBE; Mr. John Gawalt, Division Director, SBE/National Center for Science and Engineering Statistics (SBE/NCSES); Ms. Jeri Mulrow, Deputy Division Director, SBE/NCSES; Dr. Alan Tomkins, Acting Director, SBE/Division of Social and Economic Sciences (SBE/SES); Dr. Katherine Meyer, Acting Deputy Director, SBE/SES; Dr. Howard Nusbaum, Director, SBE/Division of Behavioral and Cognitive Sciences (SBE/BCS); Dr. Amber Story, Deputy Director, SBE/BCS; Dr. Deborah Olster, Senior Advisor, SBE/Office of the Assistant Director (OAD); Ms. Madeline Beal, Communications Specialist, SBE/OAD; Mr. Anthony Teolis, SBE Administrative Coordinator, SBE/OAD; Ms. Clarissa Johnson, IT Specialist, SBE/OAD; Mr. Philip Johnson, IT Specialist, SBE/OAD; Ms. Amanda Greenwell, Head, NSF Office of Legislative and Public Affairs (OLPA); Mr. Neil Canfield, Legislative Affairs Specialist, OLPA; Mr. Robert Margetta, Public Affairs Specialist, OLPA; Dr. Joan Ferrini-Mundy, AD, Directorate for Education and Human Resources; Dr. James Kurose, AD, Directorate for Computer & Information Science & Engineering; and other NSF staff.

Note: The meeting was open to the public and representatives of stakeholder groups also attended, as did Dr. William Congdon, Fellow, Social and Behavioral Sciences Team, White House Office of Science and Technology Policy (OSTP), who was an invited guest speaker.

Summary: This was the second meeting of the SBE AC in 2015. The agenda included the following items: Update on the directorate's activities; presentation of the BCS Committee of Visitors (COV) report and BCS response; presentation of the SBE Office of Multidisciplinary Activities (SMA) COV report and SMA response; a presentation and discussion of robust and reliable science; an update on behavioral and social sciences research at the National Institutes of Health; a presentation and discussion of the OSTP

Social and Behavioral Sciences Team activities; and a discussion of NSF activities and strategies related to graduate education. The AC met with leadership from OLPA and from the Office of the Director. The agenda also included a session on next steps in transformational SBE science. Additional information about the meeting is posted at [Fall 2015: SBE Advisory Committee Meeting](#).

Welcome and Introductions (Dr. Emilio Moran)

The AC welcomed new members, Drs. Lydia Villa-Komaroff, Life Sciences Institute (CEOSE liaison); John Gabrieli, McGovern Institute for Brain Research, Massachusetts Institute of Technology; and Arthur Lupia, Department of Political Science, Institute for Social Research, University of Michigan. The summary of the spring, 2015 AC meeting was approved.

Directorate Update (Drs. Fay Lomax Cook, Howard Nusbaum, Alan Tomkins, and Mr. John Gawalt):

The directorate update began with the introduction of new staff in SBE followed by Division updates. In his update, Dr. Howard Nusbaum reported on the continued use of innovative merit review processes by BCS. These include the “Plus One” used by the Geography and Spatial Sciences program, the “College of Reviewers”, and pre-panel triage. He also described BCS’s participation in broad initiatives within the directorate and across NSF, such as Forensic Science, Cyberinfrastructure and Data Intensive Science, and Understanding the Brain.

Dr. Alan Tomkins presented the update on SES, describing how the Division supports cutting-edge basic research with demonstrable broader impacts. Examples included a project from the Secure and Trustworthy Cyberspace program, co-funded by CISE, to understand hacker behaviors, and another study demonstrating the impacts of streamlining the Free Application for Federal Student Aid on STEM education outcomes. He described data infrastructure projects that exemplify NSF’s tradition of funding data collection and repository curation, and working with the community to determine which data to collect now and in the future. SES is currently sponsoring a standing committee at the National Academies of Sciences, Engineering, and Medicine to inform SBE's efforts to develop options for the future of the “Big Three” surveys: the General Social Survey, Panel Study of Income Dynamics, and American National Election Studies.

Mr. John Gawalt’s update described how NCSES is expanding the sample size of the 2015 Survey of Doctorate Recipients to provide outcomes by detailed subfields, with plans to expand research to more subfields. He also reported on the successful pilot of the Early Career Doctorate Survey to gather information about postdocs and other PhDs in the first 10 years of their careers, with a full scale survey launch scheduled for 2016. In the spring of 2016 the National Research Council will hold a NCSES-sponsored workshop on advancing concepts and models of innovative activity and science and technology indicator systems. In the summer of 2016, NCSES will pilot a survey of research and development by non-profit organizations. The questionnaire was developed through extensive research and collaboration with 24 nonprofit institutions. If successful, a full-scale survey will launch in 2017.

Dr. Cook then provided additional information on the activities of the directorate as a whole, including the Fiscal Year (FY) 2016 budget request (\$291.46 million), which would support SBE core programs and cross-directorate initiatives. She described SBE’s involvement in these cross-cutting programs as basic research inspired by real world concerns and problems. In addition, she noted that SBE is very proud of a variety of honors bestowed on its awardees. Drs. Walter Mischel, Philip Peake, and Yuichi Shoda won the 2015 Golden Goose Award for the “Marshmallow Test”. Drs. Matthew Desmond, Beth Stevens, and Heidi Williams received 2015 MacArthur Foundation Fellowships; and Dr. Angus Deaton won the 2015 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel.

Division of Behavioral and Cognitive Sciences (BCS) Committee of Visitors (COV) Report and BCS

Response: Dr. JW Harrington, AC member and Chair of the BCS COV, presented the 2015 BCS COV report. The COV consisted of 21 representatives from a variety of BCS fields, with two sub-committee chairs, Drs. Richard Aslin from the University of Rochester and Trudy Turner from the University of Wisconsin - Milwaukee. The Committee had access to 1000 proposals in eJacket and made 22 recommendations in the full COV report. Dr. Harrington reported that overall, the COV process worked well. The key findings of the report were that the division and programs are well managed; the components and results of the review process are thorough and fair; and program-specific experiments in review processes have been largely successful. One area with room for improvement is the use of the Broader Impacts merit review criterion. The COV felt that the goals of this criterion are not clear and are broadly misunderstood by Principal Investigators (PIs).

Regarding management, the COV noted that BCS program directors manage programs well with limited resources, and the combination of rotating and permanent program directors serves the division well. The COV recommended that whenever possible, each program should have a permanent program director, and that BCS should make use of research on implicit bias to provide training to all program directors.

The COV also recommended that BCS develop a longer term strategic plan and emphasize portfolio distribution at the division level, where assessment targets can be set. Currently award success rates seem to be similar by PI gender and race/ethnicity, although female PIs submit fewer proposals than would be expected based on the proportion of female PhDs in some BCS fields. Emerging methodologies that take BCS research outside of laboratories should also be promoted, with the development of division- and directorate-wide systems to support large-scale field science. In addition, the COV recommended that findings from research, i.e., the science broadening participation, be used to inform efforts to broaden participation in the SBE sciences.

In communicating with the research community, the COV recommended that BCS create better ways to disseminate announcements to interested PIs, as the NSF website is very difficult to navigate. The division was also advised to better inform PIs about the Broader Impacts criterion, and to improve its guidance on data management plans (DMPs) by providing exemplars of data-sharing, consultation before finalization of awards, and insistence on clear metadata and data archiving.

Finally, the COV articulated the following emerging lines of inquiry in the BCS: Emerging methodologies; defining human behaviors; evolution and behavioral genetics; climatic events' effects on human populations, present and past; and connectivity of humans and the natural world, present and past.

Drs. Amber Story and Howard Nusbaum presented the BCS response to the COV report. They began by thanking the Committee for the thoughtful and constructive recommendations and described a number of actions the division would take to address the COV's recommendations. They noted that the Broader Impacts merit review criterion topic is currently being discussed across the NSF. While those discussions may eventually produce Foundation-wide changes, BCS will take certain actions now. The BCS website will link to the NSF report, *Perspectives on Broader Impacts*, and include examples of activities that meet the criterion. Additional information about Broader Impacts will be distributed through review request letters and webinars for the community. In addition, BCS program directors will be reminded to check that Broader Impacts are addressed in annual and final reports from awards.

Regarding data management plans (DMPs), SBE's guidance on DMPs be updated and made more clearly available on the directorate's website. Program directors will be encouraged to include the link to the guidance in review requests to encourage reviewers and panelists to attend to DMPs in proposals -- both for the current project and as described in results of prior support. Program directors will be reminded to check for evidence of DMP implementation in annual and final reports.

Regarding broadening participation and implicit bias, the BCS leadership noted that implicit bias training is given to all incoming program directors at NSF. Program directors are also required to include a slide on implicit bias in their panel briefings. It is possible that additional training materials could be created in conjunction with the NSF Academy to share with reviewers. Program directors are also encouraged to work with their scientific societies to increase awareness of implicit bias.

Regarding the COV recommendations about personnel, the BCS leadership noted that one permanent program director slot has been filled, and recruitments for two more are ongoing. Communications with the community are also being enhanced. Some programs are piloting email distribution lists, and outreach efforts will include information of how anyone can sign up for NSF Alerts on topics that interest them.

The ensuing AC discussion of the COV report and BCS response focused on data sharing, communication with PIs after the review process, and innovations in the merit review process. The "one-plus method" is working well, but the change from six to eight month review cycles has not been well-received by the research community. It was noted that these SBE innovations are discussed in the merit review training for new NSF staff. All of these methods are intended to not only maintain fairness and collect enough reviews of high quality for each proposal, but also to identify proposals on the cusp of fundability and allow program directors to work with PIs to improve them.

The BCS COV report and response were unanimously approved by the AC.

SBE Office of Multidisciplinary Activities (SMA) COV Report and SMA Response: Dr. Catherine Eckel, AC member and Chair of the SMA COV, presented the report. The SMA COV had 11 members and reviewed five programs: Science of Science and Innovation Policy (SciSIP); Interdisciplinary Behavioral and Social Science Research (IBSS); Research Experiences for Undergraduates (REU) Sites; SBE Postdoctoral Research Fellowships (SPRF); and Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences (BCC).

Overall, the report findings were quite positive and the COV reported that the programs are well run. The COV suggested improvements regarding the data that were provided to them. They recommended that program directors strengthen efforts to encourage PIs and co-PIs to self-report demographic data, especially those applying to programs that target diversity. The COV suggested that investigators might be less reluctant to reveal such information if they knew it would be used to assess the quality and impact of programs. For interdisciplinary projects, the COV recommended that data SMA provide data at the project level (to cluster collaborative proposals) as well as the proposal level. It also recommended that SBE collect longer-term data to assess the impact of these projects beyond the standard three or five year award terms. The COV also suggested that programs provide reviewers with more systematic guidelines and training for reviewing interdisciplinary programs to improve consistency among reviews.

Looking forward in SMA, the COV noted that capacity and community building are two of the greatest challenges. Capacity includes the availability of a cohort of well-trained investigators to handle and exploit the vast amounts of SBE data being generated. This is also an opportunity, although it is neither free nor inexpensive for NSF to develop these resources. The COV expressed concern that investigators from other scientific fields are conducting social science research without the requisite expertise to do it well. The COV was also concerned that SBE cannot or does not invest enough resources to fully participate in the data revolution.

Regarding community, the COV recommended increased outreach to improve the quality and quantity of proposals from minority-serving institutions. These institutions should be given more help with proposal preparation. They might also be encouraged to partner with more research-intensive institutions, especially for the REU Sites program. In addition, the COV noted that SBE programs have primarily supported SBE scholars, but when creating a new community or new field and moving from disciplinary to interdisciplinary research, it is important to go beyond the traditional SBE disciplines.

Finally, the COV noted some dissatisfaction among the administrative staff who are assigned to SMA programs. The staff are housed in the Office of the Assistant Director, while the program directors are housed in the research divisions, BCS and SES. This arrangement may impede coordination of efforts, lead to misunderstandings about roles and responsibilities, and result in less than optimal workflows.

Dr. Deborah Olster presented the SMA response to the COV report. She thanked the COV and the SBE staff who assembled the materials and participated in the COV process. Regarding the COV's recommendations about insufficient PI/co-PI demographic data, she noted that while the provision of demographic information is voluntary, pursuant to NSF and government-wide policy, program directors can certainly encourage investigators to submit this information. Additionally, in the future SMA will provide project- and proposal-level data to COVs. SMA will also explore working with the new Evaluation and Assessment Capability section of the NSF Office of Integrative Activities to evaluate its programs. NSF has already commissioned a feasibility study to document various approaches for tracking REU Sites students over a number of years.

To address the recommendations regarding reviewer training, Dr. Olster described how program directors point reviewers to NSF resources, reiterate the importance of constructive reviews, and highlight particularly good examples of reviews. They are also exploring the use of webinars, formal presentations, explicit instructions, and review calibration exercises tailored to suit their programs.

Regarding SBE involvement in "big data", Dr. Olster noted that SMA and SBE currently support infrastructure and training programs on this topic, and expect to continue doing so in the future. Examples are the "Big Three" surveys and the following programs: Resource Implementations for Data Intensive Research in the Social, Behavioral and Economic Sciences (RIDIR); Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA); and NSF Research Traineeships, in which data-enabled science and engineering is a thematic priority.

To address recommendations about community-building, SMA will develop and implement plans to strengthen outreach to minority-serving institutions (MSIs) and relevant professional organizations to attract proposals and reviewers. The REU Sites program director plans to suggest the idea of consortia of MSIs and research-intensive institutions to the NSF-wide team responsible for the REU Sites solicitation. Workshops on proposal preparation can also be funded. SMA will also work with SBE communications

specialist to explore the use of social media to promote learning, discussion, and dissemination of information related to grant-writing to MSIs and other institutions.

Regarding SMA's management and organizations, Dr. Olster indicated that SBE leadership will work to identify coordination problems related to staffing and funding programs, and, if necessary, reorganize SMA's structure, workflow, and assignments to improve operations.

The ensuing discussion of the SMA COV report and response touched on PI provision of demographic information, outreach efforts to include more proposals from MSIs, and the questions of whether the NSF review process is uneven and/or biased. One aspect that was identified as being particularly problematic was the assessment of the merits of the proposal versus the track record of the PI. A number of potential solutions to this problem were offered and discussed. These included reminding reviewers to consider these to aspects of proposals separately and having program directors provide more information about weighting these factors.

The AC voted unanimously to approve SMA COV report and response.

Robust and Reliable Science (Dr. Kenneth Bollen)

Dr. Bollen presented the report from the SBE AC Subcommittee on Recommendations for SBE Robust and Reliable Research and material from his presentation at the *NSF Director's Symposium on Robust and Reliable Research* (September, 2015). The Subcommittee report posits that SBE scientists are well-positioned to explore non-reliable science across many disciplines. SBE can initiate research that documents the extent of the problem, investigates its causes, and tests potential solutions. The question of the extent of the problem and how to address it also surfaced at the *Director's Symposium*, an internal event designed to stimulate conversation among NSF staff about what the Foundation can do through its policies and practices to ensure that the research it funds is robust and reliable. In his presentation at that event, Dr. Bollen argued that while science is motivated by the ideal of robust and reliable research, the stakeholders in the scientific process (researchers, academic institutions, journals, the public, research funding agencies) are motivated and incentivized to produce novel findings and statistically significant results. This mismatch may bring science and stakeholders into conflict.

Dr. Bollen then reviewed factors that undermine and tactics that might foster robust and reliable science. The undermining factors include publication bias for novelty and significance; confirmation bias; data errors and incomplete documentation of methodology; incorrect use of statistics; weak research design; and scientific misconduct, which is rare. The peer review process should in theory counteract these factors, but in practice it is limited to information and time available to the reviewer – and reviewers themselves could contribute of the problem as they are subject to the same undermining factors. Proposed tactics to promote robust and reliable research include pre-registration of research plans prior to performance of studies, and the conduct of reproducibility, replicability, and/or generalizability studies. He concluded that replication (duplicating the results of a prior a study following the same procedures but with the collection of new data) appears to be the most effective countermeasure, but noted that publishing replications is a challenge. Replication studies could be facilitated by educating stakeholders about their importance, by providing funding for replications of influential studies, and by having journals publish short replication abstracts with on-line supplements.

In the discussion following Dr. Bollen's presentation, the AC members shared their experiences with promoting robust and reliable science. They discussed the recently released Transparency and Openness Promotion (TOP) guidelines. These have been adopted by numerous scientific journals, but

they are not without controversy as investigators from several fields feel that there was inadequate consultation with the research community on development of the guidelines. AC members also expressed concern about the implementation of across-the-board principles, given that replicability and reproducibility may manifest differently across disciplines. There was discussion of how professional scientific societies might react to such guidelines and whether they could be brought into the conversation in ways that would increase collaboration and buy-in at earlier stages.

Behavioral and Social Sciences Research at the National Institutes of Health (NIH; Dr. William Riley)

Dr. Riley provided the AC with an update on behavioral and social sciences research at NIH. He began by situating his position as Director of the Office of Behavioral and Social Sciences Research (OBSSR) within the NIH context. The goals of OBSSR at NIH are to enhance behavioral and social sciences research and training; integrate biobehavioral perspectives in all NIH research areas; and improve communications among behavioral and social scientists and the public. Current NIH priorities most relevant to the behavioral and social sciences are health economics research and the *Precision Medicine* Initiative. The latter is a national research cohort of more than one million volunteers to inform precision medicine, an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle. Another NIH priority particularly relevant to social and behavioral sciences is Environmental Influences on Children's Health Outcomes (ECHO), which will support multiple, synergistic, longitudinal studies using existing study populations to investigate environmental exposures — including physical, chemical, biological, social, behavioral, natural and built environments — on child health and development.

The discussion following focused on primarily on NIH support of basic behavioral and social sciences research and on the National Children's Study and its transition to ECHO.

White House Office of Science and Technology Policy (OSTP) Social and Behavioral Sciences Team Activities (Dr. William Congdon)

Dr. Congdon reviewed the activities of the OSTP Social and Behavioral Sciences Team (SBST) and the *Presidential Executive Order – Using Behavioral Science Insights to Better Serve the American People* (issued September 15, 2015). The SBST mission is to translate findings and methods from behavioral science into improvements in federal policies and programs. The team is a cross-agency group of applied behavioral scientists chaired by OSTP.

Participating agencies are directed to identify programs in which applying behavioral science insights can yield substantial improvements. Strategies for programs should be developed and, where possible, rigorously tested for impact. There are currently four main areas of focus: streamlining access to programs; improving the presentation of information; structuring and presenting choices carefully; and leveraging financial and non-financial incentives to improve outcomes.

The AC was very enthusiastic about the team and its mission. There was much discussion about the successes and failures of various insights. The team was encouraged to publish not only the successes (such as those in the annual report), but also the failures, as they provide the community with further learning opportunities. This would also contribute to transparency regarding the team's activities, as it continues to work to prove its value to agencies and the incoming Presidential administration in 2017.

NSF Activities and Strategies Related to Graduate Education (Dr. Joan Ferrini-Mundy)

Dr. Ferrini-Mundy, Assistant Director, NSF Directorate for Education and Human Resources (EHR), made remarks about general issues in graduate education that are under discussion at NSF and nationally. She

noted that \$1 billion is spent annually on graduate student education, reaching more than 40,000 students, but the current and potential future impact of this investment is not known. Most of the dollars in graduate education go to research assistantships (60%), but we know very little about this investment. We can quantify the intended number of students to be supported and dollars budgeted and match students to projects *post hoc*, but we do not gather data about the experience of the students.

NSF's goal is to have a strategy for investment in graduate student education to prepare tomorrow's leading scientists for careers in academia and beyond. Dr. Ferrini-Mundy noted that most graduate students will not go into academia, and PhD completion rates are very low, although this varies by field. Graduate education is not aligned with disciplinary, workforce, societal, and student needs. Graduate students are narrowly trained and lack transferrable professional skills. Career mentoring is narrowly focused on research positions in academe. She questioned whether graduate education should be focused on the educational needs of students or on the science. These are current topics of national conversation in many fields.

AC members then broke into small groups to discuss two questions: (1) How should the graduate preparation of students in the SBE sciences change for the future? (2) What do you wish you understood better (or where do you wish we had more data) about graduate education in the SBE sciences? AC members opined that graduate students needed improvements in statistical training and training for skills geared to non-academic jobs. They should be made aware of terminal, professional master's degrees and career options outside of academia. One member suggested that some experience in graduate education without a commitment to a full PhD would allow students to get a better sense of their options at beginning of graduate training. There should also be more training in communicating science for graduate students, perhaps by having them mentor undergraduates. Data needs include the following: better metrics for training success relevant to industry and government needs and tracking of NSF-funded graduate students as they pursue different career paths; assessment of whether NSF's prestigious Graduate Research Fellowship program results in better placements in academia or industry; and measurement of impact of doctoral dissertation research improvement awards on recipients' success.

NSF Office of Legislative and Public Affairs (Ms. Amanda Greenwell)

Ms. Greenwell, Head of the NSF Office of Legislative and Public Affairs (OLPA), discussed the goals and activities of OLPA. The Office's primary goal is to make clear what NSF does and the vital role the agency plays in supporting basic research and enabling people to create knowledge. To achieve this goal, NSF is taking a proactive approach to disseminate information about awards, including making personal connections with members of Congress and notifying them directly of awards to institutions in their districts or states. OLPA is also working with reporters and community members to reach broader audiences, such as pitching stories for media coverage about NSF. The FY 2017 budget roll out will also be extended to provide more opportunities for NSF leadership and ADs to brief Congressional committees and House and Senate members on agency and directorate priorities.

The AC then discussed various aspects of NSF's communications plans. Of particular interest was how NSF will work to combat negative opinions of the Foundation. Ms. Greenwell responded that OLPA is implementing a variety of external and Congressional affairs activities to improve relations between NSF and Congress and to promote awareness of the agency's activities, ideally creating more agency champions in the process. AC members were encouraged to contact OLPA or Ms. Madeline Beal, SBE's Communications Specialist, with any content they would like disseminated.

Meeting with NSF Leadership (Dr. Richard Buckius)

Dr. Buckius, NSF Chief Operating Officer, began his discussion with the AC with the topic of administrative burden. He indicated that administrative burden, both on the NSF directorates (proposal workload) and on the research community (to secure funding and conduct research) are at the forefront of NSF-wide discussions. He also discussed with the AC steps taken to explain the importance of SBE in the face of proposed budget cuts to the directorate; SBE's relationship with Congress; SBE's potential contributions to science across NSF; award success rates in light of new initiatives; robust and reliable science; broader impacts; and broadening participation. There was further discussion of how SBE might invest in infrastructure to support "Big Data".

Next Steps in Transformational SBE Science (Drs. Emilio Moran and Arthur "Skip" Lupia)

Drs. Moran and Lupia presented their thoughts on where SBE sciences are now and where they should be going in the coming years. Dr. Lupia began with a presentation concerning why it is an interesting time to be a social scientist and this view of the grand challenge facing SBE sciences, i.e., that SBE sciences must be of greater service and of more value to more people. He noted that the public value of social science is as a source for credible and legitimate evaluations – it is science as a service to more effectively serve social constituents. In his view, SBE research does not need to be dumbed down to be conveyed to the public; instead SBE should "smarten up" about how to convey our knowledge in the best ways that earn others' attention and provide value. The right metaphors and analogies must be found to help the public know what SBE scientists know.

Dr. Moran followed with a presentation on some of the challenges faced by SBE and a proposal for a national network of regional observatory centers to combine geographical and spatial data with social science data to better link people and place. A national network could synthesize information from a variety of sources, provide training opportunities and serve as a clearing house for data and best practices. It would be a resource for scientific consistency in the field.

Agenda and dates for future meetings, assignments and concluding remarks (Drs. Fay Lomax Cook and Emilio Moran)

Drs. Cook and Moran indicated that SBE is targeting May 23-24, 2016, for its next Advisory Committee meeting. The AC discussed several potential agenda items: a discussion of SBE-CISE collaborations with Dr. James Kurose; discussion of the language needed in funding solicitations to make the SBE community feel invited to participate in cross-directorate initiatives; science communication; graduate education in the SBE sciences; and the Foundation's Broader Impacts merit review criterion.

In her concluding remarks, Dr. Cook presented certificates of appreciation to outgoing SBE AC members Emilio Moran and Steve Ruggles.

The meeting adjourned at 12:30 p.m.