

**Directorate for Social, Behavioral & Economic Sciences  
Office of the Assistant Director  
4201 Wilson Boulevard, Suite 905  
Arlington, VA 22230**

**MEMORANDUM**

DATE: June 10, 2009

TO: Dr. James Lightbourne, Senior Advisor for the Integration of Research & Education

FROM: David W. Lightfoot, AD, SBE

SUBJECT: Report of the Committee of Visitors for the Behavioral and Cognitive Sciences (BCS) Division within the SBE directorate

Please find attached the report of the Committee of Visitors (COV) for the Division of Behavioral and Cognitive Sciences.

The COV report was discussed and accepted at the May 21-22, 2009 meeting of the Social, Behavioral, and Economic Sciences Advisory Committee. Attached, please find the COV report, BCS' formal response to the recommendations of the COV, and lists of COV members and SBE Advisory Committee members.

The COV consisted of 31 members, including the chair and two sub-chairs (the chairs and subchairs being members of the SBE AC) and three members representing each of nine programs within BCS. It was composed of 14 women and 17 men from a variety of academic institutions and different regions across the country. It also included 5 underrepresented minorities. Twenty members of the program had received past funding from NSF, 11 had not. Ten of the members had no experience (as panelist or applicant) with the BCS program they were responsible for reviewing. The sample of proposals was selected to avoid institutional conflicts with the COV members. Individual conflicts were dealt with by blocking the member's access to any proposals for which they had a personal conflict of interest.

Attachments

cc: Arden Bement, Jr., OD  
Cora Marrett, OD  
Thomas Cooley, BFA

Anthony Arnolie, OIRM  
Allison C. Lerner, OIG  
Lance Haworth, OIA  
Susanne Bolton, OIRM

## CHARGE TO THE COMMITTEE OF VISITORS

### Division of Behavioral and Cognitive Sciences (BCS) Directorate for Social, Behavioral and Economic Sciences National Science Foundation

March 18-20, 2009

The National Science Foundation has a long-standing practice of reviewing all programs on a three-year cycle. The review is performed by a Committee of Visitors (COV), which serves as a subcommittee of the Advisory Committee for the Directorate for Social, Behavioral, and Economic Sciences. The COV members form an independent group of external experts. NSF uses COVs to assess the scientific portfolio as well as the review process.

To meet the requirements of the Government Performance and Results Act (GPRA) for annual performance assessment, NSF developed performance goals for results of NSF's investment in research and education as descriptive standards. Information on the products of NSF's awards provides the basis for assessing NSF's performance against these standards through the judgment of independent external experts.

The **2009 BCS/SBE** COV is charged to consider the performance of the division in two primary areas:

- ❑ Assess the quality and integrity of operations, including technical and managerial matters pertaining to proposal recommendations.
- ❑ Comment on how the outputs and outcomes generated by awardees have contributed to the attainment of NSF's mission and strategic goals [See "National Science Foundation Investing in America's Future Strategic Plan FY 2006-2011" <http://www.nsf.gov/pubs/2006/nsf0648/nsf0648.jsp> .

BCS/SBE would like your advice about several questions related specifically to the division. **Please comment on both scientific and management aspects of each of the following division-specific questions:**

- **Infrastructure:** BCS is aware that the infrastructure needs of our communities are great. The Office of the Assistant Director of the Directorate of Social, Behavioral, and Economic Sciences also recognizes that infrastructure has been underfunded. Using funds no longer obligated to the Human and Social Dynamics priority area, the OAD has taken a first step to address this situation (see [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf09019](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf09019)). A next step is to identify infrastructure needs (broadly defined) in the Behavioral and Cognitive Sciences, particularly keeping in mind new technologies, cyber capabilities, human resource needs and interdisciplinary collaborations. Please discuss.
- **Human Resources:** In a time of increasing interdisciplinarity, behavioral and cognitive scientists must master an increasingly broad array of knowledge, skills, and techniques. How might BCS enhance our scientists' ability to do so? What other organizations might we collaborate with in such activities?
- **Broadening Participation:** Imperative in all consideration of human resources is the need to expand opportunities for underrepresented groups. Please discuss how the Division might act so as to broaden representation of women, underrepresented populations and individuals with disabilities in our sciences. Please also consider how the data, methodologies and theories of our sciences might lead to a deeper

understanding of the problem and assist in formulating evidence-based policy. The file "Sci Broaden Particip" under Documents describes activities and issues related to the Science of Broadening Participation and is a useful resource.

- Stewards of Science: How can BCS best represent the importance of our sciences both within and external to the National Science Foundation? The NSTC report "Social, Behavioral, and Economic Research in the Federal Context" is a useful resource in this regard.

We would also like your advice on progress we have made on the issues raised by the previous COV during the last three years. Please see the files "2006 COV Report," "2006 BCS Response," "BCS COV Resp Update" (for a summary of actions taken in the past three years), and each program's updated COV response in the documents section in the COV module.

To assist COVs, NSF has developed a basic set of questions and a report template for the entire Foundation. **Please remember that your report must be completed and submitted before final adjournment.**

Irene Blair  
Associate Professor & Director of the Social  
Psychology Program  
Department of Psychology  
University of Colorado, Boulder  
Campus Box 345  
Boulder, CO 80309-0345

Program: Social Psych  
Phone: 303-492-4563  
Email: irene.blair@colorado.edu  
Web: <http://blair.socialpsychology.org>

Thomas Carr  
Professor of Cognitive Psychology  
Department of Psychology  
Michigan State university  
289C Psychology Bldg.  
East Lansing, Michigan 48824-1116

Program: PAC  
Phone: 517-355-0197  
Email: carrt@msu.edu  
Web: <http://psychology.msu.edu/People/faculty/carr.htm>

Susan Cutter  
Director, Hazards & Vulnerability Research  
Institute  
Department of Geography  
University of South Carolina  
Callcott, Room 312  
Columbia, SC 29208

Program: Chair  
Phone: 803-777-1590  
Email: scutter@sc.edu  
Web: <http://enabling.unc.edu/cutter.html>

Tim Earle  
Professor  
Department of Anthropology  
Northwestern University  
1810 Hinman Ave.  
Evanston, IL 60208-1330

Program: Archaeology  
Phone: 847-491-2852  
Email: tke299@northwestern.edu  
Web:  
<http://www.anthropology.northwestern.edu/faculty/earle.html>

Jean Ensminger  
Edie and Lew Wasserman Professor of  
Anthropology  
Division of the Humanities and Social  
Sciences  
California Institute of Technology  
MC 228-77  
Pasadena, CA 91125

Program: Cultural Anthro  
Phone: 626-395-4541  
Email: jensming@hss.caltech.edu  
Web: <http://www.hss.caltech.edu/people/faculty/jensming>

Julie Fiez  
Professor  
Department of Psychology  
University of Pittsburgh  
Learning Research & Development Center,  
Room 605, 3939 O'Hara St.  
Pittsburgh, PA 15260

Program: Cog Neuro  
Phone: 412-624-7078  
Email: [fiez@pitt.edu](mailto:fiez@pitt.edu)  
Web: <http://www.lrdc.pitt.edu/fiez/personnel/fiez.html>

Agustin Fuentes  
Professor & Director, Institute for  
Scholarship in the Liberal Arts  
Department of Anthropology  
University of Notre Dame  
648 Flanner Hall  
Notre Dame, IN 46556

Program: Phys Anth  
Phone: 574-631-5421  
Email: [afuentes@nd.edu](mailto:afuentes@nd.edu)  
Web: [http://anthropology.nd.edu/faculty-staff/fuentes\\_agustin/index.shtml](http://anthropology.nd.edu/faculty-staff/fuentes_agustin/index.shtml)

John Gabrieli  
Professor  
Department of Brain & Cognitive Sciences  
Massachusetts Institute of Technology  
43 Vassar Street, 46-4033  
Cambridge, MA 02139

Program: Cog Neuro  
Phone: (617) 253-8946  
Email: [gabrieli@mit.edu](mailto:gabrieli@mit.edu)  
Web: <http://web.mit.edu/gabrieli-lab/People/gabrieli.htm>

Michele Ruth Gamburd  
Associate Professor  
Anthropology Department  
Portland State University  
141 Cramer Hall, Dept of Anthropology,  
1721 SW Broadway  
Portland, OR 97201

Program: Cultural Anthropology  
Phone: (503) 725-3317  
Email: [b5mg@pdx.edu](mailto:b5mg@pdx.edu)  
Web: <http://web.pdx.edu/~b5mg/>

Lila Gleitman  
Emerita, Institute for Research in Cognitive  
Science  
University of Pennsylvania  
260 Sycamore Ave.  
Marion Station, PA 19066

Program: sub-chair  
Phone: 610-667-7895  
Email: [gleitman@cattell.psych.upenn.edu](mailto:gleitman@cattell.psych.upenn.edu)  
Web: <http://www.psych.upenn.edu/~gleitman/>

Roberta Golinkoff  
H. Rodney Sharp Professor  
School of Education  
University of Delaware  
206 Willard Hall  
Newark, DE 19716

Program: DLS  
Phone: (302) 831-1634  
Email: [roberta@udel.edu](mailto:roberta@udel.edu)  
Web: <http://www.udel.edu/ILP>

Michael Goodchild  
Director, Center for Spatial Studies  
Department of Geography  
University of California, Santa Barbara  
5707 Ellison Hall  
Santa Barbara, CA 93106-4060

Program: sub-chair  
Phone: 805-893-8049  
Email: [good@geog.ucsb.edu](mailto:good@geog.ucsb.edu)  
Web: <http://www.geog.ucsb.edu/~good/>

Sandra Graham  
Chair, Education Department  
Graduate School of Education &  
Information Studies  
University of California, Los Angeles  
2320C Moore Hall, Box 951521  
Los Angeles, CA 90095-1521

Program: DLS  
Phone:  
Email: [shgraham@ucla.edu](mailto:shgraham@ucla.edu)  
Web:  
<http://www.gseis.ucla.edu/faculty/members/graham>

Lenore Grenoble  
Carl Darling Buck Professor, Slavic  
Linguistic Associate Chair  
Department of Slavic Languages and  
Literatures  
University of Chicago  
1130 E. 59th St, Foster 416  
Chicago, IL 60636

Program: Linguistics/ DEL  
Phone: 773-702-0927  
Email: [grenoble@uchicago.edu](mailto:grenoble@uchicago.edu)  
Web: <http://linguistics.uchicago.edu/people/grenoble.shtml>

J.W. Harrington  
Professor  
Department of Geography  
University of Washington  
Box 353550, Smith Hall 416C  
Seattle, WA 98195-3550

Program: GRS  
Phone: 206-616-3821  
Email: [jwh@u.washington.edu](mailto:jwh@u.washington.edu)  
Web: <http://faculty.washington.edu/jwh/index.html>

William Jungers  
Distinguished Teaching Professor and Chair  
Department of Anatomical Sciences  
SUNY Stony Brook  
Stony Brook, NY 11794-8081

Program: Phys Anth  
Phone: 631-444-3122  
Email: [william.jungers@stonybrook.edu](mailto:william.jungers@stonybrook.edu)  
Web: <http://www.uhmc.sunysb.edu/anatomy/wjungers.html>

J. Stephen Lansing  
Professor  
Department of Anthropology  
University of Arizona  
221 Haury Bldg.  
Tucson, AZ 85721-0030

Program: Cultural Anthro  
Phone:  
Email: [jlansing@u.arizona.edu](mailto:jlansing@u.arizona.edu)  
Web: [http://www.ic.arizona.edu/~lansing/J.\\_Stephen\\_Lansing/Welcome.html](http://www.ic.arizona.edu/~lansing/J._Stephen_Lansing/Welcome.html)

Keith Maddox  
Associate Professor  
Department of Psychology  
Tufts University  
490 Boston Avenue, Room 228  
Medford, MA 02155

Program: Social Psych  
Phone: 617-627-2563  
Email: [keith.maddox@tufts.edu](mailto:keith.maddox@tufts.edu)  
Web: <http://maddox.socialpsychology.org>

Christopher Manning  
Associate Professor  
Department of Computer Science  
Stanford University  
Gates Bldg 1A, 353 Serra Mall  
Stanford, CA 94305-3010

Program: Linguistics  
Phone: 650-723-7683  
Email: [manning@cs.stanford.edu](mailto:manning@cs.stanford.edu)  
Web: <http://nlp.stanford.edu/~manning/>

David Meltzer  
Henderson-Morrison Professor of Prehistory  
Department of Anthropology  
Southern Methodist University  
3225 Daniel Ave. Heroy Bldg. 408  
Dallas, TX 75275-0336

Program: Archaeology  
Phone: 214-768-2826  
Email: [dmeltzer@smu.edu](mailto:dmeltzer@smu.edu)  
Web: <http://smu.edu/anthro/faculty/dMeltzer/dmeltzer.htm>

Norma Mendoza-Denton  
Associate Professor  
Department of Anthropology  
University of Arizona  
Emil Haury Bldg. #210, P.O. Box 210030  
Tucson, AZ 85721

Program: Linguistics  
Phone: 520-621-2585  
Email: [nmd@u.arizona.edu](mailto:nmd@u.arizona.edu)  
Web: <http://www.u.arizona.edu/~nmd/>

Harvey Miller  
Professor  
Department of Geography  
University of Utah  
260 S. Central Campus Dr. Room 270  
Salt Lake City, UT 84112-9155

Program: GRS  
Phone: 801-585-3972  
Email: harvey.miller@geog.utah.edu  
Web: [http://www.geog.utah.edu/h\\_miller](http://www.geog.utah.edu/h_miller)

David Myers  
Professor  
Department of Psychology  
Hope College  
P.O. Box 9000  
Holland, MI 49422-9000

Program: Social Psych  
Phone: 616-395-7730  
Email: myers@hope.edu  
Web: <http://myers.socialpsychology.org>

Katherine Nelson  
Distinguished Professor Emerita  
Ph.D. Program in Psychology  
CUNY Graduate Center  
50 Riverside Drive #4B  
New York, NY 10024

Program: DLS  
Phone: (212) 724-1538  
Email: knelson@gc.cuny.edu  
Web: <http://web.gc.cuny.edu/dept/psych/subprogs/devpsy/nelson.html>

Glyne Piggott  
Professor and Chair  
Department of Linguistics  
McGill University  
1085 Dr. Penfield Ave #113  
Montreal, Quebec H3A 1A7

Program: Linguistics  
Phone: 514-398-4225  
Email: glyne.piggott@mcgill.ca  
Web: <http://www.mcgill.ca/linguistics/people/piggott/>

Suparna Rajaram  
Professor  
Department of Psychology  
SUNY Stony Brook  
Stony Brook, NY 11794-2500

Program: PAC  
Phone: 631-632-7841  
Email: suparna.rajaram@sunysb.edu  
Web: <http://www.psychology.sunysb.edu/srajaram/>

Robert Remez  
Professor of Psychology  
Department of Psychology  
Columbia University  
415-C Milbank Hall, Barnard College, 3009  
Broadway  
New York, NY 10027-6598

Program: PAC  
Phone: 212-854-4247  
Email: remez@columbia.edu  
Web: <http://www.columbia.edu/~remez/>

Sara Stinson  
Professor & Chair  
Department of Anthropology  
Queens College - CUNY  
65-30 Kissena Blvd  
Flushing, NY 11367

Program: Phys Anth  
Phone: 718-997-2893  
Email: sara.stinson@qc.cuny.edu  
Web: [http://web.gc.cuny.edu/Anthropology/fac\\_stinson.html](http://web.gc.cuny.edu/Anthropology/fac_stinson.html)

Graham Tobin  
Professor  
Department of Geography  
University of South Florida  
4202 E. Fowler Ave. NES 107  
Tampa, FL 33620

Program: GRS  
Phone: 813-974-3077  
Email: gtobin@cas.usf.edu  
Web: <http://www.cas.usf.edu/geography/faculty/tobin.htm>

Steven Yantis  
Professor  
Department of Psychological and Brain  
Sciences  
Johns Hopkins University  
3400 N. Charles St.  
Baltimore, MD 21218-2686

Program: Cog Neuro  
Phone: 410-516-5328  
Email: yantis@jhu.edu  
Web: <http://www.psy.jhu.edu/~yantis/>

Melinda Zeder  
Director, Archaeobiology Program  
Department of Anthropology  
Smithsonian National Museum of Natural  
History (NMNH)  
P.O. Box 37012 Smithsonian Institute  
Washington, D.C. 20013-7012

Program: Archaeology  
Phone:  
Email: zederm@si.edu  
Web: <http://anthropology.si.edu/archaeobio/zeder.htm>

**National Science Foundation  
Advisory Committee for Social, Behavioral and Economic Sciences  
Listing of Current Members' Addresses and Phone Numbers**

**Dr. Michael F. Goodchild (Chair)**

Department of Geography  
University of California, Santa Barbara  
Office: Ellison 5707  
Santa Barbara, CA 93106-4060  
Phone: (805) 893-8049  
Cell: (805) 455-6529  
Fax: (805) 893-3146  
Email: [good@geog.ucsb.edu](mailto:good@geog.ucsb.edu)

**Dr. Christine Almy Bachrach (EX OFFICIO)**

National Institute of Health/OBSSR  
31 Center Drive Bldg 31/Room B1C19  
Bethesda, Maryland 20892-7510  
Phone: 301-496-9485  
Fax: 301-496-0962  
[bachracc@mail.nih.gov](mailto:bachracc@mail.nih.gov)  
Assistant: Janaki Nibhanupudy  
[janakin@mail.nih.gov](mailto:janakin@mail.nih.gov)

**Dr. Ernst R. Berndt**

MIT Sloan School of Management  
50 Memorial Drive  
MIT E52-452  
Cambridge, MA 02142  
Email: [erberndt@mit.edu](mailto:erberndt@mit.edu)  
Phone: (617) 253-2665  
Fax: (617) 258-6855  
Assistant: Sarah Hufford  
Phone: (617) 253-9746  
Email: [shufford@mit.edu](mailto:shufford@mit.edu)

**Dr. Susan L. Cutter (AC-ERE Liaison)**

Director, Hazards & Vulnerability Research  
Institute  
Department of Geography  
University of South Carolina  
Callcott, Room 312  
Columbia, SC 29208  
Email: [scutter@sc.edu](mailto:scutter@sc.edu)  
Phone: (803) 777-1590  
Fax: (803) 777-4972  
Assistant: Charlie Faucette  
Email: [faucette@mailbox.sc.edu](mailto:faucette@mailbox.sc.edu)

**Dr. Kaye Husbands Fealing**

Williams Brough Professor of Economics  
Williams College  
Williamstown, MA 01267  
\*On leave as Visiting Professor  
University of Minnesota

Mail all Correspondence to:  
6965 Lake Harrison Circle  
Chanhassen, Minnesota 55317  
Email: [kaye.husbands@williams.edu](mailto:kaye.husbands@williams.edu)  
Phone: (952) 470-1106  
Fax: No. (952) 470-1107

**Sir Roderick Floud (EX OFFICIO)**

London Metropolitan University  
31 Jewry Street  
London EC3N 2EY  
United Kingdom  
Fax: 44 20 7320 1390  
Email: [roderick.floud@btinternet.com](mailto:roderick.floud@btinternet.com)  
Assistant:

**Dr. Fred Gault**

Visiting Fellow  
International Development Research Centre  
PO Box 8500  
Ottawa, Canada K1G 3H9  
Phone: + 1 613-236-6163 Ext. 2414  
Email: [fgault@idrc.ca](mailto:fgault@idrc.ca)

**Dr. Morton Ann Gernsbacher**

1202 West Johnson Street  
University of Wisconsin-Madison  
Madison, WI 53706-1611  
Phone: (608) 262-6989  
Fax: (608) 262-4029  
Email: [MAGernsb@wisc.edu](mailto:MAGernsb@wisc.edu)  
[www.Gernsbacherlab.org](http://www.Gernsbacherlab.org)

**Dr. Lila R. Gleitman**

Emerita, Institute for Research in Cognitive Science  
University of Pennsylvania  
Mail all Correspondence to:  
260 Sycamore Avenue  
Merion Station, PA 19066  
Phone: (610) 667-7895  
Email: [gleitman@cattell.psych.upenn.edu](mailto:gleitman@cattell.psych.upenn.edu)

**Dr. Ira Harkavy (AC-GPRA Liaison)**

Associate Vice President & Director  
Center for Community Partnerships  
University of Pennsylvania  
133 South 36th Street, Suite 519  
Philadelphia, PA 19104  
Phone: (215) 898-5351  
Fax: (215) 573-2799  
Email: [harkavy@pobox.upenn.edu](mailto:harkavy@pobox.upenn.edu)  
Assistant: Tina M. Ciocco  
Email: [ciocco@pobox.upenn.edu](mailto:ciocco@pobox.upenn.edu)

Phone: (215) 898-6612

Assistant: Andrea Daly  
Email: [andreliz@umich.edu](mailto:andreliz@umich.edu)

**Dr. Janet A. Harkness**

Director, Survey Research and Methodology  
Program  
University of Nebraska-Lincoln  
UNL Gallup Research Center  
200 North 11th Street  
P.O. Box 880241  
Lincoln, NE 68588-0241  
Email: [jharkness2@unl.edu](mailto:jharkness2@unl.edu)  
Phone: (402) 458-5585  
Fax: (402) 458-2031  
Assistant: Barbara Rolles  
Email: [broffes3@unl.edu](mailto:broffes3@unl.edu)  
Phone: (402) 472-7758

**Dr. Samuel L. Myers, Jr. (CEOSE Liaison)**

Roy Wilkins Professor of Human Relations  
And Social Justice  
Hubert H. Humphrey Institute of Public Affairs  
University of Minnesota  
257 Humphrey Center  
301 19th Avenue South  
Room 130 HHH Center  
Minneapolis, MN 55455  
Fax: (612) 625-6351  
Phone: (612) 625-9821  
Email: [myers006@umn.edu](mailto:myers006@umn.edu)  
Assistant: Blanca Monter  
Email: [monte064@umn.edu](mailto:monte064@umn.edu)

**Dr. Nina G. Jablonski**

Head, Department of Anthropology  
Penn State  
413 Carpenter Building  
University Park, PA 16802  
Phone: (814) 865-2509  
Fax: (814) 863-1474  
Email: [ngj2@psu.edu](mailto:ngj2@psu.edu)  
Assistant: Melissa Strouse  
Email: [mvs5@psu.edu](mailto:mvs5@psu.edu)  
Phone: (814) 867-0005

**Dr. Ruth Delois Peterson**

Department of Sociology  
300 Bricker Hall  
190 N. Oval Mall  
Ohio State University  
Columbus, OH 43210  
Phone: (614) 292-6681  
Fax: (614) 292-6687  
Email: [Peterson.5@sociology.osu.edu](mailto:Peterson.5@sociology.osu.edu)

**Professor Guillermina Jasso**

Silver Professor  
Department of Sociology  
295 Lafayette Street; 4th floor  
New York University  
New York, NY 10012-9605  
Phone: (212) 998-8368  
Fax: (212) 995-4140  
Email: [gj1@nyu.edu](mailto:gj1@nyu.edu)

**Dr. David Poeppel**

Department of Psychology  
New York University  
6 Washington Place  
New York, NY 10003  
Phone: (212) 992-7489  
Fax:  
Email: [dpoeppel@umd.edu](mailto:dpoeppel@umd.edu)  
Assistant: Katherine Yoshida  
E-mail: [katherine.yoshida@nyu.edu](mailto:katherine.yoshida@nyu.edu)

**Dr. John L. King (AC-CI Liaison)**

University of Michigan  
503 Thompson Street  
3074 Fleming Adm. Bldg.  
Ann Arbor, MI 48109-1340  
Phone: (734) 764-2571  
Fax: (734) 764-2475  
Email: [jlking@umich.edu](mailto:jlking@umich.edu)  
Assistant: Robyn Cleveland  
Phone: (734) 764-2571  
Email: [rlgrimes@umich.edu](mailto:rlgrimes@umich.edu)

**Dr. Jeffrey K. MacKie-Mason (AC-CISE)**

School of Information  
University of Michigan  
3218 SI North  
Ann Arbor, MI 48109  
Phone: 734-647-4856  
Email: [jmm@umich.edu](mailto:jmm@umich.edu)

**Division of Behavioral & Cognitive Sciences  
Committee of Visitors (COV)  
March 2009**

Susan L. Cutter, Chair  
Michael Goodchild, Sub-chair (Anthropological and Geographic Sciences Cluster)  
Lila Gleitman, Sub-chair (Cognitive, Psychological & Language Sciences Cluster)

## **1. Overview**

### **1.1 Introduction**

The present configuration of the Division of Behavioral & Cognitive Sciences consists of nine programs: Archaeology/Archaeometry; Physical Anthropology; Cultural Anthropology; Geography and Spatial Sciences; Linguistics/Documenting Endangered Languages; Perception, Action and Cognition; Cognitive Neuroscience; Developmental and Learning Sciences; and Social Psychology. The COV met March 18-20, 2009 and included the chair and sub-chairs and three members representing each of the nine programs (the HOMINID program was handled jointly between Physical Anthropology and Archaeology/Archaeometry and Linguistics/Documenting Endangered Languages had one additional member). The charge to the COV was 1) to “assess the quality and integrity of the operations, including technical and managerial matters pertaining to proposal recommendations”; and 2) to “comment on how the outputs and outcomes generated by awardees have contributed to the attainment of NSF’s mission and strategic goals”. The period of performance was a three-year window (Fiscal Years 2006-2008). Additional advice was sought by BCS on the scientific and management aspects of infrastructure needs within BCS; human resources; broadening participation; and the representation of BCS sciences to broader audiences (internal and external to NSF).

The COV was provided with access to 1,000 proposals sampled randomly from the set received by BCS in the three years, including both awards and declines. The files included reviews and panel summaries as well as annual and final reports where available. Other summary information was also provided, as well as access to previous COV reports and responses by NSF staff.

Disciplinary and cross-disciplinary sessions were held to discuss and evaluate the questions posed to the COV. There was also a cross-disciplinary discussion session focused on infrastructure needs, human resources and broadening participation, and social and behavioral sciences in the federal context. This report is organized as follows: summary (including progress made since the last COV and a synthesis of the recurring

themes that surfaced in the disciplinary sessions), followed by the disciplinary reports organized by a Report Template provided for this purpose to the COV members by NSF.

Throughout the process, the involved NSF staff was consistently welcoming and helpful, and went out of their way to accommodate the frequent demands made on their valuable time. Although this report contains several suggestions for improvements in the process, the COV members congratulate NSF on maintaining a consistent atmosphere of intellectual and scientific integrity that contributed significantly to a productive and we hope insightful COV exercise.

## 1.2 Context

This COV report should be viewed in the context of the role of special programs (e.g., CNH, HSD, OCI, CDI) in providing alternative sources of funding for researchers in the BCS disciplines. The COV reviewed only the regular programs at BCS. For many researchers, these programs are universally regarded as resource poor -- and thus PIs often go to these special programs or to other agencies, most notably NIH, when their research calls for higher levels of support than the regular BCS programs are perceived as being able to provide. However, we were **(BCS Note added in review: "not" should be added here)** able to obtain data on the numbers of PIs in the BCS disciplines who have been able to take advantage of these special NSF programs.

**Recommendation:** SBE should routinely monitor the impacts of special initiatives such as HSD in augmenting the funding opportunities available to investigators in its core disciplines, and the subsequent success of their proposals.

The Stimulus (as the American Recovery and Reinvestment Act is popularly known) will have a significant impact on BCS disciplines. NSF has recently announced its intention of directing the bulk of its Stimulus funds to young investigators and to the development of research infrastructure. The COV supports and encourages the use of the additional funds for this purpose. We are especially concerned with the implications of the current economic downturn on the career prospects for young scholars, since new academic appointments are being frozen in many institutions. Enhanced support for post-docs would be one effective mechanism for keeping new PhDs in the system.

## 1.2 Progress since 2006

We note that there have been some notable improvements in the Division based on the 2006 COV recommendations. For example, we saw the increase in the size of the dissertation awards (from \$12,000 to \$15,000). We also note that the problem of overworked program officers has been partially eased by an overall increase of 1.5 program officers between 2007 and 2008, but even with this improvement, the problem of understaffing is by no means fully alleviated. Moreover, there appears to be serious discrepancies in the distribution and permanence of program officers across BCS

programs, especially in relation to the proposal load. The program reports on DLS and Cultural Anthropology draw particular attention to this problem. Greater openness in the decision making process by which program officers are allocated among programs might be appreciated by future COVs.

The ratio of permanent staff to rotators was an issue raised by the 2006 COV. Arguments were presented on both sides: rotators bring a fresh perspective, but permanent staff better preserve institutional memory and are better able to deal effectively with resubmissions. Across all BCS programs two rotator positions were made permanent during the present review period, leading to a present tally of 8 permanent program officers and 7 rotators. The COV agreed that the goal should be at least one permanent program officer in each program.

**Recommendation:** BCS should continue to strive for a minimum of one permanent program officer in each program.

We also note the improvement in BCS's ability to provide information on diversity (grant submitters, grant recipients, panelists), but note that it is still insufficient for adequate or accurate assessment of progress towards achieving BCS goals in this area (see Section 1.6).

The COV notes that there has been little improvement in resolving the confusion over the meaning of "broader impact" among applicants, reviewers, and panelists. This is a persistent and perennial problem, as stressed by past COV reviews. It is a multi-dimensional problem for applicants, reviewers, and panelists: many academics are not used to thinking in these terms; many are confused by the definition and scope given to the term by NSF, despite the abundance of accessible explanatory material; and many do not understand the role that broader impact considerations play in the merit selection process. Is this criterion truly treated as equal in importance to intellectual merit, as implied by NSF policy statements, or is it a criterion employed only to differentiate between certain marginal proposals?

**Recommendation:** BCS should identify programs that are exemplary in their treatment of the broader-impacts criterion, and publicize the approaches used across the Division to panelists, reviewers, and investigators.

There has been no measurable progress in increasing the low return rate of ad hoc reviews; on the contrary, the rate of return appears to have deteriorated significantly in most programs since the last COV. This may be symptomatic of a larger academic problem, as there has been an apparent decline as well in review return rates for refereed journals and promotion cases. Nevertheless, the fall-off for NSF/BCS ad hoc reviews suggests that an alternative mechanism/machinery should be designed and implemented (see Section 1.3 for suggestions to this effect).

### 1.3 Quality and integrity of BCS operations

It is clear from the COV review that the NSF merit-review process continues to be the “gold standard” among research-funding agencies and one that is emulated worldwide. Nevertheless, as we note throughout, there is considerable stress on NSF human resources in attempting to maintain and even improve upon this laudable standard. Therefore, in order to maintain the integrity of the review process, provide feedback to PIs (especially first-time submitters), facilitate reviewing, and develop new initiatives consistent with NSF’s mandate, additional administrative resources are clearly required. If these resources result in an increase in the current 6% spent on administration, the COV feels this would be well justified by its impact on the quality of the reviewing process and grant management. Any such change would also allow program officers to devote more time to efforts to increase diversity among their applicants.

**Recommendation:** The COV strongly encourages BCS to increase administrative support substantially. This includes increases in staffing (program officers, administration, and technical support), and increased use of panels, site visits to institutions, and reverse site visits at NSF.

Panels and reverse site visits pose particular problems for applicants with child-care responsibilities, particularly young women. While NSF’s support in Ballston for nursing mothers is exemplary, better use of collaborative technologies would help to increase participation among researchers with young families.

**Recommendation:** The COV suggests that BCS make more use of collaborative technologies for virtual meetings for panel reviews and site visits, in order to accomplish the stated aims while not unduly increasing the Division’s carbon footprint.

We note that there is a persistent problem with the low return rate of ad hoc reviews (also noted in the 2006 COV review). Given the increasing demands on the research community and the lack of reward mechanisms for such service, we expect this low participation to continue indefinitely unless radical steps are taken. Reviewers are asked to commit substantial time to completing reviews (several hours per review for junior faculty, though experienced senior faculty may be able to reduce this significantly). This work is currently pro bono, and must compete with the many other obligations of academics. Faculty may receive a form of credit for this activity during merit and promotion reviews, but might also be encouraged to give it greater prominence in CVs and resumé.

The program reports contain several suggestions for increasing the return rate (see in particular the reports on the Archaeology and Archaeometry, Cognitive Neuroscience, and Social Psychology programs). NSF might adopt the strategy used by many journals of requesting initial agreement to review, following up with reminders;

strategies such as this would be easy to implement in Fastlane. Linguistics successfully employs such strategies.

**Recommendation:** NSF should consider implementing the ideas for increasing return rates of ad hoc reviews that are contained in the program reports.

There appear to be inconsistencies across programs with respect to the handling of resubmissions. Some program officers give detailed guidance, while others assume that researchers will simply rely on the policies stated in the Grant Proposal Guide.

**Recommendation:** BCS should work to ensure consistency across programs with respect to resubmissions, guided by the desire to do what is best for science, and should enhance the guidance given, particularly to young scholars.

#### **1.4 Improvements in the COV process**

To prepare for the COV, members were asked to select and read 20-30 proposals. However, these directions did not speak as well as they could to the task at hand nor were they realistic. A full review of a proposal, including ad hoc and panel reviews and any completed annual reports, would take a minimum of one hour and much longer for an inexperienced reviewer.

In essence, the assigned homework and the organization of the on-line materials were not ideal preparation for committee members. Future COV members should be encouraged to give priority to the summary and supplementary materials from proposals (abstracts, reviews, panel summaries, reports) over the project descriptions. The COV works from a random sample of proposals and not the whole set, yet a non-random selection of proposals near the edge of funding would have provided a better understanding of key funding decisions. A stratified sample of projects that were more advanced would provide a better mechanism for assessing outcomes (using the annual and final reports where available), and might include projects dating from earlier years. COV members felt that the ability access the full set of proposals, subject to COI concerns, would have been helpful.

**Recommendation:** For future COVs, summary information on the entire set of proposals is required. While we asked for and received such summaries during the site visit, having this material ahead of time would enhance the review process.

**Recommendation:** Improved guidance to COV members on what to look for in their preparatory review (such as annual reports for measuring outcomes, panel reviews for monitoring merit process) would be helpful.

**Recommendation:** COV members should be able to access the full set of proposals, and not be limited to a sample, subject of course to COI restrictions.

**Recommendation:** the COV would be better able to answer the questions in Section B if it had access to the annual and final reports of projects that had been started in earlier years.

We also note that the design of the user interface is far from ideal or transparent, and that many COV members spent hours downloading data. The basic principles of user interface design could have been exploited, such as first presenting summary data and then allowing the user to drill down for optional detail. Perhaps the new SRS division could be charged with selecting and providing appropriate summary data on the entire workload and project portfolio of programs. We also suggest that BCS make use of the science on human-machine interface research it funds as it thinks about the data needs for programmatic review and reporting. Finally, many COV members remarked that they were not fully aware in advance of the Arlington meeting of the expectations for their participation, particularly with respect to the preparatory workload. Compensation should be considered for the hours spent in preparation, as well as for travel time and the Ballston COV meeting.

**Recommendation:** BCS should provide a realistic assessment of expectations for COV members and the amount of time commitment for the review process. The initial invitation should be clear about the time demands and about the rewards for undertaking such service.

**Recommendation:** BCS should consider compensating COV members (and merit review panels) for preparation time in advance of Ballston meetings.

### **1.5 Program support**

BCS has not been as responsive as the COV would like to radical changes in the costs of equipment, personnel, and indirect costs caused by evolution of the disciplines themselves. This has two significant kinds of impact. First, cutting-edge proposals increasingly go to other agencies where support levels are higher. This could alter the nature of research NSF can support, with the effect of distorting the science it produces. Second, inadequately resourced awards (those proposed at one level and funded at another) compromise the science and often prevent the full implementation of a research design. Differences between proposed and funded levels are uneven across BCS and sometimes appear to have little to do with the costs of the research.

**Recommendation:** Steps should be taken to address the perception that BCS programs are starved for funding.

COV members noted the low variance of total funding available to the BCS programs (variation by only a factor of two between the highest and lowest totals). While some programs have undertaken open strategic planning, there appears to be a

lack of such planning at the Division level. Instead, increases in program funding appear to have come largely from the eventual dispersal of special-program funding, most recently of the HSD program. While this back-door approach may have been successful in the past, it lacks the kinds of strategic planning that COV members would like to see. Strategic planning would enable BCS to address issues such as the growing costs of research in some areas, notably Cognitive Neuroscience, to establish clear priorities, and implementation strategies.

**Recommendation:** The COV suggests that a strategic planning document for BCS and SBE be completed in time for the COV.

## 1.6 Diversity

BCS is to be commended very highly for its continuing commitment to increasing the participation of diverse minority groups, disabled populations, and women in its reviews and panels, in its internal staffing, and in its awards. The proportion of young investigators and first-time NSF investigators is large and appears to be increasing. Finally, we note that educational efforts of BCS at K-12, undergraduate, graduate, and post-graduate levels are pervasive and far-reaching, and are built into a good proportion of the individual scientific awards. We wholeheartedly support NSF's strenuous efforts to create and to fund a cadre of scientists drawn from all segments of the population, and to investigate issues and populations of deep significance to the citizenry.

That said, the COV acknowledges that it can provide only superficial commentary on these important issues of diversity and breadth of participation because the information required to make objective assessments is hard to extract or organize from the materials provided to the committee by NSF. As previous COV reports have noted, there are both legal and ethical constraints on the collection of this kind of information from investigators, reviewers, and participants in human-subjects experiments. The COV discussed ways in which questionnaires and forms might be revised to improve response rates on the relevant questions.

**Recommendation:** NSF should revise the forms that collect data on diversity to provide clear explanations of the reasons for requesting such data, and the benefits to science from doing so.

The COV was able to glean some rough statistical information concerning breadth of participation from 6 of the 9 BCS programs under 4 categories. Of 1370 awardees, 76 (6%) were minority/disabled PI or co-PIs, 438 (32%) women, and 277 (20%) were first-time NSF awardees. These figures appear to reflect differential submission rates, rather than differential success rates (for example, the Cognitive Neuroscience program reports that its success rates for women and men are roughly equal, but that its submission rates from women are only half those from men).

Although one might expect that diversity among the social sciences would be at least as high as Foundation-wide averages, the COV was surprised and disappointed to find that on some available statistics BCS rates are significantly lower than those in other Directorates. Comparing aggregate 2008 data on PIs and co-PIs submitting proposals to NSF, it appears that in BCS the participation of women is 17% compared to a Foundation average of 27%; participation of minorities is 3.7% compared to 8.0%; and participation of new-to-NSF PIs and co-PIs is 25% compared to 45%. While we compliment BCS on its strong and deep commitment to the principles of broadening participation, we are sure that NSF administration and program officers agree with our assessment that there is still a long way to go.

NSF supports many programs that foster greater participation of minorities, the disabled, and women in science. Many of these are organized at the Foundation level, and direct funds to institutions. We suspect that in many cases the focus on STEM or on “science and engineering” has the effect of marginalizing the social sciences, which many may perceive as not qualifying. It would be useful to undertake a systematic investigation of this issue, through study for example of the statistical records maintained by programs such as ADVANCE.

**Recommendation:** BCS/SBE should undertake a systematic investigation of the degree to which social science disciplines benefit from Foundation-wide programs to broaden participation.

One final comment concerns the human populations that ultimately comprise the scientific subject matter of the programs within the BCS directorate. In this regard also, the impression of the COV is that there is an increasing breadth – more languages, deeper penetration to varying socio-economic and ethnic groups, etc., in the scientific topics and populations engaged by BCS research.

**Recommendation:** NSF staff should make every effort to extract and organize the available information on these important matters of participant diversity for future COVs.

COV members were attracted to the notion of developing an SBE program that would support research into the science of increasing diversity. No other Directorate has the interest or expertise to support such research, or such a corpus of relevant published research.

**Recommendation:** SBE should proceed with plans to develop a program of support for research on ways of increasing diversity in the scientific community, and should draw on published research in disciplines such as Social Psychology in its own efforts at increasing diversity.

**Recommendation:** BCS could take the lead in rethinking the categorization of diversity groups based on self-reported identity following the changes in race, ethnicity, gender, and disability classifications by the US Census Bureau.

COV members noted that while NSF staff as a whole are diverse, this appears to have been achieved by recruiting minorities into supporting positions, rather than as program officers. While this leads to an NSF that “looks like American society”, it limits the degree to which program officers can act as role models for their disciplinary communities.

**Recommendation:** NSF should increase efforts to diversify its population of program officers.

### 1.7 Stewardship of Science

The COV commends BCS and SBE more generally for their efforts to inform federal policy makers about the work of the SBE disciplines, and their potential role in addressing some of the current challenges facing the nation and the world. The National Science and Technology Council Report (January 2009), *Social, Behavioral and Economic Research in the Federal Context*, is an exemplary statement on the value of the SBE disciplines and makes a strong case for national investments in this area.

**Recommendation:** BCS/SBE should distribute this report (digital and hard copy) widely among Congress and congressional staff, university presidents, and the federal agencies.

**Recommendation:** The NSTC report provides excellent information for understanding the broader impacts criterion. We recommend its use as a resource for PIs as they develop their proposals.

### 1.8 Infrastructure

In many scientific disciplines, there is a long-standing tradition of funding for communal infrastructure. In astronomy, for example, major telescope investments are funded not through individual research projects but as assets that must be made available to large numbers of researchers. In the social sciences, this tradition tends to take the form of longitudinal surveys and data repositories rather than major physical entities such as research vessels or buildings. Historically, infrastructure investments by SBE have been small in value compared to those of OPP, OCI, MPS, or GEO.

The Stimulus gives high priority to infrastructure, so it is important that a community dialog be initiated regarding the collective needs of the BCS disciplines. The COV held a short discussion of potential infrastructure needs, and further discussions took place within the program groups. There appeared to be substantial interest in an initiative to speed the diffusion of novel technologies, tools, and data sources across the

social sciences, perhaps through the establishment of a center (this idea is developed further in the Cultural Anthropology report). It is also likely that other ideas will emerge from the series of workshops currently being planned by SBE.

## **1.9 Conclusion**

We want to applaud the efforts of the BCS program officers and staff for their continued highly quality stewardship of social and behavioral science research. The intellectual and scientific integrity of the merit-review process is insured and we are hopeful that the recommendations contained within our report will assist in maintaining the exemplary quality of the management of the BCS research portfolio. We have learned much in our short visit, but all feel a renewed sense of appreciation for the work you do to support the research communities in the social and behavioral sciences.

## 2. Archaeology and Archaeometry

(BCS Note: Report reviewed by the Program Officer)

### PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### A.1 Questions about the quality and effectiveness of the program's use of merit review process.

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>1</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p><b>1) <u>Dissertation Improvement Grant</u> proposals in Archaeology do not go through a panel review, and do not have fixed deadlines. We recommend strongly that the process should stay that way for the sake of speed, flexibility and efficiency, and because it allows a greater voice for the external ad hoc reviews. The current process provides the PIs with far superior feedback than could be derived from a process in which all proposals are reviewed solely by a panel (e.g. as in Cultural Anthropology). We also recognize that this process works effectively because Archaeology has a permanent Program Director who has vital institutional memory. If that situation changes, a future COV should revisit this issue.</b></p> <p><b>2) <u>Senior Archaeology panels</u>: We have two concerns in regard to the Senior Archaeology panels.</b></p> <p><b>(A) Panel Summaries are currently prepared by a 'scribe' who is a member of the Panel. Yet, the 'Review Analyses,' prepared by the Program Officer, were routinely far more informative of the panel discussion and rationale, than the panel summaries. We strongly RECOMMEND that responsibility of the Panel Summary be returned to the Program Officer, rather than an individual panelist. This would allow the 'scribe' to participate fully in panel discussions, and give consistency to the summaries and better feedback to PIs.</b></p> <p><b>(B) In the 2006 COV it was recommended that the Senior Archaeology panel be increased from 6 to 9 individuals. The rationale was twofold: that would increase technical expertise, and prevent the same two panelists being routinely paired together (as Primary and Secondary reviewers). The recommended increase in panel size was made. Yet, pairing continues, and now by increasingly more specialized pairs, which increases the likelihood that the remainder of the panel is disengaged in discussion. It is our experience in serving on these panels that the fewer the panelists, the more participation on the part of the members and the more consistent the results. Although we recognize the need for breadth in regional and technical expertise, we think this objective can be accomplished (as it has been in the past) with 6 members, and careful selection of panelists. We therefore RECOMMEND that the panel</b></p>	<p><b>YES</b></p>

<sup>1</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>size be reduced from 9 to 6 individuals.</p> <p>3) <b>Archaeometry:</b> We observed that Archaeometry proposals are mostly (and sometimes entirely) reviewed by panel members. This circumstance is due to a low response rate on the part of ad hoc reviewers (this low response rate occurs despite great efforts made by the Program Officer to solicit reviews, and is likely attributable to a lack of incentive on the part of ad hoc reviewers to take time to review outside their field). Given the not-infrequent differences of opinion between ad hoc reviewers (who are expert in what may be a highly technical area), and panelists (who might not be), this is a point of concern – and, of course, puts a considerable burden on Archaeometry panelists. We believe the low response rate from ad hoc reviewers is part of a larger, NSF-wide problem that needs to be addressed at that level. We have specific recommendations in this regard in Section A.2.4 and C.1 and C.3.</p>	
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews? <b>Yes, although it is routinely the case that the first criterion, intellectual merit, comprises the bulk of the review.</b></p> <p>b) In panel summaries? <b>Again, intellectual merit gets the majority of comment. Broader impacts are mentioned only when little or no apparent effort was made to speak to that criterion.</b></p> <p>c) In Program Officer review analyses: <b>Yes.</b></p> <p>Comments: <b>We observe that there is, and has been, confusion regarding what constitutes a ‘Broader impact’ (although there is information on the FASTLANE web page defining such). We also note that what constitutes a ‘Broader Impact’ may vary from a Dissertation Improvement to a Senior Archaeology to an Archaeometry grant.</b></p> <p><b>The ‘Broader impact’ criterion can and should play a particularly strong and decisive role in reviewing and awarding Archaeometry grants (see further comments A.3.6). In this regard, we think it appropriate to give priority to Archaeometry projects in which the broader impacts involve providing access to laboratories for a large number of end users (including students and student training within Anthropology programs) and/or have substantial methodological applications that reach beyond a specific research project.</b></p>	<p><b>YES</b></p>
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: <b>In regard to Dissertation and Senior Archaeology proposals, we agree. Most reviewers appear to be conscientious and constructive in their criticisms. When the reviewers are not, the panel and the Program Officer effectively contextualize inappropriate reviews.</b></p> <p><b>Substantive comments were not always provided for Archaeometry proposals. We attribute this to the problem noted above – most reviews were written by panelists who are not experts in the respective area. Although such reviews may identify the major weaknesses of a proposal, they were not always able to provide detailed, substantive comments to PIs that identify and help them correct problem(s) with their proposal.</b></p>	<p><b>YES</b></p>

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: <b>Our answer here is a qualified ‘Yes.’ As we note above, the Panel Summary for the Senior Archaeology proposals (written by panel ‘scribes’) were not as comprehensive or helpful as the ‘Review Analyses’ written by the Program Officer. Accordingly, we reiterate our recommendation that the task of writing the Panel Summary be returned to the Program Officer.</b></p>	<p><b>YES</b></p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: <b>What we found most informative were the Review Analyses provided by Program Officer John Yellen. These do a superb job of explaining why a decision to award or decline was made, particularly in instances where there was disagreement among reviewers, or between the panel and the reviewers. Importantly, the Program Officer rarely overrides the panel decision, even if he thinks it overly critical.</b></p> <p><b>In addition, the Program Officer does a good job of explaining the expertise of the reviewers, and thus how much weight should be put on their comments in certain areas, and their score for a proposal.</b></p> <p><b>Occasionally, with proposals that fall within the Program Officer’s area of expertise, and he appropriately and judiciously offers his expert opinion. We find this helpful and fully justified.</b></p>	<p><b>YES</b></p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p><b>In general, yes, but with the caveats above regarding the weaknesses we see the Senior Archaeology Panel Summaries, and in the often-discrepant reviews of panelists versus ad hoc reviewers for Archaeometry.</b></p> <p><b>In the case of proposals declined in one cycle, and funded in a subsequent one, it is evident that the information being transmitted to the PI was helpful in making improvements to the proposal, leading to later success.</b></p> <p><b>We observed that in a very few instances (and only in the case of Dissertation Improvement Grants), the Program Officer provided the PIs a ‘pre-decision’ opportunity to respond to a reviewer and clarify concern(s) about a proposal. We asked the Program Officer about this practice – how often it occurs, and under what circumstances. He explained that it happens only rarely, and only when there is a specific, technical question that, if it could be readily clarified, would save the PI a round of ‘revise and resubmit,’ and thus speed the process along. We find this explanation completely satisfying, and the degree of discretionary judgment applied serves to increase the efficiency and effectiveness of the process.</b></p>	<p><b>YES</b></p>

<p>7. Is the time to decision appropriate?</p> <p><b>Not always. But when that happens it is the fault of sluggish reviewers, and not the fault of the Program Officer.</b></p> <p>Note: Time to Decision --NSF Annual Performance Goal: <i>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</i> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p>	<p><b>YES</b></p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:  <b>RECOMMENDATIONS (these summarize ones made above in the comments):</b></p> <ol style="list-style-type: none"> <li>1) <b>The responsibility for writing the Panel Summary should be returned to the Program Officer.</b></li> <li>2) <b>The panel size should be reduced from 9 to 6.</b></li> <li>3) <b>The review process for the Dissertation Improvement Grants should remain unchanged.</b></li> </ol>	

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>2</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments: <b>Given the range of the proposals (geographically, topically, theoretically and methodologically), we were very impressed by the care taken and the wide net cast by the Program Officer to find appropriate reviewers.</b></p> <p><b>However, and as also noted (A.1.1) Archaeometry proposals are too often reviewed only by panel members, and not by ad hoc reviewers. This can present a particular problem if one (or more) of the panelists (or the Program Officer) has a COI – which we observed happened with some frequency.</b></p>	<p><b>YES</b></p>
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information. Comments: <b>Our answer would be ‘Yes’ in regard to geography and type of institution. However, we noted that in regard to underrepresented groups there is not sufficient data to answer this question. For example, 76.84% of reviewers did not declare gender/minority status/disability status.</b></p>	<p><b>DATA NOT AVAILABLE</b></p>
<p>3. Did the program recognize and resolve conflicts of interest when appropriate? Comments:</p>	<p><b>YES</b></p>

---

<sup>2</sup> If “Not Applicable” please explain why in the “Comments” section.

4. Additional comments on reviewer selection:

**RECOMMENDATION:**

**1) That NSF for ALL its programs install an automated reviewer query mechanism, which includes the following features: (a) potential reviewers are queried about their willingness to review a proposal; (b) if potential reviewers decline to review a proposal, they are prompted to provide names of other potential reviewers; (c) if reviews are not received in 30 days (or whatever time is deemed appropriate), the reviewers receive a reminder of their commitment; and (d) reviewers receive acknowledgment of their reviews and (if allowed), information on the outcome of the decision.**

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>3</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments:  <b>The COV was impressed by the global breadth of proposals funded by the Archaeology program, which covers the great span of prehistory and early history, shows the application of cutting edge methods and theories, and addresses enduring scientific questions of broad interest and significance to both scholars and the public.</b></p> <p><b>The high quality of the work is demonstrated by the scope of questions asked, the theories and methods applied to answer them, the data being brought to light, and the tight linkages between those domains.</b></p>	<p><b>YES</b></p>
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments: <b>We answer affirmatively in three ways:</b></p> <p><b>(A) The large number of Dissertation Improvement Grants is testimony to the invaluable role the Archaeology Program plays in the training of the next generation of archaeologists. We think this is, in fact, one of the greatest payoffs of this program, and given the increased cost of conducting this research, we RECOMMEND that the maximum award be raised to \$ 18,000.</b></p> <p><b>(B) The REU is an exemplary program for bringing undergraduates into science and archaeology. We RECOMMEND that it be made better known to recipients of Senior Archaeology grants.</b></p> <p><b>(C) The support of the Archaeology Panel for the SAA’s Native American Scholarship Program is an excellent means of reaching out to an under-represented population in archaeology, and one whose history and prehistory is itself a major focus of archaeology. By providing the opportunity for Native Americans to participate in archaeology, the NSF Archaeology Program is not only doing an invaluable educational service, but also having a subtle yet profoundly broader impact on the relationship between archaeologists and major stakeholders in American archaeological knowledge. We RECOMMEND that this support be continued.</b></p> <p><b>(D) We observe that there has not been a CAREER award in the span of the COV cycle, and perhaps for many years prior to this period. We see these awards as a means of recognizing and facilitating the research and teaching of young scholars, which has the additional benefit of raising the profile of archaeology in the host institution. We understand that the lack of CAREER awards in archaeology was due in large measure to the mandated high level of support, which removes a disproportionate amount of funds from the Archaeology Program budget. In order to re-start activity in this program area, we RECOMMEND that the CAREER award funding levels be set commensurate with funding levels appropriate to individual programs.</b></p>	<p><b>YES</b></p>

<sup>3</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: <b>Often archaeological projects are of long duration. An individual award of 3 years (the customary maximum length) may not be sufficient to see a project to completion, but we would not recommend expanding the length of awards beyond 3 years. For the integrity of the process we think it important that a long term project regularly demonstrate its continuing merit and significance.</b></p>	<p><b>YES</b></p>
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: <b>There are enduring questions that archaeologists and the greater public seek to answer and understand. Among them, when did recognizably human behavior appear and why; how did technologies develop and evolve; how did humans populate the planet; why, after millions of years, humans worldwide began to cultivate plants and manage animals; and build agricultural economies – and, indeed, empires – based on domesticates; and, of course, how have all of these evolutionary changes affected the environment, or in turn been shaped by climate change (or caused climate change)? All of these questions are, to one degree or another, being pursued by NSF funded researchers – including in the current COV cycle.</b></p>	<p><b>YES</b></p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: <b>Archaeology by its very nature is inter- and multi-disciplinary, and the projects funded by the NSF Archaeology and – especially – the Archaeometry Program, reflect this core feature.</b></p>	<p><b>YES</b></p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: <b>We observe that the allocation of NSF funds is appropriately balanced among the several funding areas. We attribute this balance to the experience of the Program Officer and the flexibility he has and exercises in setting budgetary priorities. We also add, however, some specific observations and recommendations about aspects of the Program’s allocation:</b></p> <p><b>(A) We observe a disproportionate allocation of Archaeology Program funds to <u>Archaeometry</u> relative to the number of Archaeometry proposals (e.g. 7% of the submitted proposals are in Archaeometry, while ~11-15% of the funds go to that sub-program). We believe this is appropriate given the high cost of Archaeometry projects (which are funding laboratories and method development), and justified by the broader impacts of this work. However, we RECOMMEND that projects that do not contribute to funding laboratories and/or method development be considered under the Senior Archaeology competition, and not in Archaeometry.</b></p>	<p><b>YES</b></p>

<p><b>(B) <u>Dissertation Improvement Grants</u>.</b> Again, we RECOMMEND that the maximum amount be raised to \$ 18,000.</p> <p><b>(C) We observe that the <u>High Risk</u> program is a valuable use of NSF Archaeology Program funds, and we RECOMMEND that this program be continued, and the maximum amount be raised to \$ 30,000.</b></p>	
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p><b>We observe that over the period examined, ~50% of the applicants in both the Senior Archaeology and Archaeometry pools were ‘New’ applicants. Of those, 42.3% of the Senior Archaeology awards went to ‘New’ investigators, while the comparable figure was 34.7% in Archaeometry. We note that these figures are not disproportionate, given that ‘New’ investigators would not be expected to have the same success rate as more seasoned investigator.</b></p> <p><b>We also observe that the Program Officer notices when someone is a new investigator (or a brand new PhD), and while he does not use that observation to make an award where one is not earned, he does take that fact into account when allocating the ‘leftover’ funds from a panel meeting. We applaud this.</b></p>	<p><b>YES</b></p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: <b>See maps in Program Information reports (Archaeology, page 14, Archaeometry, page 11).</b></p>	<p><b>YES</b></p>

<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: <b>See tables in Program Information reports (Archaeology, page 14, Archaeometry, page 11).</b></p>	<p><b>YES</b></p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments:</p>	<p><b>YES</b></p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: <b>Data are available for gender, and based on the tables in the Program Information reports (Archaeology, page 16, Archaeometry, page 13) there is no significant difference in award rates for males versus females at the Senior Archaeology level.</b></p> <p><b>In regard to Dissertation Improvement Grants, males and females apply in approximately equal numbers. In some years, males had a higher success rate than females; the reverse occurred in other years. We do not consider this shifting difference significant.</b></p> <p><b>There are insufficient data to test whether significant differences occur among minority of disabled applicants.</b></p>	<p><b>DATA NOT AVAILABLE</b></p>
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: <b>The agency mission of NSF is to fund basic research, and the portfolio of awards clearly meets this need.</b></p> <p><b>As we discussed in A.3.4, archaeology is of broad interest to the American public, and the Archaeology Program funds much of the research that provides archaeological information.</b></p> <p><b>Archaeology and the projects funded by the Archaeology Program are very successful at integrating students into research and science.</b></p>	<p><b>YES</b></p>

13. Additional comments on the quality of the projects or the balance of the portfolio:

**RECOMMENDATIONS (these summarize ones made above in the comments):**

- 1) We **RECOMMEND** that the maximum amount for Dissertation Improvement grants be raised to \$ 18,000.
- 2) We **RECOMMEND** that the maximum amount for High Risk grants be raised to \$ 30,000.
- 3) We **RECOMMEND** that the REU program be better promoted to the recipients of Senior Archaeology grants.
- 4) We **RECOMMEND** that Archaeometry grants be limited to laboratory infrastructure support and method development, which have strong broader impacts. Other projects that do not meet these criteria should be shifted to the Archaeology competition.
- 5) We **RECOMMEND** that the support for the SAA Native American Scholarship Program be continued.
- 6) We **RECOMMEND** that the CAREER award funding levels be set commensurate to the funding levels appropriate to individual programs, and not use a single NSF-wide amount.

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: <b>We entirely concur and would amplify the conclusions of the 2006 COV. As stated then, “The management of the program is excellent. The Program Director makes good use of the panel: discussions are free-ranging and not overly structured; panel recommendations are taken seriously; he uses his judgment when necessary.” Understanding the difficulties experienced by programs with rotating Program Officers, we appreciate the great value of having a permanent Program Officer, particularly one who provides such a superb model of program management at NSF.</b></p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: <b>The Program Officer routinely takes a role in exploring new research venues and directions, has been responsible for or actively engaged in the creation of new funding competitions (e.g. HOMINID, Biocomplexity), and has been extremely effective bringing the deep time perspective of archaeology to NSF-wide interdisciplinary initiatives. This benefits not just the Archaeology Program, but NSF’s broader mission.</b></p> <p><b>In regard to education opportunities, we again emphasize the invaluable role the Archaeology Program plays in training the next generation of archaeologists through its high-impact Dissertation Improvement Grants.</b></p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments: <b>The planning and prioritization are excellent. We again call attention to the Program Officer’s flexibility and agility in adjusting to changing circumstances and emerging opportunities.</b></p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments: <b>Excellent. The Program Officer addressed all the concerns and recommendations of that report. Where he disagreed or was unable to make the recommended action, he carefully explained why not. We accept his explanations.</b></p>
<p>5. Additional comments on program management: <b>RECOMMENDATIONS (these summarize ones made above in the comments):</b></p> <p><b>1) Should the current Program Officer leave NSF (which we are NOT recommending!!), we strongly RECOMMEND that NSF replace him with another, equally skilled permanent Program Officer.</b></p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery:** *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Comments: One of the most serious crises facing humans on earth today is the degradation of ecosystems due to human activities. A number of the funded proposals (both at the Senior and Dissertation levels) investigate the long term impact of people on the landscape, and their adaptive responses to climate and environmental change (e.g. the effects of drought on prehistoric Puebloan populations and subsequent migrations in the American Southwest; the onset of ENSO events on the Peruvian coast and their impact on people; and, the effect of the arrival of people in New Zealand on native forests). These NSF funded research projects provide an important historical context for ongoing efforts aimed at promoting the mutual goals of human sustainability and environmental stability.

**B.2 OUTCOME GOAL for Learning:** *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."*

Comments: In the 21<sup>st</sup> century, resistance to the theory and facts of evolution continues, which must in part be attributable to ignorance of the essential evidence documenting the established fact of human evolution. One of the most beneficial outcomes of the Archaeology Program, including in its participation in HOMINID funding initiative, is to provide that documentation. Proposals in this cycle have shed important new light on the initial appearance of modern humans, about human evolution in important yet previously-unexplored regions (through support provided by a High Risk award), and in tracking the cultural evolutionary transition from hunting and gathering to farming and herding in the Near East (which has the additional benefit of showing the environmental impacts of that adaptive and evolutionary change).

**B.3 OUTCOME GOAL for Research Infrastructure: “*Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.*”**

**Comments: Particularly through its Archaeometry Program competition, the NSF Archaeology Program provides essential infrastructural support for research capability, which goes well beyond benefiting just archaeologists. For example, the ongoing support of the University of Arizona Tree Ring Laboratory has made this lab into a world-class facility, which not only provides a vital service for dating archaeological sites throughout the southwest, but also contributes substantial insight into past climates, and in a facility that helps train students. In another example, the University of Missouri Research Reactor (MURR), by providing precise and accurate data on the geographic source location(s) of archaeological materials, contributes to our understanding of trade and exchange and its vital role in the development of human cultural complexity.**

## **PART C. OTHER TOPICS**

**C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

We make the following recommendations as a means of improving the Archaeology Program. NOTE: these include ALL recommendations made above, and are based on more detailed discussions in those sections:

- 1) We RECOMMEND that the responsibility of the Panel Summary should be returned to the Program Officer.
- 2) We RECOMMEND that the Senior Archaeology panel size should be reduced from 9 to 6.
- 3) We RECOMMEND that the review process for the Dissertation Improvement Grants should remain unchanged.
- 4) We RECOMMEND that the maximum amount for Dissertation Improvement grants be raised to at least \$ 18,000.
- 5) We RECOMMEND that the maximum amount for High Risk grants be raised to at least \$ 30,000.
- 6) We RECOMMEND that the REU program be better promoted to the recipients of Senior Archaeology grants.
- 7) We RECOMMEND that the support for the SAA Native American Scholarship Program be continued.
- 8) We RECOMMEND that the CAREER award funding levels be set commensurate to the funding levels appropriate to individual programs, and not use a single NSF-wide amount.
- 9) We RECOMMEND that Archaeometry grants be limited to laboratory infrastructure support and method development, which have strong broader impacts. Other projects that do not meet these criteria should be shifted to the Senior Archaeology competition.
- 10) We RECOMMEND that in the event the current Program Officer leaves NSF (which we are NOT recommending!!), that NSF replace him with another, equally skilled Program Officer.
- 11) We RECOMMEND that NSF for ALL its programs install an automated reviewer query mechanism, which includes the following features: (a) potential reviewers are queried about their willingness to review a proposal; (b) if potential reviewers decline to review a proposal, they are prompted to provide names of other potential reviewers; (c) if reviews are not received in 30 days (or whatever time is deemed appropriate), the reviewers receive a reminder of their commitment; and (d) reviewers receive acknowledgment of their reviews and (if allowed), information on the outcome of the decision.

**C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

Nothing to add.

**C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

See recommendation C.1. (8) above regarding changing the NSF wide mandated CAREER award funding level to levels appropriate to individual programs.

See recommendation C.1. (10) above regarding NSF wide automated review procedures.

Along with other COV panels, we see a need to clarify and better broadcast the meaning of the Broader Impact criterion, but we also recognize – as discussed above – that this criterion will vary between programs and even within programs (i.e. the Archaeometry discussion above)

**C.4. Please provide comments on any other issues the COV feels are relevant.**

Nothing to add.

**C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

We have several comments, major and minor:

1. When invited to serve on a COV Panel, individuals need to be provided with far more realistic information about the time commitment – particularly the work necessary in advance of the meeting.
2. When preparing the COV Report Template, care should be taken to insure that when each question is asked, sufficient data to address the question should be gathered and presented in the e-jacket.
3. It would also be helpful to provide COV members a suggested order of approach to the data and e-jacket; for example, this COV group dove right into the e-jacket proposal files, and would have been better served (and spent our time more efficiently), if we had known that a far better starting place was the Program Officer Program Summary (which was prepared in a helpful and useful manner) and the 2006 COV Report.
4. Evaluating the documentation in the e-jacket is necessarily limited by the fact that all the proposal awards are less than 3 years old. That makes it difficult to see what sponsored projects produced, given the time lag between research and publication. It would be more useful for NSF to provide COVs access to a sample of projects from a previous cycle, and compile the record of what was produced by those projects.

**C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- Does our archaeology/physical anthropology-specific “high risk” competition still make sense? Should it be eliminated, revised, kept the same?  
([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf08523](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08523))

**See recommendation C.1. (5) above.**

- Should our ad hoc only approach to reviewing doctoral dissertations be continued? Should the maximum award of \$15,000 remain unchanged?

**See recommendation C.1. (3) and (4) above.**

- How can the Archaeology Program best respond to SBE's increased emphasis of infrastructure and complexity? (See [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf09019](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf09019))

**In regard to the former (infrastructure), the Archaeology Program should emphasize its efforts at building and maintaining infrastructure in the Archaeometry Program (along the lines illustrated in B.3).**

**In regard to the matter of complexity, an emphasis should be placed on the great potential of archaeology to illuminate and understand the appearance and evolution of complex social systems over time, including the rise of specialized economies, the effects of varying and often dramatic population growth, the origins of social stratification, the development of trade networks, the role of religion, and the rise of urbanism. The data archaeology provides are otherwise unobtainable. They provide essential comparative empirical data from non-western, pre-Capitalist contexts.**

**In addition, we endorse the Cultural Anthropology COV Report, which calls for NSF to initiate a planning process with the goal of bringing representatives of fields in the historical sciences (e.g. social sciences and biology) and applied math and computer science, to evaluate the potential for a center focused on inference in the historical/human sciences. This would be an appropriate follow-up and extension of NSF's support for human social dynamics, coupled human and natural systems, and complexity.**

- Is the Program's distribution of funds across dissertations, senior research, archaeometry and REU supplements reasonable?

**See comments in A.3.6 and recommendation C.1. (8) above.**

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Melinda Zeder**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Tim Earle**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**David Meltzer**

**Date:** \_\_\_\_\_

**Visitors for the Archaeology Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**Date:** \_\_\_\_\_

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

### 3. Cognitive Neuroscience

(BCS Note: Report reviewed by the Program Officers)

#### PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### A.1 Questions about the quality and effectiveness of the program's use of merit review process.

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>4</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The COV noted that the composition and size of the panel, which was a concern of the last COV, has improved considerably. Although the membership of the panel changes from one meeting to the next, this is appropriate to achieve the needed expertise for a given set of proposals. Ad hoc reviewers appear to be well chosen and appropriate.</p>	YES
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews? Yes</p> <p>b) In panel summaries? Yes</p> <p>c) In Program Officer review analyses? Yes, although the COV noted that the discussion of broader impacts by the PO is quite detailed in some cases and much less so in others.</p> <p>Comments: Scientific merit typically is discussed in much more detail than broader impacts. There appears to be a wide range of understanding of broader impacts among PIs and some ad hoc reviewers, despite the availability of fairly detailed written guidance (with examples) concerning this criterion. Nevertheless, the COV views the relative weighting of these two criteria as appropriate.</p>	YES
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: There continues to be variability in the amount of detail in reviews, particularly among ad hoc reviewers, and on average the reviews are relatively brief, but the COV views this as appropriate to meeting the goals of this program.</p>	YES

<sup>4</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The COV found that the panel summaries provided clearly articulated reasons for the panel decision, usually reflecting the comments in the reviews. The summaries are typically fairly brief, but highlight the key concerns. As noted, broader impacts are typically mentioned only very briefly.</p>	<p>YES</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: The COV found the documentation in the jacket typically provided clear rationale for the decision; the review analysis was typically quite detailed and clear.</p>	<p>YES</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: Assuming that the contents of the PO's review analysis are conveyed to the PI, the rationale for the decision is generally quite clear.</p>	<p>YES</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: According to the Average Time to Decision Data provided to the COV from the Cognitive Neuroscience PO, more than 70% of proposals experience a time to decision of 6 months or less. The COV viewed this as appropriate.</p>	<p>YES</p>

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

In sum, the COV views the quality and effectiveness of the cognitive neuroscience program's merit review process as outstanding.

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>5</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?  Comments: Reviewers were well chosen to have expertise that was appropriate for each proposal.</p>	YES
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?  Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.  Comments: A challenge in selecting reviewers for this field is that cognitive neuroscience research requires strong research environments, including equipment such as an MRI scanner and a community of technically skilled researchers. Therefore, expert reviewers will tend to work in prominent academic settings, and this results in unbalanced characteristics in terms of geography and type of institution. Within these practical constraints, there was a good variety of reviewers that maximized the diversity of the reviewer pool.</p>	YES
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?  Comments: Conflicts of interest appear to be minimal or non-existent, which reflects well on the organization of the review process.</p>	YES
<p>4. Additional comments on reviewer selection:</p>	

<sup>5</sup> If "Not Applicable" please explain why in the "Comments" section.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>6</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.  Comments: The overall quality of the research projects that received support was outstanding. In general, the projects involved leading investigators working on cutting-edge conceptual and/or methodological topics.</p>	YES
<p>2. Does the program portfolio promote the integration of research and education?  Comments: The program portfolio promotes research and education primarily by supporting intensive research training of graduate students by mentors who are superb investigators (i.e., this is training the next generation of leaders in cognitive neuroscience). Some proposals include also support for undergraduate and postdoctoral research training.</p>	YES
<p>3. Are awards appropriate in size and duration for the scope of the projects?  Comments: The awards are insufficient to support cognitive neuroscience research as such research is currently practiced in the US. The typical basic research (not clinical research) cognitive neuroscience project at NIH is \$250,000 per year in direct costs for 5 years. This is considered appropriate for multiple reasons (1) equipment charges (like fMRI scanning) are high; (2) standards of the field are demanding larger numbers of subjects per experiment; (3) there is an increasing emphasis on multi-modal imaging, which results in multiple kinds of imaging costs; and (4) such research involves groups of researchers with multiple kinds of technical skills. The average NSF cognitive neuroscience award is no more than half the NIH amount, and for 60% of the duration. This has several important consequences. First, investigators frequently apply to both NSF and NIH, hoping that NIH will support their best work, and even delay acceptance of NSF awards in the hopes of NIH research support. Second, as investigators succeed, they move their programs to NIH, and this contributes to the lack of senior investigators committed to review for NSF. Third, this promotes a situation in which funded investigators essentially use the NSF support as a sort of supplement to other sources of funding, so that NSF support tends to go to either early-career investigators or to investigators who are already well supported. As NIH becomes increasingly focused on clinical translational research, NSF will become the guardian of basic research on human brain functions, and larger awards will be needed so that the science drives the budgets, rather than the other way around. Despite these challenges, however, the COV feels that the cognitive neuroscience program has done an outstanding job in identifying superb early-career investigators performing innovative research, thus making an exceptional impact on the field relative to the resources available. RECOMMENDATION: The COV recommends that the Cognitive Neuroscience program budget be significantly increased to reflect the per-award needs of this area of science.</p>	NO

<sup>6</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: The current portfolio includes an excellent balance of innovative and potentially transformative projects, including studies examining the neural correlates of musical cognition, moral thinking, altruism, infant and child development in perception and thinking, metaphor, and others.</p>	<p>YES</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: A significant strength of the current portfolio is an excellent representation of inter- and multi-disciplinary projects, such as the combination of fMRI and genetics, fMRI and computational models, and fMRI and neurotransmitters/hormones.</p>	<p>YES</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: As noted above, the average award size of about \$500K total costs over 3 years significantly limits the scope of the projects that can be supported.</p>	<p>NO</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: The success rate for new investigators is similar to the success rate for prior investigators. Among funded investigators, 36 are relatively junior, 15 are at an intermediate career point, and 25 are more senior investigators. The balance of new and prior investigators appears to be appropriate.</p>	<p>YES</p>

<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: The geographic distribution of investigators is as follows: Northeast (26), mid-Atlantic (5), South (10), Midwest (12), and West (23). The COV views this distribution as appropriate.</p>	<p>YES</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: There is an over-representation of large research institutions; however this is appropriate given that most cognitive neuroscience research requires large and expensive research infrastructure (e.g., research-dedicated MRI scanners), which is typically found only in larger research institutions. The COV supports the PO's efforts to increase participation by smaller or less research-intensive institutions (see C.6).</p>	<p>YES</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments: The COV viewed the balance of topics in the Cognitive Neuroscience portfolio as appropriately reflecting trends in the field.</p>	<p>YES</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: Applications by women have a similar success rate to that for men, but the number of applications from women is less than half that from men. The success rate for minority investigators is similar to that for non-minority investigators, but the number of applications from minority PIs was extremely small. The POs are clearly sensitive to this issue and pay careful attention to proposals from underrepresented groups. The COV notes that the aggregate information provided about the characteristics of underrepresented groups was somewhat misleading, in that only a small subset of the 19 investigators listed as from underrepresented groups were in fact from those groups. The poor IT situation makes it unnecessarily difficult to accurately track the participation and success of underrepresented groups.</p>	<p>NO</p>

<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The portfolio contains projects that address a wide range of cutting-edge topics in cognitive neuroscience using advanced techniques. As documented in the Program highlights, progress in this field is fundamental to providing new insights about the basis of human performance, improvements in education, enhancing the diagnosis and treatment of neurological disease, and assessing and responding to cognitive changes within an aging population. The portfolio does an excellent job of supporting outstanding young investigators.</p>	<p>YES</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio: In sum, the portfolio of projects was of outstanding quality and well balanced.</p>	

**A.4 Management of the program under review.** Please comment on:

1. Management of the program.

Comments: The POs have done an outstanding job of managing the program under challenging conditions. Among these challenges is the dramatic rise in applications over the last three years (a doubling from 61 to 122). In response to the recommendation of the previous COV, the number of POs has increased from 1 to 1.5. However, there continues to be a high rate of turnover at the level of the program officer (5 POs over 6 years). This is a particular issue for the cognitive neuroscience program because the use of human neuroimaging techniques has begun to spread widely into psychology and allied disciplines. (This spread is reflected in the high percentage of co-reviewed applications.) In order to effectively leverage NSF funds and ensure that neuroimaging research continues to be of the highest quality it is essential to have a program officer who is highly familiar with the different programs and directorates within NSF and who has established the types of relationships that are necessary to make joint funding decisions. At the same time, the fresh ideas brought by rotating POs are extremely valuable. Understaffing and high turnover at the level of program assistant also hinders effective program operation. **RECOMMENDATION:** The COV strongly recommends that the Cognitive Neuroscience program be staffed with one permanent program officer and one rotating program officer. Additional program assistant staffing is strongly desirable.

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

Comments: The program appears to have been very responsive to emerging research and education opportunities. For example, the program supports cutting-edge research in a variety of fruitful domains, and the program has made high-impact investments to support workshops and conferences in emerging areas of cognitive neuroscience.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: The planning and prioritization process appears to have improved as this program has matured. One issue of significant concern, however, is the increasing use of "continuing" versus "standard" awards. The relative percentage of such awards varies widely across years and in some years the size of the "mortgage" has severely constrained the number of new grants that can be awarded. This appears to be a consequence of (a) the high turnover in POs that inhibits longer-term planning, (b) a flat budget, and (c) a doubling of the number of applications received (which reflects the success of the program and the increasing profile of NSF in this area). With current resources, a success rate of 10% is projected. The success of the program in attracting outstanding applications combined with flat budgets threatens the future vitality of the program.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The program has been very responsive to previous COV comments and recommendations. Some issues are still apparent, but the current COV sees that substantial progress has been made on many fronts. Most issues that remain (e.g., award size per grant, need for a permanent program officer) are not easily resolved at the level of the program.

5. Additional comments on program management: Despite the challenges involved in managing the cognitive neuroscience program, it is clear that the program has matured very successfully, with much of the credit due to its program officers and staff. However, as noted above the COV recommends the commitment of additional personnel resources to assist with the management of the program.

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."***

Comments: The research that is supported by the program is generally of stellar quality and the PIs have been exceptionally productive. The program highlights include numerous examples of work that has been published in high-impact journals and cited very widely. It is noteworthy that as the field of cognitive neuroscience has expanded beyond the discipline of cognitive psychology, so too has the breadth of the program's portfolio. The broader impacts of the work are substantial, and as the findings move along the basic-applied axis they should lead to benefits in the area of human health and disease, education and Science, Technology, Engineering, Mathematics (STEM) training, and homeland security.

**B.2 OUTCOME GOAL for Learning: *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."***

Comments: The trainees supported by this program are developing expertise with cutting-edge, interdisciplinary research tools and methods. Such expertise is essential in maintaining a world-class scientific workforce. The program has made some inroads on expanding the diversity of the scientific workforce, but the small number of applications from underrepresented groups is a major challenge. As noted in the previous COV, this is a notoriously difficult issue than cannot be tackled solely at the level of the individual program. The research supported by this program has been useful in expanding the scientific literacy of all citizens. Cognitive neuroscience results are reported widely within the mainstream media and they are often the focus of televised scientific documentaries. Introductory neuroscience and psychology textbooks increasingly incorporate figures and findings from human brain imaging, and thus findings from this program are beginning to have a substantial impact on learning in formal environments as well.

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments: The program has not made significant direct investments in advanced instrumentation, facilities, etc. However, the program has exerted a tremendous indirect influence. Functional magnetic resonance imaging (the methodology used in ~ 70% of the program grants) requires BOTH a substantial investment (~ \$2 M) in advanced instrumentation AND a substantial influx of annual revenue (~ \$600K-\$1M) to cover ongoing operational costs (e.g., service and maintenance contracts, personnel, etc.). The revenue that supports imaging centers generally comes from hourly scanning fees, which in turn are generally paid by investigators from research grants. Thus, the grants that are awarded by the cognitive neuroscience program play a critical role in ensuring that initial investments in advanced instrumentation result in a high long-term pay-off.

--

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

Excellent cognitive neuroscience is performed in rodents and other non-primate species and these could arguably be appropriate subjects for funding by this program. However, such an expansion of the mission would require a significant injection of new funds, as well as an expansion of reviewer, panelist, and PO expertise. This strikes the COV as impractical at the present time.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

The cognitive neuroscience program, which was created by NSF to address the revolution in neuroimaging methods that allow for the study of the biological basis of the human mind, faces unique opportunities and challenges in the immediate future. Whereas early cognitive neuroscience research focused on a few well-studied domains of perception and cognition, this field has now exploded in its breadth, with cognitive neuroscience approaches becoming increasingly integrated with social psychology, development, education, linguistics, decision making, and economics. In addition, there is a deepening integration with areas of biology, such as genetics. This transformation across many fields of behavioral research is especially evident in younger scientists who are less bound by traditional distinctions between mind and brain. The practical consequence of this is that there is a dramatically expanding scope of cognitive neuroscience research extending into many areas that overlap with other NSF programs. A risk is that the rapidly expanding community of researchers who use cognitive neuroscience methods, from social psychology to education to economics to linguistics, will compete for what is already a problematically small program budget. The COV recommends that NSF commit a disproportionate amount of additional resources to the cognitive neuroscience program, with the proviso that the cognitive neuroscience program interacts with NSF programs in more traditional areas of behavioral research (e.g., Perception, Action, and Cognition; Social Psychology; Developmental and Learning Sciences; Linguistics). These interactions already occur in multiple co-reviews among programs, but at present the programs must deal with zero-sum assumptions about funding among programs. Instead, we propose that NSF can take advantage of its leadership in basic behavioral sciences by having a cognitive neuroscience program that promotes research that is outstanding in its sophisticated use of knowledge in psychology and linguistics. A larger commitment of resources to the cognitive neuroscience program, therefore, could provide a direct boost to research in social psychology, development and learning, linguistics, and perception, action, and cognition while leaving in place current support for behavioral research in these areas.

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

The COV noted a continuing problem in ad hoc reviewer response rate, which was also noted in the previous COV report. Encouraging more engagement by the ad hoc reviewers could have a positive effect on response rate. A specific example was brought to our attention of an ad-hoc reviewer who was asked to review a re-submitted proposal and who complained that he or she had little to add without seeing the other reviews on the previous submission. **RECOMMENDATION:** The COV recommends that ad hoc reviewers be given an opportunity to view de-identified versions of the reviews of the proposal that they reviewed. This would provide the ad hoc reviewers with some feedback about the review process that would give them a greater sense of participation in the process.

A change like this will require significant improvements in the IT infrastructure to enable more efficient processing of applications and reviews as well as communication among POs, PIs, reviewers, and panelists. **RECOMMENDATION:** The NSF must invest in greatly improved IT infrastructure that at least achieves the functionality of systems like Manuscript Central, which is widely used for electronic manuscript submissions to journals, and which supports automatic email solicitation of reviewers, automatic email reminders to reviewers, automatic distribution of critical documents to reviewers, etc.

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

**C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

RECOMMENDATION: The COV would like to have had a complete list of all applications reviewed by this program in each cycle, placed into the various funding priority categories and ordered according to the panel's final ranking. This would provide a much more direct way to assess whether and how the reviews and ratings were being used to determine the funding decisions. It would also provide a more direct way to assess whether and how the broader impacts criterion was being used to supplement judgments of broader impacts.

The COV found it very difficult to search the sample of proposals based on a variety of criteria that are essential for addressing issues queried in the template. RECOMMENDATION: The COV recommends that as part of the recommended IT infrastructure upgrades that the Jacket search capabilities be significantly upgraded to allow complex Boolean searches on multiple criteria, including gender, ethnicity and race; funding and duration requested and awarded, size and type of institution, seniority of PI (e.g., years since PhD and previous funding record), human vs. animal subjects, keyword in title or abstract, etc.

The COV found the unfiltered list of COV documents (specifically those relevant to other programs) hindered efficient access to the critical documents. The critical and relevant documents should be clearly indicated.

**C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- How can we increase the diversity of institutions in our portfolio, given that cognitive neuroscience research often involves very expensive and specialized technology and facilities, such as MRI, MEG, or facilities for non-human primates?

One avenue to foster the involvement of smaller or less research-intensive institutions would be to make use of Doctoral Dissertation Improvement Grants (DDIGs). The Cognitive Neuroscience Program currently does not support DDIGs as a matter of policy due to lack of funds. RECOMMENDATION: The COV recommends that the Program solicit DDIG applications from graduate students at smaller or less research-intensive universities to work under the mentorship of a cognitive neuroscientist at an institution that has the research infrastructure to provide training and research experience in these areas. Additional funds will be required to support this effort.

- Should the solicitation list recommended budget ranges or set an explicit "cap" on award budgets?

The COV does not believe that a hard cap on award budgets is wise as it limits flexibility to fund high-impact transformational projects. Nevertheless, applicants should be given information about the budget ranges that are likely to be met given budgetary constraints.

- At the moment, the solicitation is ambiguous about whether animal models fall within the scope of the program. In practice, the program has funded only human and non-human primate research. Should the solicitation explicitly allow only these categories of research?

The COV suggests that the solicitation should state that the program typically funds only human and nonhuman primate research but that investigators using other animal models should contact the PO to obtain guidance about appropriateness for funding.

- There is significant overlap between the Cognitive Neuroscience program and the Perception, Action, and Cognition (PAC) program in SBE, as well as the Neural Systems Cluster in the Biology directorate. What are the advantages and disadvantages of this overlap and should program directors for these programs take any particular steps to coordinate efforts?

The inherently interdisciplinary nature of the Cognitive Neuroscience portfolio demands that the PO work to foster collaboration in review and funding with related programs both within SBE and in other directorates. The current POs have done an excellent job in this regard. This point only reinforces our earlier point that a permanent PO, who can over time come to learn the areas of common interest with other programs, would only enhance the effectiveness and impact of this program.

- How can the program establish a more distinct identity vis a vis NIH?

The Cognitive Neuroscience program's unique identity rests in large part on its ability to fund transformative basic research without the need to justify the work in its translational or clinical dimensions. Furthermore, the program can help foster interdisciplinary research collaboration involving non-health-related domains such as education, decision-making, and social psychology.

- What can the program do to increase the participation of panelists and reviewers who are senior members of the cognitive neuroscience community?

The COV believes that as outstanding younger NSF-supported scientists enter the mid-career phase, they will (and indeed have) increasingly expressed a willingness to serve the program as reviewers and panelists. To the extent that the program can, as we have recommended in this report, increase the size of awards, more senior investigators will turn to NSF for research support, which is likely, in turn, to lead to their increased willingness to serve as panelists and reviewers.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Julie Fiez**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Steven Yantis**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**John Gabrieli**

**Date:** \_\_\_\_\_

**Visitors for the Cognitive Neuroscience Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**Date:** \_\_\_\_\_

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

## 4. Cultural Anthropology

**(BCS Note: Report reviewed by the Program Officer)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>7</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Senior research proposals are reviewed by both ad hoc specialists and panelists. Here we comment on some specific issues:</p> <p>a) ad hoc reviews</p> <p>There is often considerable variance in the overall evaluation of the proposals by reviewers with respect to letter grades. There is more consistency in the written comments.</p> <p>b) panel summaries</p> <p>The panel process is usually effective in reaching consensus on the evaluation of proposals. Importantly, panelists are carefully selected to provide a wide range of expertise as well as diverse perspectives. Panel evaluations are generally cogent.</p> <p>c) Program Officer review analyses</p> <p>The review analyses created by the Program Officer are consistently excellent. They provide clear and detailed explanations of the strengths and weaknesses of each proposal.</p> <p>Dissertation research proposals (DDIGs) are presently reviewed by panels. We conclude that this is an effective method, because it facilitates thoroughness and consistency. The Program Officer adopted the 2006 COV recommendation to add an additional DDIG review panel. Three panels now meet each year for DDIGs. The panel collectively reads all of the proposals. Given the large number of DDIG proposals and the low rate of response by ad hoc reviewers, the panel mechanism is appropriate for these evaluations.</p>	<p>Yes</p>

---

<sup>7</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews?</p> <p>Individual reviews usually address both the intellectual merit and the broader impacts of proposals. "Intellectual merit" is generally taken to mean scientific merit. There is less agreement as to what constitutes "broader impacts."</p> <p>b) In panel summaries?</p> <p>Panel summaries usually discuss both criteria but lay greater stress on intellectual merit.</p> <p>c) In Program Officer review analyses</p> <p>Intellectual merit and broader merits are consistently addressed in all of the Program Officer's review analyses.</p>	<p>Yes</p>
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>The length of reviews varies, but in general most reviewers articulate their views clearly and provide a rationale for their evaluations.</p>	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>The panel summaries do a good job of distilling consensus from diverse reviews. The panels appropriately pay little attention to reviews that are too short to explain the basis for their evaluation. Panel discussions are valuable for other reasons as well: they can provide new perspectives; weigh the qualifications of the ad hoc reviewers; and assess the entire array of proposals from a comparative perspective.</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments:</p> <p>The jacket provides a wealth of information in a clearly organized format. The COV was favorably impressed.</p>	<p>Yes</p>

<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p>The PI receives a copy of all the reviews as well as the relevant panel summary or summaries. As noted above, reviews vary in length. This package of information provides a thorough review of the proposal and clear justification for the panel's decision. The Program Officer contributes clear and cogent explanations in the jackets for the hundreds of proposals she oversees.</p>	<p>Yes</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p> <p>In spite of a roughly 30% increase in proposals from 2006 to 2008, the dwell time has not changed significantly. It was at 5.11 months in 2006 and stood at 5.42 months in 2008. This is a 6% increase, an increase of less than 10 days. We conclude that the program officer has experienced a very significant increase in her workload, to keep pace with the growing number of proposals.</p>	<p>Yes</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Despite the large increase in the number of applications, the merit review process is very well managed. The program officer has evidently worked hard to find so many reviewers willing and able to write such substantive reviews.</p>	

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>8</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: In general the answer is yes. However, the most significant criterion for the selection of reviewers should be their relevant scientific competence. The need to fulfill additional requirements involving diversity in the reviewer's home states and home institution may sometimes interfere with this goal.</p>	Yes
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Comments: The data that would be needed to determine the inclusion of under-represented groups in the pool of reviewers is inadequate, because only about 25% of reviewers report this information. The pool of reviewers does reflect diversity in the reviewer's home states and home institutions.</p>	Yes
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p>	Yes
<p>4. Additional comments on reviewer selection:</p> <p>The COV recommends that NSF consider laying greater emphasis on the scientific qualifications of reviewers than on geographical and institutional diversity. An important criterion for selecting senior panelists is their competence as well-published researchers. Panelists' own research should ideally manifest the qualities sought in proposals. Otherwise, the panels may lack the expertise needed to judge cutting-edge research.</p>	

<sup>8</sup> If "Not Applicable" please explain why in the "Comments" section.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>9</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments:</p> <p>From 2006 to 2008, the quantity of both senior and DDIG proposals has increased dramatically. [Senior applications increased from 56 to 81; DDIG applications increased from 199 to 292.] This has enabled the Cultural Anthropology program to be more selective.</p> <p>We commend the Cultural Anthropology Program Officer for her outreach efforts, which include traveling to university departments to speak with faculty in person, instituting a column in the American Anthropological Association's monthly Anthropology Newsletter, putting on workshops at professional meetings, and revamping the program website.</p>	Not Applicable
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments:</p> <p>The Cultural Anthropology program funds PhD students independently through DDIG grants. Senior proposals also sometimes include funds for graduate student training. We endorse both mechanisms for training graduate students. For the majority of dissertation research projects in anthropology, the DDIG is the most appropriate avenue for graduate funding.</p>	Yes
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <p>Comparatively speaking, most grants in Cultural Anthropology are small and of short duration. We offer three recommendations:</p> <ol style="list-style-type: none"> <li>1. That the Cultural Anthropology program continue to support many senior grants with modest budgets. For many areas of ethnographic research, expenses can be kept low without adversely affecting the quality of the research.</li> <li>2. Many of the most interesting projects in Cultural Anthropology in recent years have been interdisciplinary, with multiple PIs. But the limited funding in the Cultural Anthropology program discourages ambitious proposals of this sort. The panels are tougher on high-budget, comparatively high impact research. We recommend that panels be more open to supporting high ticket, high impact projects.</li> <li>3. Recently, dissertation grants have been expanded from 12 to 24 months. We note that the size of the grants (\$15K) is very small, especially for projects that continue for 2 years. We recommend increasing the ceiling for dissertation funding to 20K.</li> </ol>	No

<sup>9</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> </p> <p>Comments:</p> <p>We note that many of the projects in anthropology that have had the greatest scientific impact in recent years have been high-budget and most often collaborative interdisciplinary efforts. We recommend that the panel and the program continue to find new ways to fund such research that offers the best hope of bringing fresh innovative anthropological research to the frontier of social science. (See Section C for specific suggestions.)</p>	<p>Yes</p>
<p>5. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> </p> <p>Comments:</p> <p>The Cultural Anthropology program makes excellent use of other funding opportunities at NSF to co-sponsor many innovative cross-disciplinary projects, in areas such as Coupled Human and Natural Systems and Human Social Dynamics.</p> <p>Much innovative scientific research being done these days is interdisciplinary, with several co-principal investigators and multi-year activities. Such projects are inherently expensive. With its small budget, the Cultural Anthropology program can offer only limited support for such research. The committee commends the program officer for her work in seeking and obtaining co-sponsorship for such projects from other programs.</p>	<p>Yes</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments:</p> <p>Because of the program's limited funding, it has been difficult to support some of the most exciting, innovative research in the field today, which tends to be expensive, interdisciplinary, and multiple-investigator work. Recommendation: we strongly encourage the program officer to continue to be as creative as possible in finding means to support such research.</p>	<p>No</p>

<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>About 20% of new investigators who apply to Cultural Anthropology are funded. This is an appropriate success rate.</p> <p>The committee also wishes to note that because of the program's long history of supporting dissertation grants, many young PIs become familiar with NSF's exacting standards at an early stage in their careers.</p>	<p>Yes</p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments:</p> <p>Awards were made in 2006-2008 to PIs across the United States.</p>	<p>Yes</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments:</p> <p>The Cultural Anthropology program funds proposals by PIs from a variety of institutions, with 27% of funded proposals coming from institutions other than the top 100 research institutions.</p>	<p>Yes</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments:</p> <p>In the 2006-07 award period, awards were widely distributed to researchers developing expertise in all areas of the world, and nearly 30% of awards went to researchers with multi-regional projects.</p> <p>In a categorization of 9 sub-disciplinary fields in Cultural Anthropology, none received more than 17% of the total funding.</p>	<p>Yes</p>

<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p> <p>Due to the low level of reporting of bio-data by applicants, it is difficult to answer this question fully. In addition, the absence of data on students in DDIG grants lessens the appearance of diversity. It is our general impression that as compared to other fields in the sciences, Cultural Anthropology has had more success in making progress towards this goal.</p>	<p>Data not available</p>
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>In line with the NSF's Strategic Plan for FY 2006-2011, the Cultural Anthropology program actively and successfully supports discovery, learning, research infrastructure, and stewardship. See Section B for more details.</p>	<p>Yes</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments:</p> <p>Cultural anthropology reviews more proposals than any other program in BCS, yet there is only one program officer working for the program. In comparison, more than half of the programs in BCS have two or more program officers. Four of the five programs with two program officers review less than half the number of proposals reviewed by Cultural Anthropology. Despite her administrative burden, the program officer does an exceptional job managing the program. The program officer conducts five panels a year. The quality of the feedback given to applicants and the quality of the review analysis crafted for each proposal are both outstanding.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments:</p> <p>The extraordinary workload limits the capacity of the program officer to respond to emerging research and education opportunities.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments:</p> <p>The committee recommends that the Program Officer's workload be adjusted to give her time to engage with the research community and NSF on these questions. A key issue is how to support improvements in infrastructure for research in cultural anthropology</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments:</p> <p>The committee found the Cultural Anthropology Program Officer's responses to the previous COV's comments to be entirely acceptable.</p>
<p>5. Additional comments on program management:</p> <p>The committee has serious concerns about what will happen if the Cultural Anthropology Program Officer's workload is not reduced. If the current situation persists, it is predictable that this position will become unattractive for a highly qualified person.</p> <p>Recommendation: Add a second program officer with complementary expertise, for example in environmental, ecological or bio-cultural anthropology.</p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery:** *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Comments:

The Cultural Anthropology program funds innovative and transformative research. For example, Clarence Gravlee and Christopher McCarty (NSF 0724032, University of Florida) are conducting a study of racial categories and hypertension among African Americans in Tallahassee FL that examines sociocultural influences on blood pressure, with profound implications for the emerging field of molecular medicine. Race is a category derived from folk biology that is not supported by modern genetics. This research examines the processes by which "race" becomes biology, leading to misunderstanding of the origins of disparities in hypertension.

Another example of innovative research is that of Monique Borgerhoff Mulder (NSF 0546119, University of California, Davis), who is investigating the differences between biological and cultural evolution, focusing on the respective role of horizontal and vertical pathways of transmission for different cultural domains and across different scales of analysis. This project is a major contribution to a new synthesis emerging in the study of human population history, which has to date been driven mainly by linguistic, archeological, and genetic evidence.

**B.2 OUTCOME GOAL for Learning:** *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."*

Comments:

The Cultural Anthropology program has three panel reviews of DDIG proposals each year. In 2006, 2007, and 2008, the program funded a total of 180 DDIG proposals. Through these grants, the program increases scientific literacy in a new generation of anthropologists.

For example, In the dissertation research grant DDIG: Knowledge, Networks, and Capital: Adapting to Change in a Small-Scale Mexican Fishery (0753326), Ava Lasseter (under guidance of PI and advisor Anthony Oliver-Smith at the University of Florida) examines how community use of resources affects the

decline of the spiny lobster in a fishing village in Mexico. Results of this research will inform scientists not only in Mexico but also in the US about how best to manage natural resources when overexploitation by human populations plays a role in their decline. Understanding the role of humans in the changing ecology of marine resources is an issue of growing importance around the world.

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments:

The Cultural Anthropology program supports methodological training for senior researchers through their Scholars Awards. For example, Sarah Strauss (NSF 0553229, University of Wyoming) received NSF support to bridge the gap between cultural anthropology and climate science. Her project involves training in hydrological modeling, following the UN’s Adaptation Policy Framework to develop a structure for hybrid management that can generate common procedures and norms of accountability at the boundary of science and policy.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

Recommendation: We firmly support the notion of offering methods training to improve the abilities of doctoral students to write competitive research proposals with rigorous methodological components. Any program money devoted to this project should enhance the instruction of cutting-edge and up-to-date methods. Such training should build on (rather than replace) training commonly available on university campuses.

Recommendation: Scholars Awards for methodological training should be continued.

Recommendation: We recommend that the allocation of funds across dissertations, senior research, REU/REG supplements, and SGER/HRRRA (now EAGER & RAPID) remain the same, subject to the judgment of the program officer.

Recommendation: We recommend that the ceiling on funding for DDIGs should be raised from \$15 K to \$20 K. We recommend keeping the proportion of the total budget devoted to DDIG grants the same, recognizing that these two recommendations may result in a lower percentage of DDIG proposals being funded.

Recommendation: We discourage the use of DDIG funds to support research by students in their communities of origin. We feel that the education of an anthropologist involves immersion in a different culture.

Recommendation: We strongly support the use of DDIG funds to support the hiring of research assistants by graduate students if appropriate to their scientific investigation.

Recommendation: We support the use of senior awards for funding post-doctoral students and graduate students. We recognize that this is a model that is essential to interdisciplinary and large-scale projects.

Recommendation: We do not recommend the reinstatement of funding for pre-dissertation fieldwork or departmental training awards.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

The Cultural Anthropology program is very well managed.

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

We have a recommendation for infrastructure development. In recent years there have been many significant innovations in inference methods that are broadly applicable to the social sciences. These include computational approaches such as maximum likelihood methods and Bayesian statistics, networks, phylogenetic and coalescent models, agent-based models, adaptive computation, geographic information systems, remote sensing and evolutionary game theory. However, the pace of adoption and innovation in anthropology and related fields is often slow. Further, many questions are inherently interdisciplinary. There is a need for more effective ways to sustain multi-actor, cross-disciplinary collaborations.

There are several models of NSF-supported centers that have had a catalytic effect on the diffusion of new methods and perspectives in their respective fields. For example, the National Center for Ecological Analysis and Synthesis (NCEAS) was created in 1995 in response to an NSF initiative, with the following goals:

\* Advance the state of ecological knowledge through the search for general patterns and principles in existing data

\* Organize and synthesize ecological information in a manner useful to researchers, resource managers, and policy makers addressing important environmental issues

\* Influence the way ecological research is conducted and promote a culture of synthesis, collaboration, and data sharing

NCEAS has been very successful in meeting these goals, as a center where methodological innovation has triggered rapid progress in theoretical ecology, which has also had important consequences for public policy. A second successful model is the Santa Fe Institute, which has fostered inter-disciplinary collaborations exploiting novel inferential techniques and perspectives.

We recommend that NSF initiate a planning process with the goal of bringing representatives of fields in the social sciences, biology, applied math, and computer science, to evaluate the potential for such a center (or other appropriate vehicles) focused on shared questions about inference in these fields. This would be an appropriate follow-up to NSF's support for human social dynamics, coupled human and natural systems, and complexity. Those programs all led to successful inter-disciplinary collaborative research projects, but provided no venue for sustained and wide-ranging continued collaboration.

**C.4. Please provide comments on any other issues the COV feels are relevant.**

We recommend that the ad hoc reviewers and panelists for senior proposals pay more rigorous attention to the results of prior NSF funding by applicants and, more broadly, to the applicants' scholarly impact as evidenced, for example, by citations and publications.

**C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

We completely endorse the process of a public, open peer review of the program.

The committee was impressed by the thoroughness of the information on the E-Jacket system. (We recommend that all proposals, rather than merely a sample thereof, be made available to the COV through E-Jacket.) The unfamiliar organization of the system meant that all of us spent considerable time learning how to navigate the site. Perhaps it would be possible to devote one of the three days of the site visit to document review with program officers available to help in the process. We believe the large group sessions could be reduced in time to accommodate this process.

We question whether the existing forms and boxes provide the most incisive feedback on the program. We felt that our time spent speaking one-on-one with NSF program officials, when we were able to frankly address controversial issues, was more productive.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**J. Stephen Lansing**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Jean Ensminger**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Michele Ruth Gamburd**

**Date:** \_\_\_\_\_

**Visitors for the Cultural Anthropology Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**Date:** \_\_\_\_\_

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

## 5. Developmental and Learning Sciences

**(BCS Note: Report reviewed by the Program Officer)**

### INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### A.1 Questions about the quality and effectiveness of the program's use of merit review process.

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>10</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Ad hoc reviews from outside experts are very important to the review process. Panels are essential for a) providing panelists an opportunity to discuss and debate the merits of proposals; b) providing feedback to investigators about the proposal as reflected in the panel summary; c) having panelists who have a shared understanding of the goals of the program as well as the NSF review criteria. (We have no knowledge of NSF site visits for individual proposals, although we believe that this occurs for large center proposals.)  <b>( BCS NOTE: IRADs are not site visited)</b></p>	yes
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews? The intellectual merit is always discussed; the broader impacts are mostly discussed but with a bit more variability.</p> <p>b) In panel summaries? Yes, both are addressed.</p> <p>c) In Program Officer review analyses Yes, both are addressed.</p> <p>Comments: To the extent that NSF and the scientific community believe that broader impacts are important, this issue must infuse the review process and evaluation to a greater degree. However, "broader impact" can be construed in various ways and this is an issue that should be addressed with a clear statement of what factors count under broader impacts with this information going to proposal writers, reviewers, and the panels that evaluate the proposal. In the review analyses or panel summaries we have read, broader impacts seems to include such things as training of students, development of new methodologies, development of theory, impact on the surrounding broader community, and impact on society at large. After broader impacts is more clearly defined, sample excellent broader-impact statements from proposals might be offered to PIs and panels. In addition, sample reviews that address broader impacts well might be offered to panels.</p>	yes
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p>	yes

<sup>10</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>Comments: All reviewers make substantive comments, some lengthier and more detailed than others. On the whole, the reviewers take their task quite seriously and provide good, analytic feedback</p>	
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The panel summaries seem to capture the reviews (both internal and external) and the panel discussion. The ones we have reviewed appeared to be quite thorough.</p>	yes
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: All documentation (but no staff diary notes) seems to be present.</p>	yes
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: The panel summaries the PIs receive are thorough and informative.</p>	yes

<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: In general, decision time is appropriate and appears to be improving. Even in 2007 when a program officer left, decision time still only averaged 6.76 months. It is curious, given the excellent structure for proposal review, that some proposals should take longer than 6 months as the note above suggests. Is this because proposals are co-reviewed by different panels that meet at different times? We are concerned that PI's may be disadvantaged by having to wait for NSF to act.</p>	<p>yes</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process: The following are 4 recommendations and one question about the merit review process:</p> <ol style="list-style-type: none"> <li>1. Stability of panel membership – We recommend that there be a stable core of panelists (perhaps two thirds) so that the panel can create shared understandings and a review culture about how to approach proposals. If the panel changes too much each time, it seems that there is little opportunity for the panel to come together as a team. The PO of DLS told us that this generally is the way it works. We mention this in case POs change as this practice should be institutionalized.</li> <li>2. Increasing DLS Pos - DLS at present has a single PO and given a comparison to other units (e.g., Social Psychology) it appears that this is lower than is appropriate given the volume of proposals. We first recommend that DLS have a <b>permanent PO</b> given the importance of continuity. We next recommend that a <b>second PO</b> be hired for DLS.</li> <li>3. Improving the science by improving communication between panels - The research DLS funds is increasingly interdisciplinary and cross-panel. We note that panels often give proposals widely disparate evaluations. We recommend that there be steps taken to improve communication between panels in the interest of creating the best science. For example, perhaps joint meetings between panels can be arranged to consider joint proposals.</li> <li>4. Racial and ethnic panel composition – We wonder if there is information on panel composition that we missed in the documents. How do panel members get selected and to what degree is diversity considered in making panel selections? How difficult is it to get individuals to serve on panels?</li> <li>5. Resubmission – While NIH has a clear policy and procedure for resubmissions, we understand that this is done program by program at NSF. For example, the PO of DLS invites resubmissions and tells panel members when a resubmission comes back. The advantages of having a consistent and publicized resubmission policy are: 1) PIs can know that submitting an improved proposal would be welcomed. Presently, this is unclear to PIs as well as to panel members; and 2) PIs and panel members can be on a level playing field with respect to their knowledge of the proposal process, making it clear that resubmissions are welcomed or acknowledged, as they presently are in DLS. However, this could change with the next PO given no official policy of which we are aware on the resubmission issue. <b>(BCS NOTE: PO does not “invite” resubmissions, but encourages them when judged appropriate)</b></li> </ol>	

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>11</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?  Comments: Most reviewers appeared to provide high quality reviews and to be at a high level of expertise. However, given the difficulty of finding appropriate reviewers, we are concerned that key reviewers may not agree to serve. This will have the effect of compromising the quality of reviews.</p>	Yes and no
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?  Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.  Comments: We recommend that NSF encourage reviewers to state their gender, race/ethnicity, and disability status so that good data can be gathered on this issue. For example, SRCD grappled with this issue and Child Development now collects these data routinely. There must be a way to explain why these data are important and why reviewers should not skip this step when they submit a review. By placing the request for this information at the very end, we catch reviewers when they are least interested in answering more questions.  Geography -Nor are the data meaningful when reviewer selection is shown on the map (p. 11). These data should be a proportion of either population or number of scientists in that state.  Type of institution – It seems appropriate to have the majority of reviewers from Ph.D. granting institutions.  In general, these judgments require the presence of some denominator against which they can be judged. The raw numbers we are offered do not allow us to answer these questions in an informed manner.</p>	Data not available for 75% of the reviewers on racial/ethnic group or disability status.
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?  Comments:</p>	yes

<sup>11</sup> If “Not Applicable” please explain why in the “Comments” section.

4. Additional comments on reviewer selection:

External reviewers – We continue to be concerned about the difficulty of getting external reviewers to review proposals. Is it possible to offer financial incentives for proposal reviews? Apparently NIH and foundations such as W. T. Grant offer an honorarium for participation or for attending part of the panel meeting remotely when the proposal is under discussion. Another issue is that reviewers do not learn about the outcome of the proposal. Allowing reviewers to see the panel summary might be an incentive, parallel to what journals do when they provide one with summaries of the reviews in which one has participated. We recognize that this is a violation of the privacy of the PI but then their privacy was violated when their name was released at the time of the original proposal review. We also discussed the possibility of having the PO make personal phone calls to the individuals who would be essential for the proposal review. Even leaving a message about the coming electronic request to review, and that the individual is essential to the review process, might help with obtaining reviewer cooperation.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>12</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.  Comments: The research programs supported appear to be of excellent quality.</p>	yes
<p>2. Does the program portfolio promote the integration of research and education?  Comments: Given that a Broader Impact statement is requested of all PIs, most mention some things that they will do in the educational domain. However, since most PIs are involved in the education of graduate students, the information offered is frequently insufficient to allow us to judge whether the integration efforts described are beyond the routine, and whether they will be innovative and wide-ranging. Some proposals offer descriptions of integration of research with education. In particular, the Subiaul CAREER award is extremely broad ranging and innovative, setting a standard for what other proposals might be able to offer. Given the fact that DLS works collaboratively with REESE, the PO is making strong efforts to integrate research and education.</p>	Yes and no
<p>3. Are awards appropriate in size and duration for the scope of the projects?  Comments: This question cannot be answered because all the relevant data we are offered is requested amounts of funding and not actual funding amounts.</p>	Data not available
<p>4. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> Comments: It is unclear what “appropriate balance” means but we see some proposals that strike us as potentially transformative. The Highlights of prior work suggest that some projects may well alter established thinking. The longitudinal IRADS projects have implications for the use of new technologies and for a range of populations. These look particularly promising. For example, the Cox IRADS project from NC examines multiple levels (from genes to environment) in accounting for children’s school and social adjustment as it relates to their physiological reactions to stress. The Tamis-LeMonda project examines multiple ethnic groups in an urban environment from infancy through the transition to school along several developmental dimensions (e.g., cognition, social, and language) The scope of this study and the nature of the urban sample provides us with a unique view of development The use of new methodologies may well be transformative as in the brain and behavior work in infants using NIRS in projects</p>	yes

<sup>12</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>by Hespos and Wilcox.</p>	
<p>5. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> </p> <p>Comments: Again we have the issue of how to conceptualize “appropriate balance.” Given the number of co-funded proposals, it appears that there is some cross-disciplinary collaboration. Linguistics and Perception/Cognition frequently collaborate with DLS. The likely increase in the emphasis on complexity may result in more cross-disciplinary projects. As these are likely to be expensive, planning for directing funds should begin.</p>	<p>yes</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: Variability in award size and in whether proposals have single or multiple investigators seem to be appropriate. In DLS, another important variable to consider is the age and stage of the children being studied. The proposals appear to be tilted toward infancy and early childhood with fewer proposals on middle schoolers and adolescents. The science of adolescence has grown exponentially in the past decade and is an area of increased importance. To understand the experiences that lead to a successful transition to adulthood one might wish to see more proposals focused on adolescence.</p>	<p>yes</p>
<p>7. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> </p> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: With 285 proposals from new investigators, compared with 143 proposals from prior investigators, the ratio looks promising in this regard. However, new investigators received funding for only 25% of these proposals while a significantly greater percentage (42%) of prior PIs received funding. The fact that 25% of the proposals in the DLS area are going to new investigators is praiseworthy.</p>	<p>yes</p>

<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: Without knowing the number of individuals in each geographic area who might be applying to NSF it is impossible to evaluate this question.</p>	<p>Data not available</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: Most of the awarded proposals come from Ph.D. and research-intensive institutions. We wonder whether competent individuals at excellent undergraduate institutions see the possibility of obtaining funding for their proposals at NSF. Should there be more outreach activities to some of the country's superlative undergraduate institutions?</p>	<p>Yes and no</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments: The quality of the proposal should be paramount in the decision to fund and not the specific sub discipline it addresses. That being said, we note that cognitive/educational proposals seem to be a bit overrepresented compared to socio-emotional and especially biological areas.</p>	<p>yes</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: Taking into account the number of minority and non-minority PIs we note that the rate of awards is slightly higher among the minority applicants. The PO is doing an excellent job in encouraging minority scientists. NSF should be differentiating between racial and ethnic groups to better evaluate this question.</p>	<p>yes</p>

<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The excellent report (<i>Social, Behavioral, and Economic Research in the Federal Context</i>) distributed at the meeting speaks beautifully to this issue. DLS is entirely relevant to the agency's mission and to national priorities of preparing scientists and informed citizens. In <i>Investing in America's Future: Strategic Plan</i>, discovery and learning are among the major priorities. By its very nature DLS involves multiple disciplines and collaborative research projects toward this end. It is also engaged in improving math and science in K-12 especially with its collaboration with the Education directorate.</p>	<p>yes</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: The current PO is doing an outstanding job with very little support. As compared to other programs that receive an approximately equal number of proposals, the DLS PO is being extremely efficient and effective. We recommend a permanent PO to increase institutional memory. Because of the disrupted leadership in the past few years, that is problematic. Furthermore, an additional PO is needed to assist in the enormous work load.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: The PO of DLS is taking advantage of the interdisciplinary nature of the DLS portfolio. Within the portfolio she is supporting workshops across subdisciplines such as education and development. She is reaching out to IES, NICHD etc. to forge links across agencies that are concerned with children, development, and learning.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments: The very first paragraph of the DLS report to the COV gives the goals of the program. The processes involved in development and learning are quite diverse (“cognitive, linguistic, social, cultural, and biological”) and the portfolio seems to reflect this diversity. The PO’s portfolio reflects the multidisciplinary nature of the DLS goals. We wonder whether the PO attempts to cultivate and solicit proposals from researchers in fields that she may believe are less well represented. She engages in “outreach” and attends conferences and informs researchers about the factors that create a good proposal. An additional PO for the program could make more targeted outreach activities possible.</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments: The PO was extremely responsive to the prior report. However, some problems remain that may be division wide such as reviewer recruitment.</p>
<p>5. Additional comments on program management:</p> <p>A question arose about whether the DLS should also cover adult learning. This COV panel believes that the agenda for DLS is already quite full and <i>does not recommend</i> adding projects that include only adults. Once again, the diversity of subdisciplines and ages and research problems considered under DLS would be better served by more than one PO.</p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: "Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."**

Comments: As the last COV panel commented, "DLS initiatives are directly relevant to this outcome." In DLS the focus is on children's development and how best to prepare them to become scientists and well-prepared citizens. Among the projects that DLS has funded, the following are particularly relevant to this goal. Work by Elizabeth Brannon at Duke University (0448250) examines numerical concepts that are the basis for STEM in infants. An IRADS proposal by Cox at UNC (0126475) studies how genes and environment impact children's physiological reaction to stress, taking a novel approach by "incorporating multiple levels of influence."

**B.2 OUTCOME GOAL for Learning: "Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."**

Comments: Many projects are relevant to this outcome. For example, the S. Ceci award to Cornell University (0126555) supports underrepresented youth in becoming involved in science. Another project by Rowley and Kurtz-Costes awarded to UNC (033308 BCS Note added in review: the correct award number is 0335331) studies the factors that mediate African-American children's transition to middle school, including parental talk to their children about race. Coley at Northeastern University (0236338) studies how children's understanding of biological concepts is influenced by where they live.

**B.3 OUTCOME GOAL for Research Infrastructure: "Build the nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools."**

Comments: The PO is eager to help IRADS grow their research infrastructure. In fact, she is already working with a group of IRADS investigators toward this end.

DLS is currently investing in the creation of new methodologies to assess infants' cognitive functioning. For example, T. Wilcox at Texas A & M (0518986) and S. Hespos at Northwestern University (0718513) are developing NIRS as a new method for assessment. A research project by Chen at the University of Indiana (0544995) on grounding word learning in multi-modal sensori-motor interaction uses new technology to

discover how toddlers and their mothers see the world in different ways. P. Marshall at Temple University (0642404) studies how the brain learns to mirror the actions of others through mirror neurons.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

No major gaps exist in the portfolio. We think that more longitudinal research on the relationship between early cognitive and linguistic abilities and school performance should be funded if we are to make headway in ameliorating the achievement gap. We are also interested in how measures in infancy in these areas relate to early-childhood preschool readiness and then to school achievement. Another area we would like to see is intergroup relations. In a global world, the development of children's attitudes about people who are different from them is an important research topic. As the area of developmental neuroscience increases in significance, we expect that NSF will be seeing more proposals in this area.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

We encourage the PO to consider cross-program calls for proposals to maximize the possibility of having fields interpenetrate each other's research agendas. One example might be the integration of education and developmental and learning sciences to invite developmental researchers to influence educational research as well as to invite educational researchers to influence developmental researchers to consider educational problems. Additional funding may be necessary to bring examples like this to fruition.

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

As mentioned earlier, the resubmission policy needs to be decided upon and codification of this practice should follow. As it is now, some programs keep the same reviewers and some go out of their way to invite different reviewers for a returned proposal. The treatment of resubmission is important for improving the science. Yet NSF has no way of collecting data on how many proposals are resubmissions.

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

The NSF is moving in the direction of influencing public policy and the general dissemination of scientific information by the publication of its excellent *SBE Research in the Federal Context* booklet. We note that there is little in the way of developmental research in this document however, other than the material on the brain. We urge the inclusion of more developmental information in future versions of this booklet. This publication needs to be supplemented by an attempt to get NSF out in front on issues related to the research NSF covers -- including DLS. In this way, NSF can stay ahead of the changing curve of scientific issues in society.

Across NSF, accurate records of minority researchers need to be kept. Furthermore, the specific racial/ethnic groups within "minority" need to be represented separately.

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

To prepare for this meeting, COV members were asked to read 20-30 proposals. However, these directions do not speak as well as they might to the task at hand; nor are they realistic given the time that would be involved. Instead, members should be encouraged to read a few proposals in depth and to focus on project summaries. Members should be encouraged to read all the supplementary material that accompanies proposals including analyses of reviews, panel summaries, and reviews. In addition, not all members are equally skilled in using Excel spreadsheets to pull down data. Nor is it clear -- even after reading the COV template -- exactly what data will need to be pulled down. For this reason, it would be extremely helpful to provide members in advance with a list of all the proposals that have been awarded as well as the declinations so that members can get an overview of the area and a snapshot of the randomly selected 90 proposals made available to us. Most of us were not skilled enough to know how to get the proposals from a program to appear on a single screen, sorted by awards and declinations, or indeed on other criteria. The brainpower of this group is better spent on evaluating the program rather than working on trying to make the data we need available to us.

### **C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- Is there an appropriate balance between the large-scale, high-budget Integrative Research Activities for Developmental Science (IRADS) awards and regular individual investigator awards?

The balance is fine with 5 IRADS and the rest individual research awards. We note that the IRADS program was extremely effective in encouraging a broad view on a range of important issues from an interdisciplinary vantage point. We regret that IRADS have ceased and recommend that DLS reconsider opening up competitions for IRADS again, should funding levels permit.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Sandra Graham**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Katherine Nelson**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Roberta Michnick Golinkoff**

**Date:** \_\_\_\_\_

**Visitors for the Developmental and Learning Sciences Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_

## 6. Documenting Endangered Languages

**(BCS Note: Report reviewed by the Program Officers)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>13</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The requirement that each proposal be reviewed by a minimum of three reviewers (1 panel and 2 ad hoc) is an excellent model, inherited from DEL's previous association with Linguistics. The Program Director is proactive in obtaining a commitment from ad hoc reviewers before sending out proposals, thereby significantly reducing the number of reviewers who fail to follow through. This selection process also makes the reviewers feel more personally engaged in the process. Perhaps for this reason, the quality of referee comments is very high, detailed and specific.</p>	Yes
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses</p> <p>Comments: In general, the reviews, summaries and analyses address the criteria. However, it is recognized that the strict application of the criteria to DEL proposals may be inappropriate.</p>	Yes
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: In general, the comments by reviews, summaries and analyses on the strengths and weaknesses of proposals are explicit and substantive.</p>	Yes

<sup>13</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The rationale for the decisions is clearly stated in all panel summaries.</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: The documentation in the jacket (especially the panel summaries and review analyses) is very comprehensive and provides a clear rationale for the decision.</p>	<p>Yes</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: The reviews and summaries are available to the PI and provide a clear rationale for the decision.</p>	<p>Yes</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: Decisions on more than 70% of proposals are made within 6 months, above the NSF-wide average. Decisions on the remaining 30% are generally made within 9 months. The average time-to-decision is excellent.</p>	<p>Yes</p>

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

The range of inputs into the merit review process enhances its credibility and reliability.

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>14</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments: The current DEL panel is an impressive group of experts with knowledge of a range of language families. It also includes members with expertise in the relevant technologies.</p>	Yes
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?  Note: Demographic data is self reported, with only about 25% of reviewers reporting this information. Comments: With regard to geographic distribution, there are clearly areas of the country that are not represented. This may be an inevitable consequence of the distribution of experts. With regard to under-represented groups, the data are unavailable, since 75% of reviewers do not provide the necessary information about minority status or gender.</p>	Data not available
<p>3. Did the program recognize and resolve conflicts of interest when appropriate? Comments:  The mechanisms in place for recognizing and resolving conflicts are quite adequate. No one in a situation of conflict participates in the discussion of a proposal. In the case of conflicts involving ad hoc reviewers, the review is discarded.</p>	Yes
<p>4. Additional comments on reviewer selection: The practice of contacting potential ad hoc reviewers informally and obtaining a commitment is laudable and recommended as a model for other programs.  The DEL program should seek to involve language experts from Tribal Colleges. This might have the positive effect of increasing successful submissions from such institutions: by reviewing other proposals, one learns what makes a successful proposal.</p>	

<sup>14</sup> If "Not Applicable" please explain why in the "Comments" section.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>15</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.  Comments:  The overall quality of research is quite high, taking into consideration that the DEL program must place emphasis on data collection and documentation.</p>	Yes
<p>2. Does the program portfolio promote the integration of research and education?  Comments:  We find that the DEL program could do more to integrate research and education.  <b>RECOMMENDATION:</b>  We recommend that the program actively promote research agendas that incorporate an active program in K-12 levels of education. PIs should be encouraged to create interdisciplinary teams of specialists, including applied linguists and professional educators, who would foster the integration of research and education.  We further note that issues of language acquisition and attrition can be incorporated into documentation projects (and can be the focal point of documentation), thereby readily enhancing the connections between research and education.</p>	No
<p>3. Are awards appropriate in size and duration for the scope of the projects?  Comments:  In general, the size and duration of most awards are appropriate. However, it should be recognized that documentation is necessarily time-consuming and may take longer than anticipated in a proposal, as originally outlined. Although we think the duration is appropriate, program directors should have some flexibility in responding to changing circumstances.</p>	Yes

---

<sup>15</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: A number of the proposals in the DEL program are highly innovative. Examples include the proposal that involves elders directly in the documentation and preservation of the linguistic heritage of endangered Koasati language. Another is the project on the acquisition of Mayan language in its traditional setting. Overall, the DEL program has the potential to be transformative in the broader context of the development of linguistic research, because it provides access to a greatly expanded range of language data than is currently available.</p>	<p>Yes</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: There is potential for DEL projects to collaborate with disciplines such as Cultural Anthropology and Psychology but very few projects realize this potential. More could be done to promote joint projects with environmental scientists. Greater collaboration with linguists is also encouraged.</p>	<p>No</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: Most projects involve more than one investigator, but this is appropriate to the nature of language documentation.</p>	<p>Yes</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: The DEL program has an excellent balance of awards to new investigators. Over the 3-year period (2006-2008), 35% of submissions by new investigators were awarded grants in comparison with 46% of submissions by prior investigators.</p>	<p>Yes</p>

<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments:</p> <p>Considering the nature of the DEL program, the geographical distribution of PIs is appropriate.</p>	<p>Yes</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments:</p> <p>In 2006 and 2007, approximately 55% of awards went to institutions with PhD programs, reflecting where researchers are expected to be concentrated. This dropped to 40% in 2008, auguring well for greater diversity in the types of institutions that are involved.</p> <p>The percentage of Tribal Colleges receiving grants has increased since the inception of the program, from 9% in 2006 to 22% in 2007 (or 2 out of 22 grants in 2006 to 5 out of 18 in 2007 and 4 out of 17 in 2008).</p>	<p>Yes</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments:</p> <p>The DEL Program Report acknowledges that greater cross-disciplinary work with Linguistics, Cultural Anthropology (and other disciplines) is desirable.</p>	<p>No</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p> <p>The data are not available in a form that allows us to draw significant conclusions.</p>	<p>Data not available</p>

<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:  This program supports NSF's goals in fostering transformative and interdisciplinary research. It is part of an international response to growing concerns about language endangerment, among linguists, speaker communities and the scientific community. It is part of a world-wide effort to document and describe language data to make it available to current and future generations of scientists and speakers alike.</p>	<p>Yes</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>The DEL program offers unparalleled opportunities to involve underrepresented minorities in research through projects based in and run by speaker communities. Yet there are a number of challenges for potential investigators situated outside of regular research universities in preparing competitive grant applications. In general we are concerned with the relatively small number of grants that go to non-traditional researchers, in particular tribal groups. The DEL program should be actively seeking to give start-up grants which might lay the foundation for such groups to receive larger grants.</p> <p><b>RECOMMENDATION:</b></p> <p>We recommend that the Program Director institute a number of EAGER grants (EARly-concept Grants for Exploratory Research) as seed money for smaller projects for exploratory research as a way of increasing the number of pilot projects based in non-traditional settings, in particular from institutions that are directly involved in native education and the promotion of Native American culture. These projects can test the suitability of such sites for future research and can provide initial experience in the grant process for ultimately preparing successful full grant applications.</p>	

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: Excellent. The documentation of endangered languages is time-sensitive and yet needs to be done with the utmost care. The program director has shown particular care in seeking out appropriate ad hoc reviewers and in constituting an excellent review panel with expertise coming from a wide range of specialists.</p> <p>We commend the initiative on the part of the Program which resulted in the NSF- and NEH-sponsored workshop with a focus on grant-writing grant and language documentation at AILDI (American Indian Language Development Institute) in 2006. This was an outstanding initiative to broaden participation and similar approaches should be continued.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: There is room for improvement in this area. The program currently focuses on the collection and archiving of data and on linguistic description. Given the focus on endangered language data which is often of immediate interest to the communities whose language is undergoing shift, more could be done within the program to facilitate the integration of research and education. Many communities whose languages are endangered are particularly interested in strengthening language usage. This falls directly within NSF's Broader Impacts criterion.</p> <p>RECOMMENDATIONS: Target specific grant opportunities for the integration of research and education. Target opportunities for building interdisciplinary teams of researchers which include not only linguists but also appropriate specialists in learning and language acquisition and scientists in areas of ecology and climate.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>We do not have a good sense of this. There is a rough historical organization of the portfolio (which seems adequate and appropriate). Program Officers seem to have a good sense of current issues and emerging areas.</p> <p>The critical part of program development is the initiative which brought the DEL Program into existence, by combining resources from NSF and NEH, and the initiative which led to its becoming an independent program. We applaud these efforts which have resulted in a vibrant and vital program.</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments: Not applicable. This is a new program.</p>
<p>5. Additional comments on program management:</p> <p>By its very nature, the DEL Program is unlike all other NSF programs in providing inherent opportunities for connections with native speaker communities with unparalleled opportunities for members of these communities to be active investigators in NSF-funded research of immediate interest to their own communities. Yet a relatively small percentage of community members are placed at research-oriented universities. Thus a critical part of management of this program is outreach to speaker communities. Site visits are encouraged as a supplement to other outreach initiatives.</p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."***

Comments: DEL is a very new program and so it is too early to see large-scale impacts. That said, the program is clearly succeeding in meeting the outcome goal for discovery in major ways.

(1) Funded projects are collectively greatly increasing our knowledge base of language structures cross-linguistically. They provide the data for new discoveries of how language functions.

(2) Individual projects provide important information about understudied languages. For example, "Mayan Language Acquisition in a Traditional Setting: Documentation and Training" (NSF award 0613120), PI Clifton Pye, documents language acquisition in three Mayan languages and establishes a linguistic infrastructure for recording and transcribing samples of children's language. Mayan languages differ from European languages on many key linguistic dimensions; documentation of their acquisition provides important information on the cross-linguistic applicability of what are assumed to be universals of acquisition. Of prime importance is the Mayan system of ergative agreement which marks the subject of transitive verbs differently from the subject of intransitive verbs. The project involves community members/speakers with linguistic training in conducting the research and thus has broader impact. An additional outcome is the establishment of a comparative acquisition base for the Mayan languages to facilitate comparison between processes of historical change and language acquisition. This project provides an excellent example of ground-breaking research which also meets NSF goals to broaden participation, to integrate education and research, and to create infrastructure.

Another example is provided by "Kowasa:ton il:halas—Let us Hear Koasati: A Filmic Documentation Project of Koasati" (NSF Award 0651290), PI Linda Langley of McNeese State University. By working with the remaining 600 speakers of the Koasati language of Louisiana, the project has created an interactive database, developed an orthographic system, and collected and digitized historical materials. It has greatly increased our knowledge of Koasati, important in its own right and significant for the further study of other Muskogean languages, contributing to our knowledge of the genetic relations between these languages and their historical development. The project is exemplary for involving virtually all members of the Coushatta Tribe (ages 12-70) and has had impact beyond the tribe by hosting a workshop for other Southeast tribes to share the knowledge and practices acquired in this project.

**B.2 OUTCOME GOAL for Learning: “Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens.”**

Comments:

DEL provides a nearly unique opportunity to engage underrepresented groups in research.

One project which has successfully trained indigenous peoples in language documentation is “Annotated Field Documentation of Northern Cheyenne Sacred Language” (NSF Award 0756035), PI Karyl Eaglefeathers at Empire State College, New York. The project has pioneered the use of accessible digital technology which is suitable for use by both research linguists and community users. The project provides a model for communities facing similar challenges in preserving sacred, private ceremonial language without making public sacred and confidential information and texts. This project stands out for its active engagement in involving community members in the project. The project serves as a model for incorporating training and education at all levels of the community -- K-12, undergraduate, and graduate -- and promotes public understanding of science and lifelong learning.

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments:

The use of technology to record, process and preserve linguistic data is a critical part of language documentation. One end product to date is the enhanced development of digital archives to house language data and the development of software for processing and analyzing the data.

One such project is “Pangloss: An interlinear glossing tool within an existing application platform” (NSF Award 0715246), headed by Jeff Good of The Longnow Foundation. The project aimed at creating software targeted for linguistic fieldwork and documentation from commercially available software (OpenOffice.org). Field linguists commonly rely on proprietary commercial software products (like Microsoft Word) to build grammars, dictionaries, and text corpora, motivated largely by their widespread availability and relative ease of use. However, these products have well-known disadvantages regarding the markup, organization, and archiving of the resulting products. The products are not limited to the tools, but also include standards for interlinear glossed texts and lexicon, which could be used by any project, as well as recommendations about the utility of building domain-specific tools on top of an existing office application suite.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

#### **RECOMMENDATIONS:**

More attention should be given to issues of archiving of documentation.

Archives are integral to documentation and yet there are currently few guarantees that DEL projects are archived according to current standards. We have several specific RECOMMENDATIONS:

- (1) Participants should be required to address archiving solutions in their yearly and final reports.
- (2) Site visits by the Program Director, in particular at non-traditional institutions, during the course of the grant, would help ensure that projects are on track for archiving.
- (3) At present, there is no DEL/NSF-recommended archive for documentation projects, which leaves researchers to find their own. Given that the partnership for DEL includes not only NEH and NSF but also the Smithsonian Institution, we encourage the Smithsonian to work with NSF to develop an archive suitable for language documentation

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

The DEL program director has a unique responsibility within the framework of NSF-sponsored research to be proactively involved in outreach and the promotion of research from non-traditional groups. Such work is not only time-consuming but also requires great sensitivity to community concerns.

Outreach activities extend beyond attendance at the usual professional meetings to time spent with local communities, in particular at events and venues which are targeted at language activities of greatest interest to these communities (such as meetings and workshops on language pedagogy and revitalization, and on language policy, as well as appropriate tribal meetings). This is a critical but time-consuming part of this program.

#### **RECOMMENDATION:**

The DEL Program requires active outreach in order to achieve its goals. This requires more time and energy from the program director so we urge that the position of program director be raised to a full-time position.

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

#### **RECOMMENDATION:**

Now that DEL is a separate program, we recommend that DEL be reviewed by at a separate panel of reviewers in future COV reviews. Although there is overlap in questions of basic management, the issues relevant to DEL are quite different from those of the Linguistics Program and require focused discussion and attention. We request that the DEL panel and the Linguistics panel be separate. We further note that Linguistics/DEL panel has double the workload of other groups at the COV review which has not only slowed our own progress in writing the two reports but has also had an impact on the amount of time we can devote to discussion of questions about the individual programs.

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

Data could be presented in a more user-friendly format. In particular the review panel has had difficulty viewing multiple proposals, as all need to be accessed individually from the internet, and supplementary documents (such as panel reviews and recommendations) are also separate documents. Simply accessing

the proposals and reports in preparation for this COV review was tremendously time-consuming, using time which could be better spent actually reading the materials.

**C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- What counts as 'transformative' research for Documenting Endangered Languages?

The DEL program has the opportunity to be transformative in the broader context in providing data with hopes of doing comparative cross-linguistic and typological research. Certain standards are emerging to enable this kind of research, and we foresee that the documentation projects, which target a wide variety of genetically and typologically different languages, will drive much of the research into establishing standards which will be used cross-linguistically.

At the level of one language, having even high-quality audio hasn't been the case for indigenous languages. The possibility of high-quality video provides access to unprecedented research opportunities in modal-media Interaction between gesture and language, conversation and discourse, and the study of the interaction of linguistic and paralinguistic features in largely unstudied and understudied languages.

- How do we bring more expertise to bear on the 'broader impacts'? Would it be advisable to have applied linguists as co-PIs?

The DEL projects have an immediate broader impact by engaging the community members in research but there is an inherent contradiction in research goals in that most communities are interested in language revitalization, not documentation. Although one way around this is to expand the education goals of DEL projects, we are not convinced that requiring applied linguists to be co-PIs is advisable. There is a lack of applied linguists with the training and interests to work with indigenous communities and any such requirement would inhibit the work. Moreover, this could significantly slow down work which is already time-sensitive. It is also not practical to imagine that we would find applied linguists with significant training in the contact language(s) outside of English and Spanish, so that this is probably not feasible outside of the Americas.

- How do we encourage a more theoretical grounding in submitted proposals?

An emphasis on teams for work on language documentation would facilitate a more theoretical grounding in the proposals.

Workshops for outreach and how to do work of this type are a great idea. In many situations potential researchers should be encouraged to team up with an academic linguist.

- How do we encourage more interdisciplinary involvement?

Adding a language acquisition component is one way to foster interdisciplinary work and to bridge the different goals of language revitalization and language documentation.

- A meeting of PIs to discuss DEL projects and outcomes is being considered. Would this be something that should be re-occurring (every two years?)

Yes, we endorse this initiative, especially because DEL is a relatively new program and documentary linguistics is an emerging field. This would enable people to learn from one another and have broad discussion of goals and best practices.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Glyne Piggott**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Norma Mendoza-Denton**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Christopher Manning**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Lenore Grenoble**

**Date:** \_\_\_\_\_

**Visitors for the Documenting Endangered Languages Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_

## 7. Geography and Spatial Sciences

**(BCS Note: Report reviewed by the Program Officers)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

<b>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</b>	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>16</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The review methods appear to be appropriate. The Geography and Spatial Sciences Disciplinary Review Group (GSS-DRG) thought that the process whereby the ad hoc reviews are synthesized by a panel is effective and the use of panel-only reviews for DDRI is appropriate. No site visits have been made since the last COV.</p>	<b>YES</b>
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews? On occasions individual reviewers do not address the broader impacts of the proposed research, which may be due to a lack of guidance from NSF or continued misunderstanding of what is being looked for. The GSS-DRG noted that this appears to be an ongoing issue having been raised in the last COV report.</p> <p>b) In panel summaries? The panel does a very good job of reviewing proposed research, including some of the broader impacts, and in pulling all the information together.</p> <p>c) In Program Officer review analyses? The program officer reviews appear to work well especially when there are differences of opinion among the ad hoc and panel reviews. Comments:</p>	<b>YES</b>
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: Some written reviews from ad hoc reviewers were limited in scope and provided information that was not always constructive to the PI.</p>	<b>YES</b>

<sup>16</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: Although they are sometimes brief, the panel summaries are clear with respect to the reasons why consensus is (or is not) achieved.</p>	<p><b>YES</b></p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: The group thought this was undertaken with great finesse frequently dealing with difficult reviews with considerable tact.</p>	<p><b>YES</b></p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: Usually PIs are provided with detailed information on the weaknesses of any proposal, although there were a couple of examples where more constructive comments would have helped.</p>	<p><b>YES</b></p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: The GSS program is more than keeping to the time-line goals.</p>	<p><b>YES</b></p>

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

By and large the number of reviews per proposal appears to be sufficient for effective assessment.

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

<b>SELECTION OF REVIEWERS</b>	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>17</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments: The GSS program seems to be selecting reviewers with the appropriate levels of expertise and interests; this includes inviting reviewers from a wide range of institutional types and from outside academe.</p>	<b>YES</b>
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?  Note: Demographic data is self reported, with only about 25% of reviewers reporting this information. Comments: The distribution of reviewers is balanced with respect to institutional type and geography, but the limited data on demographic diversity do not permit us to make a comment on participation by under-represented groups.</p>	<b>YES</b>
<p>3. Did the program recognize and resolve conflicts of interest when appropriate? Comments: In a number of cases reviewed by GSS-DRG, there was evidence that such conflicts had been identified and mitigated with panelists leaving the room and on one occasion a whole panel not commenting on a proposal.</p>	<b>YES</b>
<p>4. Additional comments on reviewer selection:</p>	

<sup>17</sup> If "Not Applicable" please explain why in the "Comments" section.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

<b>RESULTING PORTFOLIO OF AWARDS</b>	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>18</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.  Comments:  This is not a question.  The quality of the research supported by the GSS program is of high quality, although one could always debate the significance of particular components. The GSS program appears to be supporting “safe” ventures.</p>	<b>YES</b>
<p>2. Does the program portfolio promote the integration of research and education?  Comments:  In most cases, proposals include an educational component as part of the initiative; PIs are mentoring graduate students and occasionally undergraduates. In addition, some proposals focus on education and outreach. However, it is the outcomes of some of the research, that is the creation of knowledge, which will eventually be transformed into teaching and learning.</p>	<b>YES</b>
<p>3. Are awards appropriate in size and duration for the scope of the projects?  Comments:  Funding totals awarded by the GSS program range from small exploratory-type grants to partial support of large-scale interdisciplinary initiatives. However, average size of support has been increasing over the last few years from \$180,000 in FY 2006 to approximately \$200,000 in FY 2008. During the same time, the average duration of awarded projects has declined from 2.88 years to 2.44 years.</p>	<b>YES</b>
<p>4. Does the program portfolio have an appropriate balance of:  • Innovative/potentially transformative projects?   Comments:  The GSS-DRG discussed this at some length, but failed to come to a clear conclusion. It was felt that a detailed project-by-project review would be required to assess this appropriately.</p>	<b>Data not available</b>

<sup>18</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: The GSS-DRG commends the GSS on taking a leadership role in this capacity, especially within the Foundation.</p>	<p><b>YES</b></p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments:</p>	<p><b>YES</b></p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: The success rate of prior investigators is higher than that of new investigators. This might be expected given the experience of grant writing by many prior investigators. However, It should be noted that more proposals are being submitted by new investigators than prior investigators, thus the number of awards is roughly equal. The GSS-DRG felt that this is appropriate.</p>	<p><b>YES</b></p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: Forty-three out of the 53 states, districts and territories received awards during the 2006 to 2008 evaluation period.</p>	<p><b>YES</b></p>

<p>9. Does the program portfolio have an appropriate balance of:  <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> </p> <p>Comments:  Research-intensive institutions received approximately 70 percent of the awards; this seems appropriate.</p>	<p><b>YES</b></p>
<p>10. Does the program portfolio have an appropriate balance:  <ul style="list-style-type: none"> <li>•Across disciplines and sub disciplines of the activity?</li> </ul> </p> <p>Comments:  The GSS-DRG asked for a breakdown of awards based on sub-disciplinary areas for Geography and Spatial Sciences. Figures were provided for FY 2008 on six areas: Physical, Human-Environment, Human-Social, GIScience, Large-Scale Interdisciplinary, and Disciplinary Wide.  GSS Is not getting a large number of submissions from the GIScience sub-disciplinary area of Geography and Spatial Sciences. In FY 2008 there were only 13 senior proposals submitted in the GIScience field out of a total of 144 for GSS (9%).  The success rate of awards for human-environment proposals at 12% is substantially lower than that in other areas, which ranges from 23% to 31%.</p>	<p><b>NO</b></p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments:</p>	<p><b>Data not Available</b></p>
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p>	<p><b>YES</b></p>

13. Additional comments on the quality of the projects or the balance of the portfolio:

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: Excellent and innovative. The presence of a long-term leader and two dynamic program officers serves the program and field effectively.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: For the most part, the management of the program has been responsive to emerging research and education opportunities. However, some attention should be given to the number of GIScience submissions and success rates of the human-environment sub-fields.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments: The GSS-DRG commends the program's new name and strategic plan for focusing on science, in the broadest sense, and addressing theoretical developments, interdisciplinary endeavors and science and service to society.</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments: GSS responded well to previous COV recommendations.</p>
<p>5. Additional comments on program management:</p> <p>The GSS program staff performs very well especially given the large numbers of proposals that are submitted each year; the data show that GSS receives more proposals than virtually all other program. The award rate is also one of the lowest of all programs in BCS.</p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: "Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."**

Comments:

There are many examples and a whole range of projects supported by GSS that foster research to advance the frontiers of knowledge and establish the nation as a global leader in fundamental and transformational science. Some examples follow:

**1. Collaborative Research: Integration of Geographic Complexity and Dynamics in Geographic Information Systems.**

PI: May Yuan, [myuan@ou.edu](mailto:myuan@ou.edu)

Institution Name: University of Oklahoma Norman Campus

PI: Thomas Cova, [cova@geog.utah.edu](mailto:cova@geog.utah.edu)

Institution Name: University of Utah

PI: Michael Goodchild, [good@ncgia.ucsb.edu](mailto:good@ncgia.ucsb.edu)

Institution Name: University of California-Santa Barbara

Highlight ID: 12090; Award: 0416208,0416300, 0417131

**2. Three Awards:**

**(i) Cities, Regions, and Nations**

PI: Paul Krugman,

Institution Name: National Bureau of Economic Research Inc

**(ii) Economic Geography and International Trade**

PI: Paul Krugman,

Institution Name: National Bureau of Economic Research Inc

**(iii) Scale Economies, Product Differentiation, and International Trade**

PI: David Hartman,

Institution Name: National Bureau of Economic Research Inc

Highlight ID: 17437; NSF: 9321065, 9111380, 8006225

**3. CAREER: Urban Land-Use Change in Asia**

PI: Karen Seto, [kseto@stanford.edu](mailto:kseto@stanford.edu)

Institution Name: Stanford University

Highlight ID: 13911; NSF: 034986

**4. Collaborative Research: Complex Controls on the Distribution of Lightning Characteristics and Property Damage in an Urbanized Region**

PI: J. Anthony Stallins, [jastallins@fsu.edu](mailto:jastallins@fsu.edu)

Institution Name: Florida State University  
Highlight ID: 15568; NSF: 0241062

**5. CAREER: The Evolution of Transportation Networks: Empirical Research and Agent-Based Models**

PI: David Levinson, [levin031@tc.umn.edu](mailto:levin031@tc.umn.edu)

Institution Name: University of Minnesota-Twin Cities  
Highlight ID: 13104; NSF:0236396

**6. Local Labor Market Effects on Immigrant and Black Employment Outcomes**

PI: Virginia Parks, [vparks@uchicago.edu](mailto:vparks@uchicago.edu)

Institution Name: University of Chicago  
Highlight ID: 17504; NSF: 0525667

**7. Collaborative Research: The Role of the North Atlantic Oscillation (NAO) in Modulating Major Hurricane Activity in the U.S. on Interannual to Millennial Timescales**

PI: James Elsner, [jelsner@fsu.edu](mailto:jelsner@fsu.edu)

Institution Name: Florida State University

PI: Kam-biu Liu, [kliu1@lsu.edu](mailto:kliu1@lsu.edu)

Institution Name: Louisiana State University & Agricultural and Mechanical College  
Highlight ID: 13766; NSF: 0213980, 0213884

**B.2 OUTCOME GOAL for Learning: "Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."**

Comments: The learning outcome goals of much of the research supported by GSS will cultivate world-class, scientifically educated citizens. Some examples are:

**1. Spatial Thinking and Reasoning**

PI: Reginald Golledge, [golledge@geog.ucsb.edu](mailto:golledge@geog.ucsb.edu)

Institution Name: University of California-Santa Barbara  
Highlight ID: 12080; NSF: 0239883

**2. CAREER: Transforming the Politics of Place: GIS, Knowledge Production, and Community-Based Organizations in Urban Governance**

PI: Sarah Elwood, [selwood@u.washington.edu](mailto:selwood@u.washington.edu)

Institution Name: University of Washington  
Highlight ID: 17513; NSF: 0652141

**3. Thinking Spatially: The Incorporation of Geographic Information Science Across the K-12 Curriculum**

PI: Anthony de Souza, [adesouza@nas.edu](mailto:adesouza@nas.edu)

Institution Name: National Academy of Sciences  
Highlight ID: 12095; NSF: 0076284

**4. CAREER: The Evolution of Transportation Networks: Empirical Research and Agent-Based Models**

PI: David Levinson, [levin031@tc.umn.edu](mailto:levin031@tc.umn.edu)

Institution Name: University of Minnesota-Twin Cities  
Highlight ID: 13104; NSF:0236396

**5. Two Awards:**

**(i) SGER: Geomorphic and Human Consequences of the October 8, 2005, Northern Pakistan Earthquake**

PI: Lewis Owen, [lewis.owen@uc.edu](mailto:lewis.owen@uc.edu)

Institution Name: University of Cincinnati Main Campus  
Highlight ID: 16000; NSF: 0602675

**(ii) Global Positioning System (GPS) Constraints on Inter-Plate and Intra-Plate Deformation of the Indian Subcontinent**

PI: Roger Bilham, [bilham@colorado.edu](mailto:bilham@colorado.edu)

Institution Name: University of Colorado at Boulder  
Highlight ID: 16000; NSF: 0003449

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments:

Several projects reviewed by the GSS-DRG were devoted to building advanced instrumentation, cyberinfrastructure, and experimental tools. Some examples are:

**1. CAREER: Alluvial Fan Form Quantification to Advance Geographic Science and Education**

PI: Thad Wasklewicz, [wasklewicz@ecu.edu](mailto:wasklewicz@ecu.edu)

Institution Name: University of Memphis

Highlight ID: 12087; NSF: 0239749

**2. Collaborative Research: Integration of Geographic Complexity and Dynamics in Geographic Information Systems.**

PI: May Yuan, [myuan@ou.edu](mailto:myuan@ou.edu)

Institution Name: University of Oklahoma Norman Campus

PI: Thomas Cova, [cova@geog.utah.edu](mailto:cova@geog.utah.edu)

Institution Name: University of Utah

PI: Michael Goodchild, [good@ncgia.ucsb.edu](mailto:good@ncgia.ucsb.edu)

Institution Name: University of California-Santa Barbara

Highlight ID: 13191, 12090; Award: 0416208,0416300, 0417131

**3. CAREER: Exploring the Dynamics of Individual Pedestrian and Crowd Behavior in Dense Urban Settings: A Computational Approach**

PI: Paul Torrens, [torrens@geosimulation.com](mailto:torrens@geosimulation.com)

Institution Name: Arizona State University

Highlight ID: 16199; NSF: 0643322

## PART C. OTHER TOPICS

### C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

#### Reviewers

**Recommendation 1:** The GSS-DRG **recommends** that the GSS program work with AAG and other organizations (e.g. UCGIS, RSAI) to generate lists of potential reviewers.

#### Broader impacts

Discussion by the GSS-DRG focused on the value of specific scientific advances to society, while the NSF "Broader Impacts" (BI) criterion emphasizes education, diversity, infrastructure, dissemination, and benefits to society. We feel the last one is overlooked too often.

**Recommendation 2:** The GSS-DRG **recommends** that the GSS program encourage researchers to articulate broader impacts in substantive and specific ways that do not entail "boilerplate," paying particular attention to the potential impacts to society and societally relevant concerns. Each PI should be expected to articulate the value of her/his research, basic or applied, to society at large.

**Recommendation 3:** The GSS-DRG **recommends** that NSF overall, and the GSS program in particular, include two key elements in assessment of BI: the ability of the PI to articulate the projected societal benefits of the proposed research; and a plan for dissemination of project results and their implications to public beyond the academy.

**Recommendation 4:** The GSS-DRG further **recommends** that the GSS program lead the Directorate in developing researchers' abilities to communicate the import of scientific research to the broader public. GSS is uniquely positioned to lead this effort since geographic concepts and tools (space, place, proximity, maps, spatial visualization, spatial multimedia) can be key to this communication. Public communication and dissemination is too important to be left to chance or to the few who seem naturally able to do this.

#### "Geography and Spatial Sciences"

The GSS-DRG **applauds** the program's name change and the new strategic plan. Each articulates a vision of geography as a broad discipline with a vibrant core, and that the core focuses on spatial relationships and their creative analysis. While the spatial perspective has been core to geography for decades, technology and techniques have finally caught up with the ideas that have been formulated during this long period. It is increasingly possible to implement theory and models that recognize the disaggregated, complex, nonlinear, and institutionally influenced nature of natural and social systems, human behavior, and their interactions. It's important to recognize spatial thinking and recent technical advances as media for communication of inequality and social possibility, as well as being analytic tools. Analogously, it's important to see these advances used by researchers who focus on this broad variety of processes and concerns.

**Recommendation 5:** We **recommend** taking this opportunity to encourage proposals that: promise advances in basic GIScience; and integrate spatial perspectives into social, behavioral, and natural sciences.

**Recommendation 6:** We **recommend** developing a major new initiative to take advantage of the opportunities in spatial analysis and visualization in the social, behavioral and natural sciences.

**Recommendation 7:** In the near term, we **recommend** a set of workshops that could seed the work toward such an initiative. Spatial relationships can be seen as a basis for integrating research across these fields.

**Recommendation 8:** The program has played a leadership roles in interdisciplinary initiatives across the Division, Directorate, and Foundation. We applaud this and **recommend** that this role continue, with spatial perspectives as part of the integrating rubric. Given the widespread recognition of the value of these perspectives, tools, and technologies, other programs should be receptive.

#### Sub-disciplinary areas within GSS

**Recommendation 9:** We **recommend** that the program develop standard definitions of subfields funded, such as natural-science-based geography, human geography, human-environment interaction, GIScience. After settling on some definitions, the program should track the number of proposals and awards, success rates, funding levels.

**Recommendation 10:** The number of proposals focused on advances in GIScience (5 senior proposals in FY06, 5 in FY07, and 13 in FY08) seems low to the GSS-DRG, in light of the size and research activity of this subfield. The GSS-DRG **recommends** that program officers investigate (to the extent possible) whether this reflects potential PIs making use of other funding opportunities, versus potential PIs being frustrated and their research unfunded, versus some combination.

**Recommendation 11:** GSS program officers conducted a quick counting of “senior” proposals and awards in FY08 by subfield. According to this informal accounting, only 12% of the 42 human-environment proposals resulted in awards, compared to an average rate of 22% across the 144 proposals. While we do not have enough information to express concern over this, we **recommend** that the GSS program investigate and analyze success rates across subfields which would be instructive to panels, program officers, and future COVs.

#### **Size and duration of awards**

Awards by GSS range from small, exploratory-type grants to large-scale interdisciplinary initiatives. However, average size of support has been increasing over the award period (from approximately \$180K in FY06 to \$200K in FY08). During the same period, the average duration of awarded projects has declined from 2.88 to 2.44 years. This moderate increase in average support per year suggests the program officers recognize the inflationary pressures on basic research, which we **applaud**.

#### **Resources**

**Recommendation 12:** Over the FY06-FY08 period, the average success rates for GSS proposals were 18.8% for “senior” proposals managed by the program (including CAREER) and 34.4% for dissertation-improvement awards. These rates are lower than for most programs in the Division, and the success rate for senior awards is lower than the Foundation average. In addition (from our observation of the sample of jackets), most proposals deemed fundable by the relevant review panel are not funded. Based on this and based on knowledge of active researchers who do not seek funding through the program, the GSS-DRG **recommends** increased funding for the GSS program, to allow it to make highly productive investments.

**Recommendation 13:** The previous COV report noted the disproportionately high proposal load per program officer. Since then, the addition of a rotator position has increased the scientific staff from 1.5 to 2.5. This is a positive development, allowing GSS to continue its leadership of interdisciplinary activities in the Foundation. The increased participation that the GSS-DRG hopes to see from GIScience researchers, the potential for a successful new initiative (based in but operating beyond the Program), and the growth of proposals and awards stemming from the “bow wave” of Federal stimulus spending, may mean that this 2.5 FTE will become insufficient for GSS to play the leadership roles it has played. We **recommend** that the Division monitor the possibility of adding staff resources and/or seeking creative alternatives (e.g. reviewer selection shared by related programs, part-time staffing) to facilitate program management.

#### **Exploratory and “risky” research**

**Recommendation 14:** The GSS-DRG **recommends** that the GSS program seek and fund proposals that may be considered exploratory, “risky,” or at the frontier of what’s been tried before. The EAGER funding opportunity is a way to accomplish this without formal external review. We would like to see some of these awards made over the next three years (not necessarily at the maximum funding level allowed for EAGER grants). The track record and research performance of the PI would likely play a larger role in the assessment process for such awards.

### **C.2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.**

See above

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

#### **Reviewers**

**Recommendation 15:** The GSS-DRG **recommends** that NSF automate the reviewer request process so that reviewers receive a request: if they agree, they gain access to the proposal; if they decline they’re asked for suggestions of alternative reviewers. Reminders of due dates should be automatically generated.

#### **Broader Impacts**

**Recommendation 16:** The GSS-DRG **recommends** that NSF overall, and the GSS program in particular, include two key elements in assessment of BI: the ability of the PI to articulate the projected societal benefits of the proposed research; and a plan for dissemination of project results and their implications to public beyond the academy.

**Exploratory and Risky Research**

**Recommendation 17:** The GSS-DRG **recommends** that the Foundation develop a program through which established and highly productive researchers could obtain several years' funding for a specific-yet-evolving research agenda. The purpose and criteria would include the prospect of discoveries that benefit a swath broader than a single project or a single discipline. Like the CAREER program, this program would invest in the individual as much as the science.

**C.4. Please provide comments on any other issues the COV feels are relevant.**

See below

**C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

**Recommendation 18:** The GSS-DRG suggests that Section A include specific questions that incorporate a Likert Scale measure rather than simple Yes/No responses. Many current questions are quite complex but require a simple response.

**Recommendation 19:** The GSS-DRG felt somewhat constrained by the lack of data in some areas and could not make an effective evaluation. It is recommended that NSF keep an interactive data base that allows for the tracking of important criteria such as submissions, awards, program areas, disciplinary sub-fields, institutions, geographic distribution, PI and reviewer demographics, etc. The GSS-DRG often needed mid-level data rather than macro and micro-level statistics to undertake its evaluation. We were provided with a sample of the jackets (micro level) and limited aggregate statistics (macro level). It would have been useful to have had cross-tabulations across all the dimensions of interest at different levels of aggregation in the COV process.

**C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- Following development of a strategic plan, steps are underway to implement that plan, including the renaming of the Geography and Regional Science Program to be the Geography and Spatial Sciences Program. In addition to strategies identified in the strategic plan, would you suggest the program consider any other new or targeted activities or initiatives? If so, what would those activities or initiatives be, and would you recommend they be given priority over other specific activities and initiatives identified in the strategic plan?

See above Section C1.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Harvey Miller**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**J.W. Harrington**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Graham Tobin**

**Date:** \_\_\_\_\_

**Visitors for the Geography and Regional Science Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_

## 8. HOMINID program

**(BCS Note: Report reviewed by the program officers)**

We greatly value the concept of the HOMINID program. In regard to the potential and actual contributions of the HOMINID program to complexity science, infrastructure, and interdisciplinary research, we see HOMINID as a natural vehicle for realizing all these emphases. Indeed, the HOMINID program amplifies the abilities of the separate Archaeology and Physical Anthropology programs to realize their great potential in these areas. Many of the projects that have been undertaken under this competition have been among the most viable, transformative, and interdisciplinary programs that we see at NSF. These include, for example, projects that examine the dynamic between environmental and climatic change and human adaptability; the relationship between musculoskeletal biomechanics and dietary change; and the use of modern DNA to track global ancestral diasporas. These and other HOMINID projects have provided deep insight into the profound changes that have led to the evolution of our species.

Hence, our comments that follow begin with the assumption that this is an extraordinary program and deserving of continued and enhanced NSF support. That said, we have a number of relatively minor concerns, and some proactive suggestions aimed at making this fine program even stronger:

1. Based on our examination of the funded projects, we are concerned that, in some cases, the whole is not greater than the sum of the parts and does not justify the size and scale of awards.
2. We are concerned with the small number of submissions focusing on archaeological research.
3. We are concerned about the 'proposal creep'. Over the years proposals seem to have moved from general, transformative research, to more specific projects that, save for their budgets, might fit better within the traditional confines of Archaeology or Physical Anthropology programs.
4. We are concerned that the frequent COI status of the Archaeology Program Officer in handling HOMINID proposals and the rotator status of the Physical Anthropology Program Officer deprive the program consistent, focused leadership.

To address these few issues, we recommend taking the following general and specific actions:

1. That an additional deadline be put in place 6 months in advance of the Full Proposal Deadline, and that on this occasion the PIs submit a letter of intent and a brief preliminary proposal outlining their proposed research and in particular how it will meet the criteria of the HOMINID program, including its transformative and integrative components.
2. That the Program Officer(s) in consultation with relevant personnel then assesses the viability of the project and its fit with the HOMINID Program, and provide that feedback to the PI.
3. Although we recognize that this does represent additional work for the Program Officer, we believe this will have the dual benefit of stimulating interested in the program and insuring full proposals are appropriate for consideration within the HOMINID Program. This in the end will save everyone time and lead to a more efficient process.
4. Re-launch a public relations campaign (along the lines of what was done when HOMINID was first created), to re-introduce the program, calling particular attention to the expanded array of research possibilities outlined in the 2009 Program Solicitation (NSF 09-512).
5. That NSF hire, on a 3 year contract basis, 2 non-NSF individuals (an archaeologist and a physical anthropologist), who would serve as Program Officers for the HOMINID competition.

In regard to NSF 09-512, we would offer the following friendly amendments:

In the first sentence of the 'Synopsis of Program,' please insert the word 'cultural,' so the sentence reads "... biological, physical, behavioral, and cultural interrelationships that led to ..."

Amend the sentence on page 4 of the Program Announcement, as follows:

"Researchers are encouraged to integrate and apply a broad range of approaches and techniques to tightly defined and clearly justified transformative questions of human evolution, both biological and cultural. To illustrate the potential range of such broad endeavors, projects might address topics such as:"

In regard to the question about whether PIs should be encouraged to apply for continuation funds, we would not change the statement as it currently reads.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Agustin Fuentes** Date: \_\_\_\_\_

\_\_\_\_\_  
**William Jungers** Date: \_\_\_\_\_

\_\_\_\_\_  
**Sara Stinson** Date: \_\_\_\_\_

\_\_\_\_\_  
**Melinda Zeder** Date: \_\_\_\_\_

\_\_\_\_\_  
**Tim Earle** Date: \_\_\_\_\_

\_\_\_\_\_  
**David Meltzer** Date: \_\_\_\_\_

**Visitors for the Human Origins Moving in New Innovative Directions (HOMINID) Program**

\_\_\_\_\_  
Date: \_\_\_\_\_

**Susan Cutter, Chair**  
**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

## 9. Linguistics

**(BCS Note: Report reviewed by the program officers)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>19</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>We believe the program makes very effective use of the combination of expert ad hoc reviews with the broader, comparative perspective of panel reviewers.</p>	YES
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses</p> <p>Comments:</p> <p>Both merit review criteria were addressed in every individual review, panel summary and program officer review analysis that we examined. For individual reviews, evaluation of broader impacts ranged from cursory to detailed, but broader impacts were adequately addressed in all cases in the panel summaries and program-officer review analyses.</p>	YES
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>The quality of detailed evaluation of the merit of proposals is just impressively high. In almost all cases there were thoughtful, knowledgeable, positive discussion of the pros and cons of proposals.</p>	YES

---

<sup>19</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The panel summaries did a good job in reflecting the reasons for panel decisions.</p>	<p>YES</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: As above.</p>	<p>YES</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: As above.</p>	<p>YES</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:  The linguistics program officers should be congratulated for their efficient running of the review process. In particular, their time to decision statistics are well above agency targets.</p>	<p>YES</p>

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

The COV strongly commends the detailed, efficient and high quality review process that is currently taking place within the linguistics program.

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>20</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: The program officers appeared to have been very effective in getting reviews from knowledgeable experts.</p>	YES
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information. Comments: The COV felt that self-reported data from a non-random one-quarter of the reviewers could not be used as a reliable basis for determining balance of reviewers with respect to institution type and underrepresented groups. The geographic distribution of reviewers was considered well-balanced (given the population distribution of the US).</p>	DATA NOT AVAILABLE
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: Yes. The program officer's work in broadening the pool of reviewers has assisted in minimization of potential COIs.</p>	YES
<p>4. Additional comments on reviewer selection:</p> <p>The program officers do an exemplary job in personally contacting reviewers before formally asking for a review through the NSF system. This approach has worked to increase the pool of reviewers, to uncover more COIs, and to improve the response rate.</p>	

---

<sup>20</sup> If "Not Applicable" please explain why in the "Comments" section.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>21</sup>
<p>1. Overall quality of the research and/or education projects supported by the program. Comments: We noted that the quality of research supported by the program is generally high.</p>	YES
<p>2. Does the program portfolio promote the integration of research and education? Comments: There are certainly some proposals that strongly integrate undergraduate and graduate education into research projects, and we feel that the Linguistics program's support of workshops at venues like the LSA Summer Institutes is a very effective way of combining research and education. Nevertheless, overall, we saw insufficient evidence of this, and some missed opportunities.</p> <p>CAREER grants are one effective mechanism designed by the NSF to promote integration of research and education. The low rate of CAREER awards prevents this mechanism being effective in Linguistics, even though we understand and appreciate the reason for this low rate (insufficient budget to allow portfolio diversity). Effectively, the high minimum for CAREER grants, which was meant to increase money for young researchers, has instead led to CAREER grants not being awarded in areas like Linguistics, hence decreasing support for young faculty, and decreasing integration of research and education.</p> <p>RECOMMENDATION: The Foundation should examine more flexible, discipline-specific minimums for CAREER grants to enable and encourage their award in Linguistics (and SBE more generally – Linguistics actually awards more CAREER grants than some other areas of SBE).</p> <p>Secondly, we would encourage more support for integrated research. Notwithstanding the small number of 4- and 2-year colleges with linguistics, it is precisely by supporting efforts in these places that Linguistics will grow within them. Similarly, we feel that more could be done to encourage Linguistic research integrated with educational outcomes aimed at K-12.</p>	NO
<p>3. Are awards appropriate in size and duration for the scope of the projects? Comments: In the last three years, the program has increased the average size of grants from &lt;80K (incl. indirect) to 100K per year. This is a very positive change, given the costs of carrying out many forms of innovative research. Given the restricted overall size of the Linguistics Program budget, the Committee feels that the current grant size is a good balance between sufficient money for innovative research and being able to support a reasonable number of worthy proposals.</p>	YES

<sup>21</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments:</p> <p>There is much transformative work taking place in technological innovation (MRI, ultrasound, electronic databases). However we also feel that the program should look for a balance between technologically transformative projects versus theoretically or pedagogically transformative ones. Transformative research in the latter categories has tended to be harder to argue for and harder to recognize.</p>	<p>YES</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments:</p> <p>A strength of the program is its multidisciplinary projects. We see EE in MRI, ultrasound imaging and other speech projects, computer science in various computational linguistics projects, psychology in psycholinguistics and language acquisition research, sociology and anthropology in sociolinguistics and language typology work, and neuroscience methods for linking linguistics with the brain.</p>	<p>YES</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments:</p> <p>There seems to be a good mix of smaller and larger projects.</p>	<p>YES</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>There is an enormous problem in supporting new researchers. The track record in general is poor, but in particular, the data from 2008 is appallingly bad for new researchers, with only 7% of applicants having successfully gotten an award. This is absolutely a terrible number, which will discourage and prevent the success of young or new scientists and contrasts with the success rate of 35% for prior awardees – a 5 to 1 ratio.</p> <p>RECOMMENDATION: Steps have to be taken to rectify this immediately. We would suggest that future panels should consider applicant's status as a new versus experienced investigator in their decision-making, and be presented with statistics of proposed actions in tabular form, similar to the statistics provided to us</p>	<p>NO</p>

<p>for this question.</p>	
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments:  A couple of New England states do stand out for their high acceptance rates (around 50% or more), and a few states are notable for their low acceptance rates (under 20%) off a reasonable base of applications: AZ, OK, GA, FL. Some attention to these data would be useful, but in general the data are reflective of the distribution and strength of research universities across the country.</p>	<p>YES</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments:  There appears to be no problem with supporting work from 2yr, 4yr, and non-PhD institutions and EPSCoR states, when submitted. The main goal has to be to increase the research potential and hence the submission of proposals from such institutions. There may be possibilities here for greater NSF outreach.</p>	<p>YES</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments:  The Linguistics program does a good and appropriate job at supporting research in the Linguistics Sciences, broadly defined.</p>	<p>YES</p>

<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: The committee notes an apparently encouraging trend in increasing total numbers of awards to minority investigators, but recognizes an overall disparity in proportion of awards and declines for underrepresented populations.</p>	<p>NO</p>
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The linguistics program portfolio speaks to Foundation goals of supporting transformative and multidisciplinary research and investigating the human and social dimensions of knowledge (as discussed above). Much work addresses advancing the fundamental knowledge base on learning, The phonetic and computational work often addresses issues of high relevance to national security. The language acquisition research of the CELEST NSF Science Learning Center is specifically highlighted in the NSF's 2006-11 Strategic Plan (note: this is only one strand of CELEST's overall research mission).</p>	<p>YES</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

**A.4 Management of the program under review.** Please comment on:

1. Management of the program.

Comments:

The program has been managed extremely well. We note with pleasure the greater staffing of the program, which should make continued good management possible without unreasonable workloads.

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

Comments:

The program can be commended for supporting emerging directions including use of new technologies, large databases (cyberinfrastructure) and expanding into emerging issues (documenting endangered languages, now its own program).

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:

We don't really have a good sense of this. There is a rough historical organization of the portfolio (which seems perfectly adequate), and the Program Officers seem to have a good sense of emerging areas, but we're not sure how or whether this is explicitly planned and prioritized.

4. Responsiveness of program to previous COV comments and recommendations.

Comments:

The program officer gave a thoughtful and thorough response to the last COV. Many of the issues mentioned there have been addressed (more program staffing, larger award sizes, more emphasis on transformative/high-risk research) or were appropriately judged to not actually be a problem (portfolio distribution across areas, the funding of dissertation development awards). Some of the more difficult issues are still ongoing areas of concern, such as diversifying the portfolio with respect to institution type.

5. Additional comments on program management:

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."***

Comments:

Advancing the frontiers of knowledge is NSF's mission. Within linguistics this is being accomplished by projects such the one being conducted by Drs. John McCarthy and Joseph Pater from University of Massachusetts - Amherst (award number 893829 BCS note added in review: the correct award number is 0813829). McCarthy and Pater have an ambitious plan to apply novel computational techniques to the problem of testing Harmonic Serialism and Harmonic Grammar, extensions to the constraint-based framework of Optimality Theory, one of the dominant theoretical frameworks for phonology.

Dr. Adele Goldberg at Princeton University (award number 0613227) is fostering innovation in how we understand constructions in language. Extending previous NSF-funded research, she finds that kindergarteners, for example, can identify the meaning associated with a novel construction (without relying on morphology) after only three minutes. The speed of construction learning comes with complex caveats: construction learning is facilitated by input that is skewed in a way that one type of example accounts for the preponderance of the input. This finding alone has tremendous implications for foreign language learning.

At West Virginia University, Dr. Kirk Hazen (award number 0743489) is analyzing ten features of Appalachian English, an understudied and disappearing dialect of English. This work will fill a gap in our knowledge of dialect classification in the American South, and by taking account of both phonological and syntactic features, it promises to settle some of the controversies surrounding the status of Appalachian English.

**B.2 OUTCOME GOAL for Learning: “Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens.”**

Comments: Achievements in this area include the support of the Ohio State University mini-institute in linguistics (PI Dr. Elizabeth Hume, award number 0822719), which took place immediately following the LSA 2008 Summer Meeting, a meeting of the Linguistic society specifically geared to help students hone their public presentation skills and to develop strong connections with faculty. At the mini-institute, four courses on innovative methods were taught by prominent scholars, including a course on quantitative methods by Mary Beckman and a course on the use of eye-tracking research methods by Shari Speer and Kiwako Ito. NSF's support helped to ensure that room and board were available free of charge, travel grants were available to student participants, and the registration fees for the institute were kept to a minimum.

Enhancing the scientific literacy of our youngest scientists was the goal of an NSF award to Dr. Lori Levin at Carnegie Mellon University (award number 0633871) for the first North American Computational Linguistics Olympiad. This event helped prepare an American delegation of high-school students to the International Linguistics Olympiad held in St Petersburg, Russia.

We commend NSF for supporting projects that reach national and international audiences, such as the film *The Linguists*, which premiered at the Sundance film festival and has received wide critical attention.

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments: NSF fosters new interdisciplinary connections and expands the research capacity of linguistics by taking advantage of brand-new experimental tools and advanced instrumentation. Two important projects have been funded using the technique of ultrasound imaging to look at phonetic production.

A collaborative grant to Drs. Amanda Miller of Cornell University and Bonny Sands of Northern Arizona University (award numbers 0726198 and 0726200) utilizes portable ultrasound imaging to document a previously undescribed sound, a click found in Grootfontein, Namibia. Not only is the description of a novel sound extremely rare and theoretically important, but in addition their findings have shown that the tongue root is more important in the organization of these sounds than was previously thought.

In the area of language learning, Lisa Davidson of NYU won a CAREER award (NSF award 0433567) to better understand the production of articulatory coordination of the sound systems of different languages.

Two projects stand out as making use of cyberinfrastructural developments in the area of less expensive data storage capacity and faster connectivity. Dr. Deb Roy at MIT was awarded funding for the Human Speechome project (SGER Proposal 0554772), an unprecedented effort to collect a multimodal record of a single child's development. Using a network of video-cameras and microphones installed around the child's home, Dr. Roy is collecting the most complete (to date) record of a child's environment leading up to the acquisition of the child's first words. This project was written up in *The New York Times* in January 2008, giving the agency visibility and highlighting public interest in this scientific project.

The Talkbank project by Carnegie-Mellon researcher Dr. Brian MacWhinney provides a widely-accessible database for the sharing of data that has been collected in individual research projects. Researchers contribute transcribed data and make it available to the broader research and teaching community. In this way, a wide variety of audio and video records collected in international and historical contexts become available for data mining, and analysis. This particular NSF investment provides a continuing return because it enables new uses of available data and improves accessibility of scientific materials over the web.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

RECOMMENDATION: (See also A.3.2 and A.3.7) Provide more funding and incentives for new researchers to establish themselves. This should work towards correcting the imbalance of new/established researchers. Awarding CAREER awards in particular (perhaps more appropriately sized to the BCS) has many potential benefits: It provides funding to new, usually young researchers, it lifts the profile of linguistics in the eyes of deans and other university administrators, it helps to promote linguistics within science more generally (PECASE program, etc.), and it encourages new researchers to formulate groundbreaking long term (5 year) research programs.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

(covered adequately above)

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

NSF should consider making the size of CAREER awards more flexible, so they can be better adjusted to individual programs such as Linguistics (and BCS more generally) and to the needs of individual researchers. We believe the minimum amount of CAREER awards must originally have been set with the goal of getting more support given to new researchers, but within BCS it appears to have had the opposite effect of leading Program Officers to not award CAREER awards because the funding level of an individual CAREER award becomes too high a percentage of the Program Officer's yearly budget. There is also perhaps some need for cultural change: we got data showing that 30% of funding within the Robust Intelligence program (which funds Computational Linguistics) went out in CAREER awards; BCS program officers have not tended to show the same priority towards funding new/young researchers. **(BCS NOTE added in review: Correct figure for Robust Intelligence program is 20%)**

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

We would suggest in future that the DEL panel and the Linguistics panel be separately convened. Things were complex this time, since DEL was a fully independent program for only one year, and many DEL grants were within the Linguistics portfolio. But nevertheless, the end result was that our group of 4 people needed to generate 2 reports in the time that other groups of 3 people generated 1 report, which unfortunately decreased the amount of time we had available for high-level programmatic discussion.

The COV wishes to commend the work of the Program Officer in maintaining and reenergizing the Linguistics Program during a time of transition to a Linguistics/DEL separation.

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

Generally good. The one-size-fits-all template has occasional limitations. Accessing a large sample of grants, reviews, summaries, etc. of grants in eJacket takes much more time waiting for pages to reload than is desirable for busy committee members.

### **C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- Is the Portfolio Balance with respect to linguistic subfields appropriate?

YES. There is a good balance between supporting core areas of linguistics and supporting broader multidisciplinary advances in the language sciences.

- The Linguistics Program currently is not funding methods training projects. Should we solicit such projects and, if so, what kind? For the further training or re-training of post-PhD professionals? For the training of graduate students in areas not typically emphasized in graduate education? Other?

YES. We encourage the pursuit of more workshop and methods-training options, which could ideally cover people ranging from graduate students to mid-career professionals. While also supportive of independently held workshops and training sessions, we see the best opportunities for organizing such activities and achieving broad impact and participation to be by attaching them to activities such as summer schools and conferences. For instance, the 3-day methods pre-courses prior to the 2007 LSA Summer Institute were very well attended and effective.

- What kind of infrastructure does the field need that we might encourage and support? What sort of infrastructure might be potentially transformative in terms of the way linguists do research or in terms of what linguists research?

Some of the infrastructure needed in the field that could potentially transform representation and understanding of language would be funding of initiatives that would enable multimedia and multimodal studies of language (gestures and faces as well as speech), and work that would enable large-scale comparative studies of language (whether across languages or across users of one language). Twenty-first century linguistics stands to be transformed by large-scale data, as opposed to the fieldworker's notebooks of the first half of the 20th century. But this kind of research requires infrastructure and tools to support data storage, search, comparison, and modeling.

- The Linguistics Program currently has an unofficial policy of capping summer salary at a maximum of \$10,000 per PI/co-PI per year, except in unusual situations, i.e. when the PI has an unusually heavy teaching load (e.g. 8 courses a year) or is entirely dependent on grant money. Should this policy be changed, and if so, in what direction?

We support the continuation and maintenance of the established norms.

- Research Experience for Undergraduates (REU) Supplements: Currently supplements are submitted any time of the year and reviewed/funded by the Program Officer on case-by-case basis. Everything funded by the Linguistics program is from a single budget so funding depends partly on availability, and partly on the best allocation of funds to support the research development in the field. The REU and regular supplement mechanisms are used less frequently by some PIs than others, whether through lack of knowledge or lack of students is unclear. Would it be more equitable and/or effective to set a yearly deadline and review them together? How much of the program budget should be allocated to REU supplements?

We support the establishment of a deadline for review of REUs in linguistics. We hope this would encourage researchers to plan accordingly.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Glyne Piggott**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Norma Mendoza-Denton**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Christopher Manning**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Lenore Grenoble**

**Date:** \_\_\_\_\_

**Visitors for the Linguistics Program**

\_\_\_\_\_

**Date:** \_\_\_\_\_

**Susan Cutter, Chair**  
**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

## 10. Perception, Action, and Cognition

**(BCS Note: Report reviewed by the program officers)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>22</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: We did not encounter a site visit. Ad hoc reviews are generally inefficient -- they are difficult to obtain and potentially less influential at the time of review because the author of the review is not present at the panel meeting to defend the critique.</p> <p>The structure and size of the panel might lack continuity, or breadth.</p> <p>To gain the benefit of continuity in service and breadth of expertise, the COV recommends that a portion of the panel present at the discussion of applications be composed of standing members, a second portion composed of regular occasional members, and a third of ad hoc reviewers. These are proposed as methods to try, rather than firm convictions about improving peer review.</p>	YES
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses</p> <p>Comment: Uncertainty about the meaning of Broader Impact limits the evaluation of this aspect of review.</p>	YES to all
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: The COV recognized the generally high standard met by reviews. However, a small number of reviews sampled by the COV were too brief to be sufficiently informative. See A.1.4.</p>	YES

<sup>22</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: RECOMMENDATION: On the few occasions when reviews are terse, the panel summary bears more of the burden of conveying the rationale to the applicant. Program Officers observing a brief review should flag this to the scribe in advance, fostering a thorough summary. This will insure useful feedback to the applicant. We intend this as a way to improve transparency of the actions of NSF panels.</p>	<p>YES</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: The COV was consistently impressed by the combination of reviews and review analyses in justifying the funding decisions. Overall, the Review Analyses were more detailed and thorough than the reviews and panel summaries. See A.1.6.</p>	<p>YES</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the Program Officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: The combination of Panel Summary and reviews is together adequate for the PI to understand the rationale. RECOMMENDATION: To inform the PI sufficiently about the rationale for the award/decline decision, it would be salutary to provide as much of the Review Analysis in the Panel Summary as discretion and kindness allows.</p>	<p>YES</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments:</p>	<p>YES</p>

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

The COV observed variation in the size of review panels, and in the continuity of individual service on panels.

**RECOMMENDATION:** To gain the benefit of continuity in service and breadth of expertise, the COV recommends that a portion of the panel present at the discussion of applications be composed of standing members, a second portion composed of regular occasional members, and a third of ad hoc reviewers.

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>23</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Comments:</p>	YES
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information. Comments: Despite progress, the discrepancy in institutional origins of applications and origins of reviewers noted by the 2006 COV persists, and should be addressed. However, the COV commends the practice of recruiting reviewers from members of Research-Intensive PhD Institutions, by far the largest segment of reviewer and applicant population. Self-report measures are inadequate to characterize the reviewers. It is unclear why there are so many reviewer institutions designated as "UNKNOWN" in the table "Reviewers by Institution Type." Fifteen percent of reviewers are categorized as "Business, State, Local, Foreign, and Other." The COV commends the practice of calling on the international community for reviews, but would like this component to be disaggregated from the rest in order to insure proper tracking of this contribution of to the reviewer set .</p>	DATA NOT AVAILABLE
<p>3. Did the program recognize and resolve conflicts of interest when appropriate? Comments:</p>	YES

---

<sup>23</sup> If "Not Applicable" please explain why in the "Comments" section.

4. Additional comments on reviewer selection:

COMMENT: The increasingly global character of research communities demands increasing participation of the international community in review.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

<b>RESULTING PORTFOLIO OF AWARDS</b>	<b>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE<sup>24</sup></b>
<p>1. Overall quality of the research and/or education projects supported by the program.  Comments: The quality of the awarded proposals is strong. This noted strength can be attributed to the quality of peer review and to the scientific judgment of the Program Officers. However, see §A.3.10 for the COV comments on the balance of the portfolio.</p>	YES
<p>2. Does the program portfolio promote the integration of research and education?  Comments:</p>	YES
<p>3. Are awards appropriate in size and duration for the scope of the projects?  Comments: The COV recognized that the average funds per year were insufficient for the scope of the research projects. PAC occupies a central role within the Directorate and participates with 6 other programs in review and support of research in addition to collaborations with outside agencies. This fundamental role is not presently reflected in the allocation of funding for distribution within the PAC portfolio nor is it reflected in the staffing assigned to carry out a program of such broad base and impact.  RECOMMENDATION: The COV recommends a larger budget for PAC, to permit more adequate funding of individual projects, funding of a greater number of projects, and adding the needed support staff (AAAS Fellows, APA Fellows, Science Assistants and Program Assistants). It would be salutary for NSF to provide additional monies to support pre-doctoral scientists, which is critical to broadening participation in science.</p>	NO

---

<sup>24</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: It is difficult to judge the balance between projects that provide depth of fundamental research and projects that transform the field of perception, action and cognition. The COV expressed discomfort with the designation of a project as transformative well before its effects can be known through published work, citations to that work, and new projects building upon it in useful, productive and exciting ways. The COV preferred to weigh the quality of proposed research and its potential importance. Creating a context in which each applicant must sell proposed research as transformative is not necessarily helpful to the overall progress of the field. Importance can arise by extending the field, by filling in critical gaps in understanding, and in developing original applications of the research in real-world settings, as well as by pursuing high-risk, high-reward projects.</p>	<p>DATA APPLICABLE      NOT</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: The COV saw many instances of cooperative reviews and sponsorship with other programs, as well as projects that were adequately assigned to PAC.</p>	<p>YES</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: The COV observed that a majority of projects received the same budget.</p>	<p>NO</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: The COV observed that projects submitted by new investigators are funded at a slightly lower rate than projects submitted by prior award recipients. Overall, a reasonable portion of the portfolio is composed of projects submitted by new investigators. The COV would like to know the program goal for concluding that the portfolio has appropriate balance.</p>	<p>YES</p>

<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments:</p>	<p>YES</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: The COV observed that a small proportion of applications originate from scientists at 4-year colleges, but that these have a differentially higher success rate. Increased dissemination of information about funding opportunities to these colleges is likely to increase their submission rate. The COV believes more generally that increased emphasis on undergraduate involvement in research, regardless of institution type, would be good for the field.</p>	<p>YES</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments: The COV observed that the PAC portfolio does not fully represent the topical concerns of researchers within cognitive psychology, nor does the portfolio approximate proportional representation of the research within perception, action and cognition. In particular, it was surprising to the COV that research on attention, learning and memory were so sparsely represented. However, Program Officers were helpful in explaining Federal-wide sponsorship of cognitive psychology, and it is reasonable to conclude that in combination with research supported by other agencies that the field is well represented. Program Officers also described their role in referring potential applicants to the appropriate sources of support, whether this included another program within the NSF, or to NIE, ONR or AFOSR.</p>	<p>NO</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: The COV found that 30% of minority PIs and Co-PIs received funding, in contrast to 41% of non-minority applicants. This is a heartening trend. The COV encourages NSF's continued outreach to appropriate individuals and institutions. The COV found that the funding rate for female and male applicants was similar (39% and 41%, respectively) but the submission rates differed greatly, women submitting less than half as many applications as men. RECOMMENDATION: NSF should consider innovating mechanisms of support for outreach and active support of women's careers, and continue its laudable efforts to involve increasing numbers of minority applicants, reviewers and panel members.</p>	<p>NO</p>

<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The COV found that all of the proposals were relevant to the first arm of the agency's mission ("to promote the progress of science"); the results derived from many projects would be relevant to the second arm of the agency's mission ("to advance the national prosperity and welfare"); but, none in our sample were specifically relevant to the third arm of the agency's mission ("to secure the national defense"). All proposals were relevant to the national priority of maintaining leadership in science, engineering, and scientific instruction.</p>	YES
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: The COV was impressed by the Program Officers, who expressed astute scientific judgment, conviction in the mission of the NSF, and deep understanding of and commitment to the importance of review and deliberation about scientific merit.</p>
<p>2. Responsiveness of the program to emerging research and education opportunities.</p> <p>Comments: The COV found that the Program Officers were both receptive to advice and active in seeking information about new opportunities in research and education.</p>
<p>3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.</p> <p>Comments: The present Program Officers are both relatively new to NSF. They inherited an established portfolio largely shaped by previous funding decisions, and have spent considerable effort mastering that portfolio, interacting with potential applicants, and learning about other programs and agencies that are alternative sources of support for cognitive science, including establishing co-funding and referral relationships with those sources. Thus their activities are a combination of bottom-up reaction to the field and top-down attempts to organize topical coverage within PAC and coordinate it with coverage of other funding sources. They have developed one initiative, to increase and better integrate computational methods and modeling into program concerns.</p> <p><b>(BCS NOTE: This is a goal of the PAC POs, but as yet there is no formal initiative)</b></p> <p>We commend the Program Officers efforts' to identify the existing portfolio, and we recommend movement toward establishing a more balanced profile of projects that better reflects the whole range of research topics in the study of perception, action, and cognition (see comments in Section A.3.10).</p>
<p>4. Responsiveness of program to previous COV comments and recommendations.</p> <p>Comments: The 2009 COV found that the responsiveness of the Program Officers to the 2006 COV was very helpful.</p>
<p>5. Additional comments on program management:</p>

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: "Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."**

Comments: Many proposals describe work at the frontiers of the study of perception, action, and cognition. A particularly strong example is Proposal 0646558 by Gordon Logan at Vanderbilt University. The work integrates theory, modeling, and experimental research on executive control, attention, and memory. The proposed research will develop a theory of performance that links existing theories of attention and categorization to theories of short-term and long-term memory, with the aim to provide integrated explanations of executive control for simple and complex tasks. A nice feature of this project is that it integrates training of undergraduate researchers at a historically black institution in Nashville, Fisk University, into the project's activities on the Vanderbilt campus.

**B.2 OUTCOME GOAL for Learning: "Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."**

Comments: Many of the proposals emphasize training and education. The COV found two particularly good examples of this. One is 0642716, PI Guy Van Orden, "Collaborative Research: Context and Cognition," conducted at the University of Cincinnati, with co-PI John Holden of California State University at Northridge. The research will study the influence on communication of social context. A talker regulates spoken expressions to fit a social context, and this research studies the cognitive functions that track the setting and reconcile potential expressions to fit. The PIs are working in a relatively unexplored corner of cognitive psychology that could have widespread impact on how behavioral scientists analyze their data and construct their experiments. The PIs have already been instrumental in disseminating knowledge of time-series analysis techniques to the larger community. Holden is working at an institution that is providing important training for underrepresented groups and has a record of promoting diversity. Van Orden is leading a new interdisciplinary center that dovetails nicely with the goals of this proposal. There are ample opportunities for graduate training.

The second excellent example is 0738059, PI Trisha Van Zandt, "Temporal Context and Rhythmic Effects on Simple Choice," conducted at Ohio State University. This project examines how the surrounding temporal/rhythmic context of a to-be-judged target affects people's ability to respond appropriately to that target. Second, using features of models of stochastic evidence accumulation and a dynamical attending model, this project offers a new theoretical approach to choice behavior that blends the best of these two frameworks. The context for this work at OSU is supportive with a cognitive modeling concentration in the Psychology Department. This program allows students from different areas to pursue a curriculum that

prepares them for quantitative modeling for psychological questions. Specifically, the PIs are in psychology but have existing collaborations with the mathematics and statistics departments. Research experience will also be provided for undergraduates and area high-school students in the OSU P12 program. The PI is also a member of the Columbus Center of Science and Industry. In contrast, the larger problem of conveying science to the public and expanding scientific literacy remains largely unaddressed across the portfolio.

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments: The COV observed many projects in the PAC portfolio that advance knowledge in creative and beneficial ways. One particular example of an ambitious project is 0554772, PI Deb Roy, “Regularities in Children’s Word Learning Input,” at MIT. The aim is to produce measures of language exposure longitudinally of a single child, and to deploy innovative methods of data reduction that are potentially scalable to other spoken language corpora. The methods developed in this project are likely to be widely adopted.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

The COV recommends developing programs specifically to foster participation by women scientists at different career points. Examples might include: support bridging family and research careers; childcare support for travel to conferences; etc. We also recommend additional staff support for tracking the quality of reviewers to improve the adequacy of peer review. In addition, increased support staff is needed for informing the research community about funding opportunities, in the form of newsletters, communication with professional societies, and organizations such as COGDOP. The COV noted concerns about the workload for Program Officers and staff created by current policies pertaining to revised and resubmitted applications. We recommend evaluating these practices and developing a more systematic approach to revision and resubmission.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

The COV recommends that the NSF-STEM initiative explicitly include behavioral and cognitive sciences. It appears to us that current standards across agencies are variable with respect to the disciplines included in STEM initiatives and funding. The important role of the cognitive and behavioral sciences in fostering STEM should not be overlooked or undervalued.

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

The COV review would have been facilitated if all of the documents pertinent to a single application were consolidated into a single file which could be navigated or searched without additional downloading or interface handling.

### **C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- **Should PAC fund research on non-human animals?**

No. The COV felt that significant modification would be needed across Programs, Divisions and Directorates to create the program collaborations required to support research with cognitive rationale on animals. The COV emphasizes that this should not be the sole responsibility of the PAC program.

- **Should PAC fund purely computational research in cognition?**

No. The COV judged that PAC should not support purely computational research. The COV felt that the portfolio already includes projects in which computational models are well integrated with theoretical and empirical studies. Projects such as these provide a prototype of the contribution of modeling in PAC research. Pure computational work is better hosted in other Directorates within the NSF. See §B for specific examples.

- **Should PAC fund dissertation awards (DDRIGs)? If so, approximately how many?**

Yes. The COV feels that a coherent program of support of research should include pre-doctoral sponsorship. Only an infusion of new funds will permit PAC to accomplish this goal.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Tom Carr**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Robert Remez**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Suparna Rajaram**

**Date:** \_\_\_\_\_

**Visitors for the Perception, Action and Cognition Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_

## 11. Physical Anthropology

(BCS Note: Report reviewed by the program officer)

### PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### A.1 Questions about the quality and effectiveness of the program's use of merit review process.

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>25</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The COV thinks that the combination of panel and ad hoc reviews for senior proposals is very appropriate. However, we are somewhat concerned that in cases where there are a small number of reviews there may be insufficient balance between ad hoc and panel expertise. We think the DDIG panel system of review is appropriate and encourage the Physical Anthropology Program to maintain large panels to ensure appropriate breadth of expertise. Given the volume of DDIG applications, the Program may want to consider reinstating the former system where very low ranked proposals were not discussed at panel (i.e., triage). We are unaware of site visits.</p>	Yes
<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses</p> <p>Comments: RECOMMENDATION: The COV believes that the Program should encourage PIs to think about broader impacts in the design of their projects rather than as an afterthought. We expect that it is an NSF-wide problem that investigators address the broader impacts primarily because they are required to do so. Directing (or forcing) PIs to look at the July 2007 document on merit review would be helpful.</p>	Yes Yes Yes
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: For the most part reviewers are thorough in their reviews, with some reviews of exceptional quality and others that are minimal.</p>	Yes

<sup>25</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: The panel summaries generally provide the rationale for recommendations, but the COV feels that there could be improvements.</p> <p>RECOMMENDATION: If the panel recommendation is to revise and resubmit, the panel summary should contain a clear list of the suggested revisions. This should be for both Intellectual Merit and Broader Impacts. We found at least one example where a panel summary with a strong statement about shortcomings in the Broader Impacts of the proposal apparently led to substantial improvements in this aspect of the proposal with revision. Panel summaries should better reflect the discussion at the panel that led to the panel recommendation rather than just reiterate the reviews.</p>	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: There was a range of detail in the Program Officer review analyses. The COV found the more detailed and transparent analyses provided a better rationale for the final decision.</p>	<p>Yes</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the Program Officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: The documentation is generally adequate, but see comments on questions 4. above.</p>	<p>Yes</p>

<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: The time to decision is excellent, averaging less than 6 months in each year.</p>	<p>Yes</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Overall the quality and the effectiveness of the merit review process are strong. We hope that the comments above will only improve an already very good process.</p>	

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>26</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: Proposals are sent to reviewers having appropriate expertise, but there are too many cases where reviews are not returned resulting in the potential for insufficient expertise in the evaluation.</p>	<p>Yes</p>
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.</p> <p>Comments: Reviewers are representative with respect to institutional participation in NSF submissions. Because NSF does not require that reviewers indicate gender, minority or disability status, fewer than 25% of applicants provided this information. The COV feels that this is insufficient data for comment.</p> <p>RECOMMENDATION: The COV recommends that NSF review the form on which reviewers indicate status to see if changes can be made to make it more likely that reviewers will enter the information.</p>	<p>Institution &amp; Geography - Yes</p> <p>Underrepresented Groups – Data Not Available</p>
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The COV noted two serious COIs, one in which a reviewer was a collaborator of the applicant and one in which a panelist shared a home institution with an applicant (and reviewed the applicant's grant). In neither case was the proposal awarded.</p> <p>RECOMMENDATION: The COV recommends that COI information be more prominent on the reviewer form.</p>	<p>No</p>
<p>4. Additional comments on reviewer selection:</p> <p>We recognize the difficulties in obtaining adequate numbers of reviews and encourage NSF to explore innovative avenues to increase participation by reviewers. For concrete suggestions, see the recommendations of the Archaeology COV.</p> <p><b>BCS NOTE added in review:</b>  <b>Copy of recommendations as listed under the Archaeology section:</b>  <b>1) That NSF for ALL its programs install an automated reviewer query mechanism, which includes the following features: (a) potential reviewers are queried about their willingness to review a proposal; (b) if potential reviewers decline to review a proposal, they are prompted to provide names of other potential reviewers; (c) if reviews are not received in 30 days (or whatever time is</b></p>	

<sup>26</sup> If "Not Applicable" please explain why in the "Comments" section.

deemed appropriate), the reviewers receive a reminder of their commitment; and (d) reviewers receive acknowledgment of their reviews and (if allowed), information on the outcome of the decision.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>27</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments: Based on our assessment of the sample of 108 proposals, the Physical Anthropology Program supports research of very high quality at both the senior and dissertation levels. It appears that even worthy proposals are sometimes not funded. There were relatively few education-oriented projects in our sample, but there were a few outstanding examples.</p>	Yes
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments: The COV notes the outstanding quality of the DDIGs and the important role they play in professional training. This is clearly an appropriate integration of research and education. The educational component is smaller for the senior proposals, but most of them do involve some training of students.</p>	Yes
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: Even though average award size has increased, budgets are commonly cut, sometimes severely. The COV is concerned that the cuts are sometimes so severe that it may compromise the research enterprise. See comment under C.1. regarding funding overall funding level of the Physical Anthropology Program.</p>	Sometimes
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: While we do not know exactly what would be an “appropriate balance,” there were certainly many innovative projects and some that could be considered transformative. These range from isotopic analysis of fossils, to measuring natural selection in the wild, to true metaanalysis of skeletal samples of modern humans. We also noted the potential transformative effects of applying emerging methodologies to substantial longitudinal data sets.</p>	Yes

<sup>27</sup> If “Not Applicable” please explain why in the “Comments” section.

<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: Physical anthropology is by its very nature inter- and multi-disciplinary. In our sample of 108 proposals were projects that combined mechanical engineering with dental anthropology, geology with paleoanthropology, plant ecology with animal behavior, and quantitative genetics with morphology.</p>	<p>Yes</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments:</p>	<p>Yes</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: Although the success rate for new investigators remains lower than that for prior investigators, there was a clear effort made to provide funding to new investigators.</p>	<p>Yes</p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments:</p>	<p>Yes</p>

<p>9. Does the program portfolio have an appropriate balance of:  • Institutional types?</p> <p>Comments: Similar to the last COV, over 75% of awards go to Research Intensive Ph.D. Institutions. This seems in line with expectations.</p>	<p>Yes</p>
<p>10. Does the program portfolio have an appropriate balance:  •Across disciplines and sub disciplines of the activity?</p> <p>Comments: Based on our tabulation of proposal awards and declines, it appears that the various subdisciplines are appropriately represented, although we note a low success rate for bioarchaeology proposals.</p>	<p>Yes</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments Underrepresented Minorities: The statistics suggest that about 10% of awarded proposals are to PIs/Co-PIs with minority status. However it is difficult to interpret whether these statistics indicate appropriate participation of underrepresented groups because individuals with more than one award (including supplements) may be counted as more than one individual.</p> <p>RECOMMENDATION: The COV believes that for the next COV, data should be presented and analyzed in a way that distinguishes the roles of PI/Co-PI/other as individuals and that data be provided for both individuals and awards.</p> <p>Comments Women: For both senior and DDIG grants, the majority of submissions come from women. Supplementary data provided during the COV meeting indicated that 30% of senior proposals from men are awarded while 28% of senior proposals from women are awarded. For DDIGs the comparable figures are 33% and 25%. This discrepancy warrants further investigation.</p> <p>RECOMMENDATION: The COV believes that NSF should conduct analysis of gender differences in submission and award rate to determine how the pattern has changed over time.</p>	<p>Data not available for minorities</p> <p>For women - Yes</p>
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: See examples in NSF document. January 2009, Social, Behavioral and Economic Research in Federal Context.</p>	<p>Yes</p>

13. Additional comments on the quality of the projects or the balance of the portfolio:  
Given the overall high quality of the proposal portfolio, we were surprised to discover that the budgets for Physical Anthropology grants appear routinely to be reduced by a greater amount than grants in other programs in the Division. We suspect that this is having a deleterious impact on the research outcomes.

**A.4 Management of the program under review.** Please comment on:

1. Management of the program.

Comments: The Physical Anthropology Program is well managed. The Program Officers do an excellent job of coordinating and managing the review process and communicating its outcomes to the PIs. They also do an excellent job of interacting with the physical anthropology community. These responsibilities are complicated by the short duration of residency of Program Officers – four Program Officers in Physical Anthropology in the last four years. This de facto annual rotation impacts institutional memory, project management continuity, revision and resubmission support, and raises issues about follow-up when suggestions are made for revise and resubmit. All the Program Officers are extremely well qualified, but that is not the issue. It takes time to learn the relevant skill set, and the ability to enhance and implement improvements to the Program is inhibited by the short tenure.

RECOMMENDATION (VERY STRONG): The COV believes the Program should make every effort to secure two to three year commitments from Program Officers.

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

Comments: Physical Anthropology has been very responsive to the increasing importance of transdisciplinary and collaborative research incorporating expertise from outside our discipline. The Program has also helped support teaching initiatives, workshops, and symposia on emerging topics of interest in physical anthropology.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: It is the opinion of the COV that the lack of continuity in Program Officer is negatively impacting the potential for programmatic planning and the developing of priorities. One year is not enough time to plan, let alone implement lasting change.

4. Responsiveness of program to previous COV comments and recommendations.

Comments: The COV was pleased to see that the submission rate for women had increased substantially and that submissions in human biology seemed to be better represented. However, there remains some gender disparity in DDIG award rate, which we hope will disappear by the next COV. With respect to previous concerns about COIs, we appreciate the increased vigilance, but still discovered two potentially significant COIs. Although the size of senior awards has increased over time, fewer grants are being awarded and many of these are being cut to a level that may compromise the research. The increase in maximum award amount for DDIGs to \$15,000 was an excellent change in response to the 2006 COV report. We are also pleased that staffing has increased; however increased workload has diminished any potential benefits of this change.

5. Additional comments on program management:

On balance the Program Officers have done an excellent job under trying circumstances. The COV believes that the field of physical anthropology is enhanced by the management endeavors of the NSF Physical Anthropology Program. It is the hope of the COV that the projected increases in budget will help remedy some of the concerns raised above.

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery:** *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Comments: Each of the various subdisciplines of physical anthropology offers opportunities for transformative research at the frontiers of knowledge. For example in genetics and paleoanthropology Morris Goodman, "Genotypic and Phenotypic Changes Associated with Encephalization" (0550209), Leslea Hlusko, "The Evolution of Modularity in the Dentition of Old World Monkeys" (0616308); in human biology Christopher Kuzawa, "Early Life Nutrition, Developmental Plasticity and Reproductive Ecology in Filipino Males" (0548393); in bioarchaeology and human evolution, Christopher Ruff and Brigitte Holt, "On the Verge of Modernity: Post-Pleistocene Evolution of the European Skeleton" (0642297, 0642710); in primatology and conservation Cheryl Knott, "Understanding the Role of Ecology in Saving the Orangutan from Extinction" (0721288), Patricia Wright, "Losing the Edge: Senescence Schedules and Longevity in Malagasy Rain Forest Primates" (0721233); and in paleoanthropology Christopher Beard and Daniel Gebo, "Paleontological Investigation of Early Primate Evolution in Asia" (0820602, 0820485).

**B.2 OUTCOME GOAL for Learning:** *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."*

Comments: The Program makes a substantial commitment to funding doctoral dissertation research, i.e. training the next generation of scientists. Examples of dissertation proposals include Katherine Milton, DDIG, "Feeding on Phytoestrogens: Implications for Red Colobus Monkey Physiological Ecology" (0823651), Michael Wilson, DDIG, "Biological and Cultural Factors Associated with Lactational Disfunction in Overweight Women: (0824467); Corola Borries, DDIG, "Competition Among Three Primate Species at Way Canguk, Sumatra, Indonesia" (0726089), and Theodore Schurr, DDIG, "Analysis of Y Chromosome Variation in Indigenous Altaian and Altaian Kazakh Populations" (0726623). The Program has funded a number of conferences including Rashid Shaikh, "Symposium: Teaching Evolution and the Nature of Science" (0613273), Anthony DiFiore, "Research Conference: Molecular Primatology - Progress and Promise" (0552306).

**B.3 OUTCOME GOAL for Research Infrastructure: “Build the nation’s research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.”**

Comments: Several funded projects are working towards creating publically accessible data bases and enhancing infrastructure and instrumentation. These include Eric Delson, “Workshop on Databases and Data Sharing in Paleoanthropology” (0653793), Joseph Lorenz, “Integrative Primate Biomaterials and Information Resource” (0629321), Rebecca Stumpf, “Comparative Primate Microbial Ecology” (0820709), Christopher Ruff and Brigitte Holt, “On the Verge of Modernity: Post-Pleistocene Evolution of the European Skeleton” (0642297, 0642710), and Jessica Lynch Alfaro, “Phylogeography of Capuchins: Squirrel Monkeys and Owl Monkeys: A Critical Comparative Framework for Studying Evolution, Behavioral Ecology, and Conservation in Neotropical Primates” (0742441). Awards made through the HOMINID Program, in particular, have contributed to research infrastructure both in the United States and abroad.

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

Issues of Program Officer continuity. See comments under A.4.

Issues of grant cutting. See comments under A.3.

Issues of improving panel summaries. See comments under A.1.

We were struck by how underfunded Physical Anthropology is relative to the costs of our research and relative to other programs within the division.

The COV would also suggest that the Physical Anthropology Program institute a system of “junior panel member” in which investigators who have never been received a senior award participate in a limited way on panels. This participation would help these investigators gain familiarity with the review and panel processes with the purpose of improving their success rate. Their participation on the panel could involve informally reviewing proposals and serving as scribes.

### **C.2. Please provide comments as appropriate on the program’s performance in meeting program-specific goals and objectives that are not covered by the above questions.**

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

Issues related to Broader Impact. See comments under A.1.

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

Some additional documents prior to the COV meeting would be helpful:

- Spreadsheet of all proposals awarded and declined during the review period, including titles and representation information, and divided by senior and DDIG status.
- History of CAREER Awards.
- Funding rates by women involvement, broken down by senior/DDIG status.
- Total base program allocations within the division.
- July 2007 Broader Impacts Criterion: Representative Activities.
- Physical Anthropology award and declination status broken down by subdisciplinary categories (e.g. bioarchaeology, genetics, human biology, morphology, paleontology, primate behavior and ecology)

### **C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- **HRRA – Does our archaeology/physical anthropology-specific “high risk” competition still make sense? Should it be eliminated, revised, kept the same?**  
[http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf08523](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08523)

The COV feels strongly that the “high risk” competition is very useful and should be maintained. Given the conditions of anthropological fieldwork, the competition totally makes sense.

- **Outreach / Diversity: The number of proposals submitted by under-represented, e.g., female, minority, disabled, scientists is low which in part reflects the field in general. In addition to individual senior and dissertation proposals, proposals for conferences, workshops, or other activities to encourage broadened participation would be welcome.**
  - **How can the program encourage more participation from these groups?**

Establish a bridge program linking undergraduates from underrepresented groups to graduate opportunities. This could include

- Postbaccalaureate programs
- Funding for undergraduate attendance at national meetings
- Stand-alone REU funds for student research at institutions with predominantly underrepresented student populations
- **How might the program be an active partner with other organizations in broadening participation?**

The Physical Anthropology program should investigate opportunities to partner with the AAPA, AAA and the AAAS.

- **Complexity science: This is a new focus area for NSF funding, particularly within SBE. (See [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf09019](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf09019))**
  - **Within Physical Anthropology, how can "complexity" be defined?**

Physical anthropology at its core works with issues related to complexity. This is tied to its intrinsic interdisciplinarity which is the prerequisite for investigating human and primate systems. An emerging core area of complexity in physical anthropology is the use of multiple methodologies and scales in research projects. Our focus on evolutionary processes and patterns relies on recognizing complexity at many different levels of organization. For example attempts to link genomic, morphological, developmental and behavioral systems rely on incorporating simpler systems to explain observed complexity.

- **What types of modeling would encourage / develop this new avenue of thought? Is there a way for NSF to help target this type of research in the field?**

Recognize the labor and infrastructure-intensive needs of research programs focusing on complex systems in human and primate evolution. Some of the recent HOMINID proposals meet these criteria, which suggests that large collaborative projects are only possible with levels of funding not typically seen in the Physical Anthropology Program.

- **Infrastructure: Concern for the development of research infrastructure has become more prominent. This can include development / commitment to databases (images, morphological / behavioral / growth / genetics), repositories, field sites, core laboratories, etc. Infrastructure can also include human resource development.**
  - **What mechanism would best serve developing Physical Anthropology's needs?**
  - **What type of long term commitment for support would be appropriate?**
  - **How should access and proprietary issues be addressed?**

The COV considers infrastructure support to be extremely important, especially given the number of long term data-intensive projects in our field. However, experience suggests that infrastructure proposals fare poorly in competition with grants for new research. The COV supports the recent SBE call to use former HSD funds for infrastructure proposals (December 9, 2008); however, we suggest that there be a separate competition within Physical Anthropology for access to these awards.

Access and proprietary issues are very complex and the COV did not feel that they had sufficient time to reach a conclusion on these topics. But we do support the notion of free exchange of ideas and data.

- **Research Experience for Undergraduates (REU) Supplements: Currently supplements are submitted any time of the year and reviewed / funded by the Program Officer on a one by one**

**basis. Everything funded by the Physical Anthropology program is from a single budget so funding depends partly on availability and partly on the best allocation of funds to support the research development in the field. The REU mechanism is used more frequently by some PIs than others whether through lack of knowledge or lack of students is unclear.**

- **Would it be more equitable to set a yearly deadline and review them together?**

We see some advantages to this idea (ability of PIs to plan, less random). Based on the DDIG experience, one potential disadvantage (in terms of work for the Program Officer) is that the number of proposals will increase.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Agustin Fuentes**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**William Jungers**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Sara Stinson**

**Date:** \_\_\_\_\_

**Visitors for the Physical Anthropology Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_

## 12. Social Psychology

**(BCS Note: Report reviewed by the program officers)**

### **PART A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT**

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

#### **A.1 Questions about the quality and effectiveness of the program's use of merit review process.**

Provide comments in the space below the question. Discuss areas of concern in the space provided.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>28</sup>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: The program makes effective use of ad hoc and panel reviews. However, there is a small concern that the small number of reviews in some cases (3 or 4) may result in biased sampling of expertise in the field. It would be beneficial for the program to obtain a greater number of reviews if possible to provide for more balanced peer review. There are at least two ways to accomplish this goal. The first concerns the use of the scribe assigned to each application as an additional panel reviewer (i.e., 3 panel reviews + 2 or more external reviews). Unfortunately, this change would mean that new staff would have to be brought in as scribes and this could have negative implications in terms of costs and the greater difficulty of a non-expert scribe interpreting the discussion. The second possibility would be to increase the number of external reviews. In making this suggestion, we recognize the challenges of obtaining external reviews and we have four suggestions for improving review acceptance rates: (a) cultivate a panel advisory board of experts across topics who commit to review X number of applications each year for 2-3 years, much like a journal editorial board. (b) provide more structured instructions to the reviewers about the level of review that is requested (e.g., apx. 1 page covering major strengths and weaknesses) so they can see that the burden is not great. (c) provide the reviewers with some feedback on how the panel reviewed the proposal (e.g., funding priority) and/or whether the application was funded. The latter could be implemented as an automated message to reviewers once the final decision about an application has been made. Providing this feedback would allow reviewers to see the influence of their reviews and motivate them to review again. (d) host a reception at SPSP or a similar conference for reviewers to discuss funding issues with one of the program directors, or some other public recognition of their work.</p>	Yes

---

<sup>28</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>2. Are both merit review criteria addressed:</p> <p>a) In individual reviews? Yes, see comments.</p> <p>b) In panel summaries? Yes, see comments.</p> <p>c) In Program Officer review analyses? Yes, see comments.</p> <p>Comments: Ad hoc and panel reviews focus substantially more on intellectual merit, with little assessment of broader impacts. Program officers do a much better job in addressing both criteria in the review analysis, which is not routinely given to the PI. Our understanding is that NSF views both criteria as equally important, but in practice, intellectual merit has a disproportionate (if not complete) influence in the evaluation process and funding decisions. We recommend that NSF provide a clear statement on the relative importance of these two criteria, make sure this importance is communicated to the panelists, ad hoc reviewers, and PIs, and that funding decisions attend to both criteria as stated.</p>	<p>Yes</p>
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: There is some variability in the length and extent of these reviews. As mentioned above, the reviews focus on intellectual merit, with only perfunctory attention given to broader impacts. This may be because reviewers don't have the expertise to evaluate broader impacts. As noted above, we recommend more explicit instructions be given to reviewers, particularly with respect to length. This could improve the reviews and increase the rate of consent to review. Instructions could also focus the reviewer on providing constructive feedback that includes suggestions for improvement, framed in a positive as opposed to a negative way.</p>	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments: We noted some inconsistency in the panel summaries in their provision of the rationale for a recommendation. Some summaries include a section on "Synthesis/Comments" that achieves this goal to some degree. Other panel summaries provide more descriptive comments on the strengths and weaknesses – sometimes something of a laundry list – without the rationale for the recommendation. This is especially problematic for proposals that fall in the middle category of low-competitive. This inconsistency stands in great contrast to the review analyses, that typically provide a clear rationale for the panel's recommendation and the funding recommendation.. Often these analyses include more substantive information to the PI about how to improve his or her work.</p>	<p>Yes</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.)</p> <p>Comments: The jacket, particularly the review analysis, provides adequate information about the evaluation of the proposal.</p>	<p>Yes</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments: Our understanding is that the review analysis, arguably the most useful document, is not made available to the PI as a matter of policy. Although the information contained in the analysis is often communicated to the PI informally, there is a chance that it may not be. As such, the remainder of the jacket materials available to the PI are not entirely sufficient. We recommend that the review analysis be given to all PIs, or that the information be conveyed as standard practice.</p>	<p>No</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: The time to decision, roughly 5 months for most of the proposals, is exceptional in our view. The Program Directors are clearly sensitive to the need for feedback for proposals that have not been funded in order to provide adequate time for revisions. We commend the Directors for their extraordinary willingness to work with PIs to ensure the ongoing excellence of research funded by NSF.</p>	<p>Yes</p>
<p>8. Additional comments on the quality and effectiveness of the program's use of merit review process:</p>	

**A.2 Questions concerning the selection of reviewers. Provide comments in the space below the question. Discuss areas of concern in the space provided.**

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>29</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: As noted above, increasing the number of reviews per proposal would help to ensure broader representation of expertise in the field.</p>	Yes
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Note: Demographic data is self reported, with only about 25% of reviewers reporting this information.</p> <p>Comments: These data are impoverished to the extent that we cannot assess the actual nature of this balance. Our recommendation would be to request the information in a way that, 1) states the importance of providing this information along with the ways in which it will be used, and 2) requires the reviewer to opt-out (e.g., a “decline to state” option) of each demographic characteristic of interest, rather than being able to skip the demographic information form in its entirety. Ideally, these questions would be encountered and require responses (even if the response is “decline to state”) BEFORE reviewers or PIs can access the other parts of the system. Based on the data in hand, it would seem that there is approximately equal gender representation among reviewers, and we believe that men outnumber women in the field. So women seem to be overrepresented. In terms of minority status, there are no data about the proportion of minority and non-minority members in the pool of potential reviewers. Based on the U.S. population, minority reviewers are sorely underrepresented in the reviewer pool. We made a similar observation for the category of disability status, with similar conclusions. The representation by institution type seems appropriate, given that those at Ph.D. institutions have a vested interest and more experience in the process that others may not.</p>	No
<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: The guidelines for dealing with conflicts are very clear, and are communicated to panelist and reviewers on multiple occasions. Review analyses include information about individuals who have conflicts and the steps taken to resolve the conflict. Our experience as members of the COV suggests that COI policies are being followed rigorously.</p>	Yes

<sup>29</sup> If “Not Applicable” please explain why in the “Comments” section.

4. Additional comments on reviewer selection: Not at this time.

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

RESULTING PORTFOLIO OF AWARDS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>30</sup>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments: The funded research is excellent in its quality, demonstrating both theoretical and methodological sophistication.</p>	Yes
<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments: Although there are examples of this, the portfolio does not explicitly promote the integration of research and education, with the exception of the training of graduate students who are widely supported on research awards. However, the broader integration of research and education (e.g., classroom teaching or a focus on educational processes) seems to be mostly incidental rather than intentional. This may stem from ambiguity surrounding the meaning and importance of broader impacts, which are not communicated effectively to potential PIs, panelists, nor ad hoc reviewers.</p>	No
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: As noted elsewhere, we especially applaud the practice of granting junior incentive awards in small amounts to assist new investigators in their work toward full funding.</p>	Yes
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: We think it's appropriate given the incremental nature of scientific progress, in which the majority of projects would not fall into that category. We also saw a distinction between projects that we considered "innovative" (there were many) and those that might be considered "potentially transformative" (not as many).</p>	Yes

<sup>30</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: Social psychology is inherently interdisciplinary in its reliance on theory and methodology from a variety of fields. Against that backdrop, there were a moderate number of proposals (30%-40%) that go beyond standard practice in their incorporation of new theories and methodologies from other fields, such as neuroscience and physiology.</p>	<p>Yes</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: Our sample included relatively few examples of multiple-investigator awards (approximately 15%), suggesting that the demand for these awards is limited. However the rate at which multiple-investigator awards were funded was equal to that of single-investigator awards. This is appropriate.</p>	<p>Yes</p>
<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments: There is a difference in the rate at which new investigators and prior awardees are funded (17.5% vs. 23.5%, respectively). This is likely attributable to a number of generally appropriate factors, such as the greater sophistication and proven productivity of experienced researchers. Nonetheless, it is to the benefit of the field to ensure that new talent is encouraged and given a fair share of the resources. Our understanding is that few new investigators in social psychology receive CAREER awards due to their comparatively high budget. This is unfortunate in an organization without other formal mechanisms to aid new investigators. There is an informal program, introduced in 1997, that provides for seed money or incentive grants to junior investigators when the research is well-reviewed but doesn't obtain full funding. We recommend that this practice be continued and that NSF consider formalizing this program to encourage proposals from junior investigators – especially those from underrepresented groups or institutions who may not be aware of it.</p>	<p>Yes</p>

<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: Grants do not seem to be distributed evenly geographically. EPSCOR states, and other geographical regions apart from the Northeast, Midwest, and Far West, have fewer submissions and lower funding rates. This likely reflects the uneven distribution of research institutions across the country.</p>	<p>Yes</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: Research-intensive institutions have the highest submission and funding rates. This may be appropriate at some level. However, in terms of cultivating the next generation of scholars, NSF should direct more attention to encouraging submissions from other undergraduate-serving institutions. (E.g., from 2006 to 2008 there were zero grants reportedly awarded to 4-year colleges.)</p>	<p>Yes</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub disciplines of the activity?</li> </ul> <p>Comments: The distribution reflects current activity in the field. This is appropriate, however we noticed that proposals that were difficult to categorize under traditional subcategories were less likely to be funded. These might be considered under the category of innovation and risk-taking. There is a possibility that this can be attributed to differences in the quality of these "risky" proposals compared to those that focus on more traditional topics.</p>	<p>Yes</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p> <p>Comments: Similar to the demographic data on reviewers, the impoverished nature of the data make any conclusions difficult and we reiterate the need for change in the collection procedures (see item A.2.2 above). Based on the data in hand, the gender balance is appropriate. Minorities have a lower submission (8%) and success rate (15% of those submitted) than non-minorities (92% of submissions with a 29% success rate). Since the term minority collapses across racial, ethnic, and disability status categories, these rates could certainly be improved. The category of minority-serving institutions is even more problematic, suggesting that efforts toward eliciting proposals from these institutions are warranted.</p>	<p>No</p>

<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: In terms of funding basic scientific research in social psychology (NSF Strategic Plan 2006-2011), the program is highly successful. The diversity of the portfolio with respect to the various sub-disciplines in social psychology is representative of the submissions, which reflect the demands of the field. Additionally, the portfolio contains many research projects that address important societal issues, such as stereotyping and prejudice, barriers in children's educational achievements, and negotiation during conflict. Apart from race-related research, there were, however, relatively few applications related to social relations (attraction, aggression, and altruism).</p>	<p>Yes</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>There are some additional steps that NSF could take to ensure the long-term strength of the Social Psychology portfolio. First, we recommend that the Program consider the creation of a guide to writing a good proposal, available at the Program website. This guide would go beyond existing guidelines by providing (new) investigators with information and examples of what makes a proposal good in addition to having a good idea (e.g., the appropriate level of detail on proposed studies). Second, we recommend that the Program consider using certain funded investigators as NSF ambassadors who are compensated to attend various events for the express purpose of communicating their experiences with NSF to students and faculty from underrepresented groups. This could include conference receptions, school visits, and other meetings of organizations designed to attract and support students and faculty from underrepresented groups. Such activities could reduce the workload for POs while broadening NSF's reach.</p>	

**A.4 Management of the program under review.** Please comment on:

1. Management of the program.

Comments: We think the management of the program is excellent. The POs are highly involved in the field and work well with potential investigators and reviewers to encourage and produce high quality products. Over the three year period, we have observed improvements in almost every measurable aspect of the review process. However, it is clear that workload issues are still present. The staffing issues over time have been ameliorated to some extent with the addition of a third, rotating program director. But any efforts toward reducing the workload to allow the POs to work more effectively in building the portfolio would be of great benefit to the program.

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

Comments: Excellent, as evidenced by the representation of SGER awards, funding for the Summer Institute for Social Psychology (SISP) that expands graduate-student education, and the award of smaller incentive grants to promising new investigators. It is also evident from the portfolio that cutting-edge research is being funded by the program.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments: From the Program Report: "The guiding priority is to support the most innovative and rigorous empirical research that has the potential to advance if not transform the field of social psychology. The program achieves this goal by fostering discovery, learning, and research infrastructure, while also weighing important considerations like support for early career faculty, diversity, integration of research and education, and potential broader impacts on society."

The POs communicate NSF priorities to the research community yet retain an open attitude toward the research directions that emerge from within the community. There is specific emphasis on encouraging new investigators (though this process is not currently formalized). However, the efforts toward integrating research and education (beyond graduate-student training) and eliciting broader impacts could be improved. We encourage the POs to continue to work with the research community in developing proposals that combine the priorities of the community with those of NSF that have not yet had a large impact on the field (e.g., complexity sciences and major instrumentation).

4. Responsiveness of program to previous COV comments and recommendations.

Comments: Excellent with only a couple of exceptions:

a) The prior COV asked that the program clarify the role of broader impacts and communicate these more effectively to researchers, reviewers, and panelists. The efforts that were undertaken since that report -- adding the broader-impacts statement to the signature lines of emails and addressing the broader-impacts criteria in outreach sessions -- may not have been as effective as hoped. We still identified problems with these issues in the sample of proposals reviewed, with respect to all phases of the review process. Additional steps are warranted, that could include the PO's insistence that the PI have a strong broader-impacts plan and method of assessment before a proposal is funded. However, we know that the POs are aware that this is an ongoing issue and trust that they will continue to look for appropriate solutions.

b) There remain problems in the collection of diversity information from reviewers, panelists, and PIs. The response suggests that this is a broader problem across NSF and thus not directly a fault of this program. However, the response is inadequate and compels further action. As mentioned above (A.2.2), we have suggested possible remedies for this state of affairs.

c) There remain issues with broadening participation. Budget and time constraints prevent extensive travel to conduct outreach, but some efforts have been made to encourage underrepresented group members to review, serve as panelists, and submit proposals. This would include more specific proposals for how to do this. In the future it might help if the Report includes a discussion of strategies that have been explored

(strengths and weaknesses), describing those that were actually pursued and those that were not pursued. A document of this nature would give the COV panel a better understanding of the PO's efforts toward broadening diversity.

5. Additional comments on program management:

## PART B. RESULTS OF NSF INVESTMENTS

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF's mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award "highlights" as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery:** *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."*

Comments: The majority of the social psychology program seems to focus on this objective, and it has done an excellent job toward achieving it. Examples include Ann Bettencourt and Monica Biernat's studies of how stereotypes and perceived status together influence our impressions of people, Kipling Williams' experiments on the pain, distress, and antisocial behaviors evoked by social ostracism, and Richard Nisbett's analysis of cultural (e.g., Asian and American) influences on how people perceive and think about their worlds.

**B.2 OUTCOME GOAL for Learning:** *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."*

Comments: Efforts toward this goal are less clear in the research portfolio, however the SISP program (Harry Reis) contributes to the education of a number of graduate students. There is work that serves to educate and reduce racial bias among police officers (Joshua Correll). Lora Park's research exploring the role of goal pursuit among women in the STEM fields has the potential to increase women's participation and success in these domains. Work by Catherine Good, Carol Dweck, and Sian Beilock exploring stereotype threat may have similar benefits. Work by Becky Kochenderfer-Ladd explores ways that children can insulate themselves from bullying and flourish in their educational environment.

**B.3 OUTCOME GOAL for Research Infrastructure:** *"Build the nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools."*

Comments: Infrastructure efforts in social psychology are less frequent than in other disciplines. Examples includes the development of experience-sampling software (Lisa Feldman-Barrett) used on Palm Pilots; Timesharing Experiments for Social Psychology (TESS) that provide the opportunity for researchers to collect data on large, diverse, representative samples; and the Research Center for Virtual Environment and Behavior (RECVEB).

## **PART C. OTHER TOPICS**

### **C.1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.**

Addressed in comments above.

### **C.2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.**

N/A

### **C.3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.**

Addressed in comments above.

### **C.4. Please provide comments on any other issues the COV feels are relevant.**

### **C.5. NSF would appreciate your comments on how to improve the COV review process, format and report template.**

### **C.6. Please comment on both scientific and management aspects of each of the following program-specific questions:**

- The SBE directorate is currently encouraging submissions covering three areas -- complexity science, large-scale interdisciplinary research and infrastructure (see [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf09019](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf09019)). First, what does complexity science mean to social psychology?

Social psychology stands at the intersection of many disciplines and thus is naturally involved in multilevel analyses that range from genetics, physiology and neuroscience, to sociology, political science and cultural analyses. An investigator who examines a phenomenon from these various perspectives would be engaging in complexity science. There are also opportunities for social psychology to explore dynamic complex systems, as in the work of Vallacher and Nowak. Social networking websites such as Facebook may also lend themselves to complex analyses. Complexity can also refer to the interaction between cognition, emotion, and motivation, and their roles in influencing human behavior over time.

- What kind of infrastructure does the field need that we might encourage and support? What sort of infrastructure might be potentially transformative in terms of the way social psychologists do research or in terms of what social psychologists research?

It would great if social psychologists had

- A resource that would allow them to provide ideas and materials for studies that could be conducted on a targeted population (e.g., a national sample or an international sample) and if these data could be widely available to researchers in the field.
- An fMRI facility that would take selected proposals from social psychologists around the country and provide them with the results, thus allowing more investigators to take advantage of this expensive technology.
- Models for encouraging researchers to develop new technologies and focus on specific research topics that function as short-term intellectual centers. These working groups (see the Pod format that launched the Positive Psychology movement) would be short-term opportunities for researchers to network by reporting on recent findings and strategizing new directions in research and opportunities for funding. The short-term mechanism would circumvent the complexities associated with long-term funding for Centers and Programs.

- Do you have ideas about the kinds of large scale interdisciplinary projects that social psychologists might be involved in that would advance understanding of social behavior?

Almost any discipline that involves some human behavior can provide a context for the study of basic social psychological research. Examples are interdisciplinary inquiries that have engaged social psychologists with colleagues in medicine, economics, law, and environmental studies. For example, recent work in behavioral economics and in studying the economics of well-being have helped bridge the two disciplines. Given NSF's focus on basic research and not the application of theories to various domains, the question becomes whether such bridge-building falls within the NSF mandate.

- As reported in the data above, we funded a handful of proposals from minority PIs and only a small number even applied. What suggestions do you have as we continue our efforts to encourage greater participation from members of underrepresented groups, as PIs and as reviewers?

Please see comments above.

**SIGNATURE BLOCK:**

\_\_\_\_\_  
**Keith Maddox**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**Irene Blair**

**Date:** \_\_\_\_\_

\_\_\_\_\_  
**David Myers**

**Date:** \_\_\_\_\_

**Visitors for the Social Psychology Program**

\_\_\_\_\_  
**Susan Cutter, Chair**

**NSF Committee of Visitors for the Division of Behavioral & Cognitive Sciences, 2009**

**Date:** \_\_\_\_\_