

Directorate for Social, Behavioral, and Economic Sciences Office of Multidisciplinary Activities Response to the 2015 Committee of Visitors Report

Overview

The Directorate for Social, Behavioral, and Economic Sciences (SBE) Office of Multidisciplinary Activities (SMA) Committee of Visitors (COV) met August 27-28, 2015. The COV included the chair and two members representing each of five programs under review: Science of Science and Innovation Policy (SciSIP); Interdisciplinary Behavioral and Social Science Research (IBSS); Research Experiences for Undergraduates Sites (REU Sites); SBE Postdoctoral Research Fellowships (SPRF) and its predecessor Minority Postdoctoral Research Fellowships (MPRF); and Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences and in Education and Human Resources (BCC; SBE directorate only). The members of the COV met in plenary and in program-focused sessions. The program-focused teams also met with the program officers managing those programs and the whole COV met with administrative staff who provide support for SMA programs. The COV presented its findings and recommendations to Dr. Fay Lomax Cook, Assistant Director, SBE, Dr. Clifford Gabriel, Deputy Assistant Director (acting), SBE, and Dr. Deborah Olster, Senior Advisor, SBE, and to program officers and administrative staff involved in SMA programs.

The COV provided recommendations pertaining to the quality and integrity of operations, specifically data issues (i.e., data collected and provided to the COV) and reviewer training and consistency, and forward looking comments for SMA as a whole. In addition, at the request of SBE, the COV addressed specific questions related to capacity building, community building, diversity of disciplinary coverage, and the adequacy of SMA's structure and resources. This Overview section first considers and responds to the COV's recommendations for SMA as a whole. Recommendations made at the individual program level are addressed in later sections of this report.

A. Quality and integrity of operations

1. Data Issues

Recommendation: We recommend that every effort be made to complete the demographic information for PIs and Co-PIs, especially for programs that target diversity, and particularly in advance of COVs.

Response: SMA is receptive to this recommendation and will ask our program officers to strongly encourage PIs and Co-PIs to provide demographic information that can then be provided to future COVs. For policy and privacy reasons, however, provision of this information will remain voluntary.

Recommendation: We recommend that disciplinary and demographic data be collected and reported by project in addition to proposal-level data, merging information for collaborative proposals and including Co-PIs. This will allow assessment of disciplinary diversity as well as standard demographic composition of the teams.

Response: SMA agrees. For future COVs we will provide PI and co-PI disciplinary and demographic data and present this information at the proposal and project levels.

Recommendation: We recommend that SMA explore the feasibility of longer term outcome measures for interdisciplinary and pipeline programs.

Response: SMA appreciates this timely comment. NSF is in the process of standing up a new Evaluation and Assessment Capability (EAC) section in the Office of Integrative Activities. The role of the EAC is to provide leadership, coordination, and collaboration for evaluations and assessments at the Foundation to inform decision-making on NSF investments in human capital and research. SMA will explore working with the EAC to develop appropriate outcome measures and tools to evaluate the success of our interdisciplinary and pipeline programs.

2. Reviewer training/consistency

Recommendation: We recommend that SMA move to develop systematic guidelines, training and information resources for reviewers of interdisciplinary and pipeline programs, and consider feedback systems that might incentivize or reward higher-quality reviewers.

Response: As is the case for all of SBE, SMA adheres to NSF-wide criteria for merit review and additional program/solicitation-specific review criteria, when applicable. Many guidelines, training, and information resources are available for reviewers, and program officers managing SMA programs will work to ensure that ad hoc reviewers and panelists are made aware of these resources. We do not feel that systematic guidelines for all of SMA is advisable. Given how different the individuals programs are, program officers who manage those programs are in the best position to develop materials tailored to their programs' needs. We are also reluctant to provide formal grading of the quality of reviews – e.g., by awarding stars, as suggested for BCC, below – as this risks introducing disharmony into panels of tight-knit reviewer communities.

Program officers can and will, however, make stronger efforts to improve reviewer training and consistency. They will point out particularly good examples of reviews during panels, and reiterate to panelists and ad hoc reviewers the importance of detailed, constructive reviews – not only for helping investigators improve their own proposals, but also for serving the broader scientific field by facilitating stronger research. In addition, as described below in the individual program sections of this report, program officers are exploring the use of webinars, formal presentations, more explicit written instructions, and calibration exercises to improve the quality and consistency of reviews. Finally, they will continue the current practice of not inviting reviewers or panelists back if they fail to provide reviews of sufficiently high quality.

B. Forward looking comments

Recommendation: We recommend that SMA, together with the rest of SBE and other directorates, continue to explore ways to fund much needed capacity and infrastructure, both intellectual and physical, for large scale data science for social science research.

Response: SMA agrees with the need identified by the COV. SMA and the SBE research divisions are already involved in a number of initiatives that fund much needed capacity and infrastructure for large scale data science for social, behavioral, and economic sciences research, and will continue to do so for the foreseeable future. SBE continues its long history of funding the “Big Three” surveys: the General Social Survey, Panel Study of Income Dynamics and

American National Election Studies. In addition, the Building Community and Capacity for Data-Intensive Research in the Social, Behavioral, and Economic Sciences and in Education and Human Resources program (BCC), reviewed by this COV, was a preparatory step toward building research capacity and infrastructure for large scale data-intensive SBE science. This competition ran for three years and funded 38 awards to enable communities to develop visions for data-intensive SBE areas of research. In Fiscal Year (FY) 2015, BCC was succeeded by an SBE-focused solicitation, Resource Implementations for Data Intensive Research in the Social Behavioral and Economic Sciences (RIDIR). RIDIR is designed to support the development of user-friendly, large-scale, next-generation data resources and analytical techniques for the SBE sciences. Three new awards were made under RIDIR in FY 2015, and the solicitation was re-issued for additional competitions in FYs 2016 and 2017. SBE also participates in the multi-directorate, Critical Techniques and Technologies for Advancing Foundations and Applications of Big Data Science & Engineering (BIGDATA) program. BIGDATA seeks novel approaches in computer science, statistics, computational science, and mathematics, along with innovative applications in domain science, including social and behavioral sciences, geosciences, education, biology, the physical sciences, and engineering that lead towards the further development of the interdisciplinary field of data science. Finally, SBE participates in the cross-directorate NSF Research Traineeships (NRT) program which supports institutional, interdisciplinary graduate-level training programs. Data-enabled science and engineering, one of the thematic priorities for NRT, is specifically designed to educate and support the next generation of researchers in the data science space. In FYs 2014 and 2015, four of the 12 awards made under the data-enabled science and engineering theme included strong SBE science components.

Recommendation: We recommend that outreach efforts be expanded to improve the quantity and quality of proposals from minority-serving institutions, including training and encouraging partnerships.

Response: SMA agrees with this recommendation and will work with the relevant program officers to develop and implement plans to strengthen our outreach to minority-serving institutions. Partnerships between minority-serving institutions or non research-intensive institutions with research-intensive institutions were specifically recommended for the Research Experiences for Undergraduates (REU) Sites programs. As described in the REU Sites section of this report, the SBE REU Sites program officer plans to explore the possibility of incorporating this recommendation into the NSF-wide REU Sites solicitation.

Although not explicitly stated as Recommendations, SMA addresses several other comments made by the COV in sections C-E below.

C. Community Building

Comment: There is a need to develop scholars who have a long-term commitment to doing research in the area of the program. Too often it seems that projects that might be termed “drop-in” proposals are funded, proposals by scholars in another area who see a potential fit for their work in the program. But this will not develop the kind of research community needed. This kind of community may more likely to be fostered by permanent than rotator program officers, engaging in multi-year outreach to the relevant communities.

Response: The appearance of SMA too often funding “drop-in” proposals is an interesting comment, and if confirmed to be accurate, would call for additional attention. In addition, SMA understands the COV’s concern about the need for permanent program officers, and with the exception of SciSIP, all of the SMA programs reviewed by this COV are staffed by a permanent program officer. Hiring of permanent program officers is constrained by the number of FTEs available. While all successful program officers must have the requisite program-specific scientific and administrative expertise, SBE also tries to balance the benefits of hiring permanent program officers that offer continuity and experience in the job, with the rotator program officers who are more likely to be actively engaged in scientific research and education. The SBE directorate and research divisions (Behavioral and Cognitive Sciences; Social and Economic Sciences) that house the program officers who manage SMA programs provide new program officers with mentorship, orientation and other training opportunities to bring them up to speed. In addition, the Foundation offers intensive training courses and program “boot camps” on subjects such as Merit Review Basics several times a year. Information specific to SciSIP is included in the SciSIP program response below.

Comment: Broader community building occurs across disciplines. We see great potential here in continuing to build partnerships across directorates at NSF. It could be argued that BCC and SciSIP are, perhaps not surprisingly, focused on SBE and on funding SBE scholars in their own academic disciplines, but would benefit from teaming up with scholars in other directorates. We understand the political problems in developing successful collaborations, and have seen such efforts fail in the past. But it is still a good idea. Perhaps it would be useful to look to other models, such as those centered around particular data availability. The Census Data Centers, NORC or ICPSR spring to mind. Thinking about this kind of model might also revive the idea of a social observatory-type infrastructure.

Response: In addition to SBE’s “core” programs in the Division of Behavioral and Cognitive Sciences, Division of Social and Economic Sciences, and SMA (many of which co-fund awards with other programs and support interdisciplinary research), SBE collaborates with the other NSF directorates in a number of ways. SBE partners with the Directorates for Geosciences (GEO) and Biological Sciences (BIO) in the Dynamics of Coupled Natural and Human Systems program. We partner with the Directorates for Computer and Information Sciences and Engineering (CISE), Engineering (ENG), and Education and Human Resources (EHR) in the Science of Learning. SBE also participates in cross-directorate agency priorities: Understanding the Brain; Innovations at the Nexus of Food, Energy and Water Systems; Risk and Resilience: Critical Resilient Interdependent Infrastructure Systems and Processes; Secure and Trustworthy Cyberspace; Cyberinfrastructure for 21st Century Science, Engineering and Education; and Inclusion across National of Communities of Learners that have been Underrepresented for Diversity in Science and Engineering. Many current awards in these programs involve collaborations between SBE scientists and their counterparts in other disciplines, and we expect this to continue in the future. The other NSF directorates recognize that a basic understanding of human behavior is integral to these topics and routinely seek out SBE expertise. As the smallest directorate at NSF, SBE thinks carefully about committing our limited human and financial resources to these activities.

D. Diversity of Disciplinary Coverage

Comment: We suggest that efforts be made to go beyond SBE in the formulation and execution of further cross-disciplinary efforts. Particularly with regard to data science, we believe that early

involvement of computational people is vital, including within the formulation of programs' definitions and goals. Conversely, we believe that members of the SBE community should be included in discussions (panels, etc.) in other directorates where social science issues are showing up even if not identified explicitly as such.

Response: SBE agrees and as noted above, participates in many cross-disciplinary and cross-directorate activities. Teams of staff with relevant expertise from all participating directorates are involved in all phases of these activities' development and management.

E. Adequacy of SMA structure and resources

Comment: In response to the previous COV report, the directorate moved the SMA program officers out of the "front office" and into the divisions. This appears to have had both benefits and costs. On the one hand, it has been useful to give program officers for the SMA programs easier access to the management practices and subject matter of the disciplinary programs. But on the other hand it appears to have created some coordination problems related to staffing and funding these programs. The staff seemed unhappy with aspects of the management of SMA. It might be worthwhile to revisit the structure of SMA with an eye to making further changes that will smooth operations.

Response: SMA appreciates that the COV has brought this issue to our attention and agree that the structure of SMA (program officers in the research divisions; administrative staff in the SBE Office of the Assistant Director) has advantages and disadvantages. SBE leadership will work to identify the source of the problems and, if necessary, re-organize SMA's structure, work flows, assignments and/or coordination to improve our operations.

The remainder of this response document addresses individual program-level recommendations from the COV, organized to match the COV report template structure.

Science of Science and Innovation Policy (SciSIP)

I. Questions about the quality and effectiveness of the program's use of merit review process:

Q7. Additional comments on the quality and effectiveness of the program's use of merit review process:

Recommendation: We recommend guidance to reviewers in the form of a sample of ideal reviews (2 or 3 paragraphs long), perhaps with separate examples pegged to each level from Excellent to Poor. This online resource would aid in calibration and alignment of reviewer standards, bringing more coherence to ad hoc reviewer assessments.

Response: SMA understands the need for greater depth for reviews and panel summaries. SciSIP's program officer is currently developing improved guidance that will be sent to ad hoc reviewers and panelists and in the near future, be posted on the SciSIP@NSF portion of the ScienceofSciencePolicy.net website. In addition, when the panels meet, she will reinforce this guidance and also point out examples of particularly good reviews.

III. Questions concerning the management of the program under review:

Q4. Responsiveness of program to previous COV comments and recommendations

Recommendation: The last COV recommended SciSIP add strength in fields such as political science, sociology, anthropology and history. We recommend that these efforts continue, and note that it would be helpful if the program officer had sufficient travel funds to, on a rotating basis, attend professional meetings in these various fields.

Response: SMA understands the need for greater balance between disciplines in the interdisciplinary SciSIP program. There is somewhat of a chicken and egg problem as other disciplines are not engaged with the program. The SciSIP program officer is already working to expand her outreach efforts. She recently attended meetings of the Academy of Management and the Association of Public Policy and Management and is planning to attend the annual meeting of the American Association for the Advancement of Science. SciSIP and SBE's Science of Organizations program are also hosting a workshop with the deans of business schools to increase awareness and attract applicants to these programs. SciSIP's program officer has also created a brochure to distribute at meetings that she is unable to attend and is working with other program officers to include information on SciSIP in their outreach efforts.

Recommendation: Almost all proposals from non-social scientists (e.g. biologists and chemists) were declined for what we saw as sound reasons. We recommend that non social scientists be encouraged to submit with collaborators who better understand social science methodology.

Response: There is certainly a need for greater collaboration between physical and biological scientists and social scientists. Having two rounds of proposals per year (a recently initiated change) has made it easier for proposers to add social scientists to a project and revise/resubmit stronger proposals in a timely manner. Many times the response is that the applicant did not know how to identify potential collaborators. The ScienceofSciencePolicy.net website has been a good place to start the identification process.

IV. Questions about Portfolio:

Q1. Please comment on the demographic and disciplinary diversity of the program's portfolio.

Recommendation: Still we recommend special outreach efforts to HBCUs and minority serving institutions. Also more members of these institutions might be invited to be panelists.

Response: SciSIP did make one award to a HBCU last year (FY 2015). As described above, SciSIP's program officer will work with others in SMA to develop and implement plans to strengthen our outreach to minority-serving institutions, to boost the quality and quantity of proposals and engage reviewers from those institutions. In addition to outreach efforts to broaden participation in our programs, the SBE directorate is also pursuing the Science of Broadening Participation to better understand the barriers that hinder and factors that enhance our ability to broaden participation in science, technology, engineering, and mathematics. A SciSIP-sponsored symposium, scheduled for February, 2015, will convene a diverse group of researchers, practitioners, and decision makers to clarify a vision for the Science of Broadening Participation, propose relevant evidence gathering and analytical approaches, engage questions of intervention and implementation, and provide a framework for evaluating relevant processes and outcomes.

Other Topics:

Q4. Please provide comments on any other issues the COV feels are relevant.

Recommendation: We also recommend that the appointment of a permanent PO for SciSIP be seriously considered. As a young program with a need to build community, the SciSIP program can be set back with each transition to a new program officer. But this recommendation can be implemented only if the right person can be found. This person will have a track record of scholarly contributions in the area of science policy, an allegiance to science policy rather than any particular discipline, an appreciation of both quantitative and qualitative methods, motivation to develop a community rather than pursue a personal agenda and the kind of personality and community connections that will make him or her a central supportive figure in growing the science needed to answer the decade old Marburger challenge.

Response: There are certain strengths to rotating the program officer as the program is defining itself. Maryann Feldman, the current SciSIP program officer, has agreed to serve an additional, third year. More support staff help would also facilitate the transition between program officers and the Office of the Assistant Director is currently recruiting a science assistant who can help in this regard. One objective for the coming year is to write a SciSIP program manual, with details about specific operational details, such as activities the Interagency Working Group, the contractual arrangements over STAR Metrics and the management of the webpage.

Interdisciplinary Behavioral and Social Science Research (IBSS) Competition

I. Questions about the quality and effectiveness of the program's use of merit review process:

Q1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?

Recommendation: The COV recommends that novel methods be implemented to balance the needs for deep disciplinary expertise and the considerable breadth needed to evaluate interdisciplinary proposals.

Response: The IBSS program directors appreciate the issues that led the COV members to make this recommendation. Based on their past experience in conducting interdisciplinary competitions, IBSS has relied heavily on the use of advisory panels that include expertise from a broad cross-section of social and behavioral science fields. They have tried to provide guidance to panel members before and during the meeting regarding the NSF-wide and IBSS-specific review criteria, and they have asked additional panel members to assist in the evaluation of proposals identified as potentially competitive during the first part of the panel meeting. Although they think that the use of four panel members to evaluate each proposal has resulted in thorough and comprehensive evaluations of proposals for 80% to 90% of the proposals, they recognize that in perhaps 10% to 20% of the proposals, none of the panel members has sufficient expertise to assess certain aspects of the proposal. They will seek to address this problem in future competitions by experimenting with targeted use of ad hoc reviewers or other techniques that might provide the focused expertise needed to provide comprehensive evaluations of all IBSS proposals.

Q3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?

Recommendation: The COV recommends that program directors encourage extra attention by reviewers to solicitation-specific criteria and summary statements.

Response: The IBSS program will employ pre-panel webinars and change their written instructions to panel members in order to make panelists aware of the need to address all relevant criteria in the reviews they write before the panel meeting. As a general principle, panel members who provide incomplete reviews usually are not invited back to serve on panels in the future.

III. Questions concerning the management of the program under review:

Q2. Responsiveness of the program to emerging research and education opportunities.

Recommendation: The COV recommends that formal systems be put in place to evaluate the outcomes of the topical areas.

Response: The IBSS program directors will work with SBE leaders to determine more effective ways to monitor the different dimensions of IBSS proposals and awards, including evaluation of topical areas, disciplinary involvement, and other critical factors. As described above, SMA will also work with the new Evaluation and Assessment Capability to explore how best to evaluate the outcomes of our programs.

Research Experiences for Undergraduates Sites (REU Sites)

Other Topics:

Q4. Please provide comments on any other issues the COV feels are relevant.

Recommendation: Improvements in the review process through a calibration exercise and reviewer training. In terms of reviewer training NSF might consider putting together webinars which exemplify good reviewer practices. Such training might include how proposals have been graded in the past identifying a mix of good and poor proposals.

Response: SMA appreciates this constructive comment. In the past, the REU Sites program officer would calibrate informally, when discussions on each proposal would take place. Then after all the reviews were submitted, she would note which panelists are harsh graders and which ones are lenient, and take that into account when the final panel recommendations are made. Now she has introduced this practice explicitly for her upcoming panel. Before the proposal discussions start, she will run a calibration exercise by pulling out examples of high, middle, and low ranked proposals. Running a webinar is also a good idea for reviewer training, and will be considered for next year. Currently the program officer does reviewer training informally, through emails, by providing reviewers with review templates and explanations of how to write their reviews. This year she is introducing a PowerPoint presentation for panelist orientation/training.

Recommendation: Greater effort should be made to collect data on program outcomes and participant productivity. These measures should be made available in a summary format

Response: SMA agrees that this is a good idea, and as has been described above, will work with the new Evaluation and Assessment Capability section to explore how best to evaluate our programs. This will include defining metrics for measuring outcomes and productivity.

Recommendation: For outreach purposes, to increase the participation of minority serving institutions in the REU program we recommend NSF (3a) considers funding a workshop on proposal preparation for REUs, (3b) considers including in the solicitation prioritizing funding consortium of colleges and universities for REUs. For example, a primary purpose of the REU program is to provide research intensive experiences for undergraduates who do not normally have access to the facilities to support such an experience. What better way to meet this purpose than to have a research intensive university as a 'hub' working in cooperation with other non-research intensive colleges and universities. In addition, co-PI's from less research rich institutions benefit from the opportunity to access and use facilities and resources not available at their employing institution.

Response: SMA agrees that funding a workshop on proposal preparation for REUs is a very good idea. The REU Sites program officer will bring this up to the NSF-wide REU committee and see if there is any interest in running a workshop for all disciplines, since this is (most probably) not an isolated SBE issue. She will also bring the suggestion to prioritize funding consortia of research-intensive and non-research intensive or minority-serving colleges and universities to the NSF-wide REU committee for consideration. The REU Sites program is run under a common, NSF-wide solicitation, and all changes must be approved and cleared by all participating directorates.

Although not stated as explicit recommendations. SMA would also respond to two other comments made by the COV:

Comment: Reviewer and PI data should be better collected or reported. For example, currently the information provided only presents primary PI and not co-PI characteristics.

Response: SMA will strongly encourage all PIs, co-PIs, and reviewers to provide demographic information that can then be provided to future COVs. For policy and privacy reasons, however, provision of this information will remain voluntary.

Comment: As we noted above, there appears to be racial disparities in award sites, and some unevenness in quality of reviewer reports.

Response: NSF continues to strive to broaden the participation of underrepresented groups in all of its programs. As described above, the REU Sites Program Officer will explore the COV's suggestion of funding consortia of minority-serving colleges/universities and research-intensive institutions in the REU Sites program, as one vehicle to address the disparities. She will also continue to participate in outreach and grantsmanship events to increase awareness of the program and improve the quality of proposals submitted for funding. More explicit reviewer training, as described above, is being introduced to improve the quality of reviews of proposals.

SBE Postdoctoral Research Fellowships (SPRF)

II. Questions concerning the selection of reviewers:

Q1. Did the program make use of reviewers having appropriate expertise and/or qualifications?

Recommendation: For the period under review, the discipline of some reviewers is listed as “other” which does not make it possible to comment comprehensively to this question. Therefore, we recommend that data be collected to clarify what the designation “other” constitutes in order for the COV to provide appropriate comments concerning reviewer’s expertise and qualifications.

Response: This recommendation would be relevant not only to SPRF but also, likely, across the entire range of NSF programs. Given the work involved developing a broadly acceptable set of criteria and embedding such information in NSF’s electronic systems, the issue would require consideration at a higher than directorate NSF level. SBE will bring this idea to the group(s) within NSF working on these issues for consideration, starting with the Business Applications Review Board.

Additional comments on reviewer selection:

Recommendation: The COV therefore recommends that SBE seek to obtain this data from reviewers who do not self-report in these categories from other NSF data sources. This is important to the SPRF program where capacity building is central to its mission. We recommend that a statement regarding the importance of providing demographic information in light of the Broadening Participation programmatic goal be included in the instructions to reviewers.

Response: As stated above, SMA program officers will strongly encourage reviewers to provide demographic information that can then be provided to future COVs. For policy and privacy reasons, however, provision of this information will remain voluntary.

IV. Questions about Portfolio:

Q2. Are there any major gaps in the program’s award portfolio?

Recommendation: No major gaps have been detected, however the COV recommends that a table describing the distribution of awards/declines by year per discipline would be useful in identifying funding trends (if any).

Response: SMA agrees and will provide the data in this format in the future.

Q3. Are there particular strengths or weaknesses in the program’s award portfolio?

Recommendation: Weaknesses: SPRF-BP attracts fewer proposals than SPRF-IBSS, and experienced a reduction in number of applications between 2011-2012 (MPRF) and 2013-2014 (BP). Diversity of the applicant pool is dependent on the numbers of particular minority groups going through graduate school within the SBE fields. We recommend that the program obtain these data from the Survey of Earned Doctorates to identify regions for targeted outreach.

Response: Resources permitting, SMA will work with our colleagues in SBE’s National Center for Science and Engineering Statistics to obtain these data and use them to inform targeted outreach efforts.

Recommendation: We therefore recommend that the SPRF program officer or her designee extend the program's outreach activities to minority serving institutions to include grant writing workshops. One possible opportunity is to host regional grant writing training events targeted to institutions with graduate and postdoctoral training programs in SBE disciplines that are developed in collaboration with former awardees, postdoctoral program offices, and/or professional societies, such as AAAS or the National Postdoctoral Association. This would provide the training in the preparation of competitive proposals under the guidelines of this program and decrease a perceived barrier to submission.

Response: SMA appreciates these very constructive recommendations and agree that grant-writing workshops at MSIs could be useful. As noted in the Overview, SMA program officers will work to develop and implement plans to strengthen our outreach to MSIs, taking into consideration all the ideas and suggestions from the COV.

Other Topics

Q1. Are the structure and resources (human and financial) of the SBE Office of Multidisciplinary Activities (SMA) adequate to support the program under review?

Recommendation: We recommend that SBE consider making adjustments in the SPRF budget to ensure that all competitive proposals that increase diversity are funded.

Response: SBE is sympathetic to this recommendation and would like to fund all of the highly meritorious proposals in all of our programs. The reality, however, is that our limited budget prevents us from doing so and increasing the budget for the SPRF program would come at the expense of other program(s). SBE reviews all of our programs' budgets annually and makes adjustments as we see fit, balancing the needs of all of the directorate's core programs and our commitments to multi- and cross-directorate programs. If SBE receives a budget increase, we will consider the needs of the SPRF program along with those of our other programs in making allocations.

Q2a. How well do the REU Sites and SPRF/MPRF programs do in expanding research capacity in the SBE sciences?

Recommendation: We therefore recommend implementation of outreach in the form of grant writing workshops supported by a mentor and through social media networking to the SPRF program in order to increase diversity and research capacity in SBE disciplines.

Response: SMA's SPRF program will work on creating a comprehensive outreach plan for the coming year. We will consider organizing grant-writing workshops for this program. We have already funded a 3-year project to run short courses on SBE research methods, with an emphasis on proposal development, targeting underrepresented groups in SBE sciences. The first cycle of the program took place in July, 2015, during which postdocs spent a week working with SBE faculty to develop and design research projects and grant proposals. Furthermore, we will work with SBE's new Communications Specialist to explore the use of social media to promote learning, discussion and dissemination of information related to grant writing and other career development topics.

Q2b. Are the programs designed to support interdisciplinary research (IBSS, SciSIP, SPRF-IBSS) supporting cutting-edge, interdisciplinary research in the SBE sciences? How could they be improved?

Recommendation: How could they be improved? Conducting outreach through grant writing programs, as identified above, will have the additional benefit of increasing the number of competitive proposals in this category as well....Additionally, we recommend tracking outcomes of funded SPRF-IBSS proposals to evaluate how well the program meets its goals.

Response: As mentioned in the Overview response, SBE hopes to work with the new Evaluation Assessment Capability section to evaluate our programs. In addition, the SPRF program officer is planning some additional targeted outreach for FY 2016. This will build on her recent efforts which appear to have been successful, in that the latest cohort (FY 2016) of SPRF proposals is much larger than the FY 2015 cohort.

Q4. Please provide comments on any other issue the COV feels are relevant.

Recommendation: Questions were raised about whether there is a sufficient pool from which to draw proposals in the SPRF-BP Track. To address this issue we recommend that SPRF consider collaboration with Foundation programs such as AGEP (Alliances for Graduate Education and the Professoriate) in the Education and Human Resources (EHR) directorate and institutional SBE Sciences programs located in the SBE Directorate. These programs support under-represented graduates seeking PhD's in STEM disciplines who may be interested in pursuing postdoctoral training after graduation and this would appear to be a natural collaborative opportunity to increase diversity in SBE disciplines.

Response: SMA agrees with this recommendation and will start a dialogue with our EHR colleagues to pursue it. As noted above, the SPRF program has received many more proposals – in both the IBSS and SBP tracks – in FY 2016 as compared to FY 2015.

Building Community and Capacity for Data-Intensive Research in the Social, Behavioral and Economic Sciences and in Education and Human Resources (BCC)

Note on SMA's response: BCC was designed as a three-year competition (FYs 2012-2014) and was reviewed in its entirety by this 2015 SMA COV. Therefore SMA's responses to the COV's recommendations concerning BCC have been addressed as relevant to RIDIR, its successor. While RIDIR follows and builds on BCC the goals of the two competitions are not identical and some issues raised by the COV simply are not applicable to RIDIR.

I. Questions about the quality and effectiveness of the program's use of merit review process.

Q1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?

Recommendation: We would emphasize that, for a program like BCC in particular, which is intended to be broad, cross cutting, and to bridge across disciplines, the panel conversation is quite important, and is more difficult to do well without the panelists being physically co-present in a group. This might suggest a greater than usual level of effort to get panelists to NSF to participate on the panel in person as compared with other programs.

Response: We agree that panel meetings that all members attend in person are more effective than all virtual or mixed virtual-in person counterparts. Given the difficulty in finding willing participants, flexibility is necessary but for RIDIR we shall press for in person participation.

Q2. Are both merit review criteria addressed?

Recommendation: One possibility is that reviewers may not understand what is meant by broader impacts. If this is not done already, NSF should provide guidance about the evaluation of broader impacts when instructions are circulated to reviewers.

Response: With the exception of unusual circumstances, RIDIR proposals are evaluated by panelists only. In circulating pre-meeting instructions to panelists we shall make certain that the broader impact criterion is discussed in detail. Moreover, as questions about reviewers' understanding and use of it have surfaced across the agency, the broader impacts merit review criterion is currently under discussion by the NSF leadership and the National Science Board.

Q3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?

Recommendation: Although any review process the quality of reviewers' commentary is going to be mixed, it might be worth considering ways that the panel process could encourage or even incentivize greater attention to the quality of the commentary. One straightforward mechanism, for example, would be to modify the FastLane panel system so that panelists can anonymously rate others' reviews using an Amazon-like 5-star system.

Response: An addition of the type proposed would need to be addressed at the agency-wide level. One problem that we foresee for RIDIR and likely across many other competitions is that all reviews are provided by panelists who collaborate closely with each other and are aware of all other panelist identities. There is thus the potential to introduce disharmony into the meeting process.

Q4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?

Recommendation: SBE might want to consider adding an element from the NIH review process. In the NIH study sections, at the end of the discussion of each proposal, the chair is charged with summarizing the strengths and weaknesses identified by the reviewers.

Response: In principle this suggestion has merit. Since NSF review panels do not have designated chairs, this responsibility would likely fall to the NSF program directors. Given the program directors' limited time and multiple other responsibilities (managing their core programs, participating in cross-directorate activities), we are concerned about the amount of time and effort involved when weighed against potential positive effect on outcome. A cogent summary can best be provided if the chair has read and taken sufficient time to think about both the proposal and the reviews. A more manageable alternative that is already used in many SBE panels and that can be implemented for RIDIR is to have the individual panelist drafting the

panel summary read out the major strengths and weaknesses of the proposal before the panel categorizes the competitiveness of the proposal.

Q5. Does the documentation in the jacket provide the rationale for the award/decline decision?

Recommendation: There seems to have been a tension between wanting to value the perspective of computationally oriented panelists (for whom technical innovation is often a core value) and wanting to ensure that the program be able to support creation of high impact SBE resources even if they employed only pedestrian methods from a computational perspective. Clear guidance in the statement of the program's vision, reinforced by the program officer in the lead-in to the panel discussion, would help.

Response: We believe that the current RIDIR announcement deals effectively with this issue since it presents a clear goal: production of a specific well integrated database with the tools necessary to insure effective use. We agree that at the start of a RIDIR panel meeting the chair should address this issue directly and allow time, if necessary, for discussion and arrival at a panel consensus.

Q6. Does the documentation to the PI provide the rationale for the award/decline decision?

Recommendation: We recommend that NSF consider reframing the review as also providing education for submitters and input into the development of SBE science generally rather than simply an evaluation, especially since many will not ultimately be funded.

Response: We agree with this recommendation and will remind reviewers that in addition to serving the immediate need of evaluating proposals, their reviews serve an education function to applicants and contribute to the development of the SBE sciences.

Q7. Additional comments on the quality and effectiveness of the program's use of merit review process.

Recommendation: For example, there may be significant value in adding more explicit structure around identification of strengths and weaknesses (similar to NIH reviews), and making sure that strengths receive appropriate prominence (since discussions often focus on weaknesses).

Response: We agree and will try to insure that RIDIR panel discussions explicitly address strengths as well as weaknesses. The RIDIR coordinating committee will discuss development of a panel summary template structured to require such information.

II. Questions about the Selection of Reviewers:

Additional comments on reviewer selection:

Recommendation: We recommend that NSF organize information about reviewers in a way that would facilitate a better assessment of their credentials. Information such as discipline of PhD, department, and university are present in the records and could be assembled to describe the panels with helpful specificity. It may also be helpful to explore ways of distinguishing the department and discipline of PhD from current area of emphasis/expertise (e.g. via self-report).

Response: This recommendation would be relevant not only to RIDIR but also, likely, across the entire range of NSF competitions. Given the work involved in developing a broadly acceptable set

of criteria and embedding such information in NSF's electronic systems, the issue would require consideration at a higher than directorate, NSF level. SBE will bring this idea to the groups within NSF working on these issues for consideration, starting with the Business Applications Review Board.

Recommendation: We also recommend that NSF undertake an analysis of the recruitment of reviewers. It would be helpful to know how many reviewers were solicited initially, how many responded, how many said yes, and reason for not participating among those who responded (e.g., schedule conflict, too busy, etc.). It would be helpful to look at characteristics of potential reviewers such as gender, race, and ethnicity; time since PhD; department and institution; NSF experience with respect to previous participation in workshops, review panels, submission of proposals to NSF, and whether awarded. Is the reason for lack of racial and ethnic diversity on the BCC panels a consequence of the pool of reviewers initially recruited, differential participation once recruited, or some other factor?

Response: This recommendation has merit, and NSF has already engaged Insight Policy Research to conduct a survey that addresses many of these questions. The results of the survey will be used to improve reviewer recruitment efforts across the Foundation.

IV. Questions about Portfolio:

Q1. Please comment on the demographic and disciplinary diversity of the program's portfolio.

Recommendation: We recommend that NSF approach this question differently in terms of the statistics it assembles. There are two issues. The first is the focus on the PI rather than the team of scientists assembled. When a single institution is involved in a project, it is important to know about the co-PIs as well as the PI. The second issue is the focus on proposals rather than projects. When multiple institutions are involved in a project, it is important to know about the total group of PIs and co-PIs involved. This is particularly important for a program such as BCC, where the goal is to create teams and build communities.

Response: There are two aspects to this recommendation. The first involves the evaluation of proposals and for BCC as well as RIDIR, the focus was on the "project" rather than individual "proposals." The composition of the entire set of researchers and institutions was taken into account. The second aspect concerns how NSF presents data for post decision analysis. As stated in the Overview, for future COVs we will provide PI and co-PI disciplinary and demographic data and present this information at the proposal and project levels.

Recommendation: Regarding the subject areas of awards, the table shows something of a skew toward sociology. However, as we have noted, the numbers may not be sufficiently informative. We recommend re-computing and reanalyzing as appropriate.

Response: As stated in the Overview and in our response to the previous recommendation, for future COVs we will provide PI and co-PI disciplinary and demographic data and present this information at the proposal and project levels.