

Appendix

The following document was prepared by Caroline Wardle, who joined the National Science Foundation in 1990, and who was the principal professional staff member involved with women in computing projects in the CISE Directorate during the years covered by this list of CISE awards. Wardle left NSF in 2006.

The final grant in this list, awarded to Bobby Schabel of the University of Colorado at Boulder was for planning what became the National Center for Women & IT. In 2004, Schnabel received a \$1 million grant for start-up of NCWIT. Over the years since 2004, NCWIT has received several grants from NSF for its programs.

CISE-Supported Projects Targeted at Women in IT

FY89-FY03

The CISE Directorate is committed to encouraging and supporting activities that will contribute significantly to increasing the number of women qualified to participate in research and educational activities in the CISE disciplines. While CISE has supported and continues to support Foundation-wide programs such as FAW, RPG, CAA, POWRE and now ADVANCE, it has also provided significant support for this goal through the Special Projects Program. In 2000 CISE established the Information Technology Workforce Program (ITWF) which supports research projects addressing the under-representation of women and minorities in IT. (In the budget figures of this document, half of the ITWF budget is allocated to projects targeted at women.)

CISE support of these projects has grown from \$166,000 in 1989 to over \$3.8 million in 2002.

1989 (\$166,000)

“Bringing Young Minority Women to the Threshold of Science”, pi’s – Rachelle Heller, Dianne Martin and William Lynch, George Washington U., FY89-91. (Award = \$166K)

A 2-year award that supports bringing in twenty-four 9th. and 10th. grade minority girls and six teachers to the George Washington University campus on 9 Saturdays and during the summer for a 10-day residential program. On each Saturday during the semester, the participants are given computer classes during the morning; the afternoon sessions include a presentation by a research scientist.

1991 (\$141,884)

“Mentoring of Women and Minorities in Science”, pi – Shari Lawrence Pfleeger, ACM. (Award = \$47,000)

This award has funded a project to design guidelines and training materials for the mentoring of junior professionals by senior professionals. As part of this project, a workshop was held in Washington DC Feb. 6–7, 1992. Groups of mentors and proteges from both industry and academia were invited to attend the workshop. Each participating institution brought along two mentor/protege pairs. There were presentations from mentors and proteges, breakout sessions on various aspects of mentoring, and full discussions on goals, timetables, and plans for mentoring.

“Committee on the Status of Women in Computer Science”, pi – Nancy Leveson, University of California, Irvine, and Rick Weingarten, Computing Research Association (CRA). (Award = \$94,884)

A 2-year award to support the establishment of a CRA committee on the status of women in computer science. Goals of the committee include increasing the number of women in all types of CS research and in faculty ranks at universities, increasing the degree of success experienced by female researchers, and providing a forum for addressing problems that are of special concern to women such as career-family conflicts, maternity, child care, two-body problems, discrimination, and harassment.

1992 (\$84,316)

Workshop on Expanding Opportunities for Women in CISE, October 25–27, 1992: pi – Susan Conry, Clarkson U. (Award = \$84,316)

This award funded a 2-day workshop to identify and examine mechanisms for attracting and retaining women in academic careers in the computing sciences. The

workshop addressed issues such as professional support and development, pipeline issues, academic faculty careers, visibility of women in the field, and partnerships between academia and industry.

1993 (\$436,360)

Workshop on Academic Careers for Women in CISE – FCRC, May 15, 1993: pi’s – Cindy Brown, Northeastern U. and Rick Weingarten, CRA. (award=\$29,650)

This award provided travel support for 20 women in the CISE disciplines to attend a 1-day workshop on Academic Careers, held on May 15, 1993, immediately prior to the opening of the Federated Computing Research Conference (FCRC) in San Diego. The workshop activities focussed on women in the CISE disciplines who were starting or ready to start academic careers. Over 150 women attended the workshop. Sessions addressed the tenure process, obtaining an academic position, building a research program, obtaining external funding, teaching, making connections with people in the field, and time management.

Windows of Opportunity – Symposium for Female Students in Computing, May 22–23, 1993: pi – Rick Weingarten, CRA.

(Award=\$191,710)

The Computing Research Association (CRA) presented a 2 day symposium for 200 undergraduate and graduate female students on May 22nd. and 23rd., 1993 in Washington D.C. The students, studying in CISE areas, were nominated by their institutions. The symposium, chaired by Dianne Martin of George Washington University, had several goals. One was to increase the community’s interest in and awareness of the need for participation of women in CISE disciplines. A second was to provide the students with an opportunity to meet senior women in academia, industry and government and to hear about their careers and accomplishments. A third was to enable students to make professional contact with fellow students and to start building a network of colleagues.

NSF Graduate Research Fellowships. (Award=\$215,000)

10 additional 3-year awards were made to qualified women in CISE in the NSF Graduate Research Fellowship program.

1994 (\$917,973)

Distributed Research and Mentoring Project for Undergraduate Females in Computer Science and Computer Engineering, Summers of 1994, 1995: pi’s – Joe O’Rourke, Smith College and Rick Weingarten, CRA. (Award=\$239,940)

Joe O'Rourke of Smith College and the CRA Committee on the Status of Women in Computing Research have organized a project to match 20–30 female undergraduate students with female professors in CISE research areas each year, to participate in a summer of research at the mentor's institution during the summers of 1994 and 1995.

NSF Graduate Research Fellowships. (Award=\$430,000; includes 10 new awards and 10 continuing awards)

There is now a "Women in Engineering and CISE Award" in the Graduate Fellowship Program. 10 additional 3-year awards were made to qualified women in CISE. The eligibility requirements have been modified to take into account that women may have interrupted their careers.

Travel Support to Attend the Grace Hopper Celebration of Women in Computing Conference, Summer 1994, pi – Anita Borg, Digital Equipment Corp. and Rick Weingarten, CRA. (Award=\$50,000)

On June 9–11, 1994, the first Grace Hopper Celebration of Women in Computing Conference was held in Washington, DC. A travel grant was made for students and junior faculty participants to attend this technical conference. The Celebration was an event bringing together CISE women and men. All speakers were women representing the major technical computing disciplines, and the academic, government and industrial communities.

Workshop on Academic Careers for Women in Computer Science, 1994–1996: pi's – Jan Cuny, U. of U. Oregon and Rick Weingarten of CRA. (Award=\$65,600)

This award provided travel support for 3 career management workshops targeted at women who were new to academic careers in computer science. The workshops presented practical advice and basic information needed to succeed in academic careers. The attendees were provided with opportunities to interact with more senior women in academia, to develop mentoring relationships, and to start a professional network with their fellow attendees. Workshops were conducted in conjunction with the Grace Hopper Celebration for Women in Computing held in Virginia in June 1994, and with Supercomputing 1994 held in Washington DC in November 1994. The third workshop was held with the Federated Computing Research Conference (FCRC) in 1996.

CRA Committee on the Status of Women, 1994–1997: pi's – Mary Jane Irwin of Penn. State, Francine Berman, UC, San Diego (Award=\$132,433)

The CRA Committee on the Status of Women (CRAW) was established in 1990 with the goal of taking positive action to increase the number of women participating in computer science and engineering research and education at all levels. This award provides travel support for committee meetings, for continuing projects, and for new projects of CRAW. CRAW has been very active in recommending and organizing projects and in many cases obtaining separate funding for them. Members of CRAW have produced several articles on women's issues in CS for the Computing Research News; have started the Systems-Academia, a moderated electronic mailing

list for female faculty and Ph.D. students in CS have established the Ph.D. database of women with Ph.D.'s in CS and have organized and presented career management workshops at major conferences and events.

1995 (\$840,000)

Distributed Research and Mentoring Project for Undergraduate Females in Computer Science and Computer Engineering, Summers of 1996, 1997, 1998: pi – Anne Condon, U. Wisconsin and CRA (Award=\$530,000 split \$242K – FY95, \$288K – FY96)

A 3-year continuation of the previous distributed research mentoring project with a longitudinal evaluation study of the entire 5 year program. (EHR/HRD contributed \$30,000 in FY95)

NSF Graduate Research Fellowships. (Award=\$598,000; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award. The eligibility requirements have been modified to take into account that women may have interrupted their careers.

1996 (\$886,000)

Distributed Research and Mentoring Project for Undergraduate Females in Computer Science and Computer Engineering, Summers of 1996, 1997, 1998: pi–Anne Condon, U. Wisconsin and CRA Continuing. (Award = \$288K)

Second year of the distributed research mentoring project with a longitudinal evaluation study of the entire 5 year program.

NSF Graduate Research Fellowships. (Award=\$598,000; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award. The eligibility requirements have been modified to take into account that women may have interrupted their careers.

1997 (\$742,000)

Travel Support to Attend the Second Grace Hopper Celebration of Women in Computing Conference, Summer 1997, pi's –Tracy Camp, University of Alabama, William Aspray, CRA. (Award=\$56,000)

On September 19–21, 1997, the second Grace Hopper Celebration of Women in Computing (GHC) was held in San Jose, California. A travel grant was made for students and junior faculty participants to attend this technical conference.

NSF Graduate Research Fellowships. (Award=\$686,000; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

1998 (\$1,402,521)

Evaluation and Institutionalization of the CRA Distributed Research Mentor Project, 1999–2001: pi's – Mary Jean Harrold, Ohio State, Anne Condon, U. Wisconsin and William Aspray, CRA (Award=\$624,526)

A 3-year continuation of the distributed research mentoring project, continued long-term evaluation, dissemination of the evaluation results through articles and presentations, and institutionalization of the mentoring project through securing of long-term funding.

Investigating the Incredible Shrinking Pipeline for Women in Computer Science, 1998, pi's=Denise Gurer, SRI International and Tracy Camp, Colorado School of Mines (Award=\$67,495)

The ACM Committee on Women in Computing has established a repository and clearing house for information and research pertaining to women in computing.

NSF Graduate Research Fellowships. (Award=\$710,500; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

1999 (\$1,120,354)

Travel Grant for Faculty at Minority/Female Institutions to Attend PLDI'99, pi= Barbara Ryder, ACM (Total Award=\$23,485 split between EIA=\$13,485 and CCR=\$10,000)

The organizing committee of the 1999 ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI) invited faculty actively involved with the education of women and minorities to attend the 1999 PLDI tutorials and conference. A full day of tutorials was offered for educators. Targeted schools include primarily undergraduate institutions, including historically African American colleges, women's colleges, and other colleges with large minority enroll-

ments. For the selected participants, travel and subsistence costs were shared between NSF and ACM SIGPLAN, and ACM also provided the registration fees for the tutorial and conference.

CRA's Committee on the Status of Women in Computing Research, 1999–2002:
pi's=Jan Cuny, U. Oregon, Leah Jamieson, Purdue U. and William Aspray,
CRA (Award=\$206,454)

A 3-year continuation of support for CRA-W. This award provides travel support for committee meetings, for continuing projects, and for new projects.

Virtual Workshop on Underrepresentation of Women in IT, 1999: pi=Doris
Carver, Louisiana State U. (Award=\$132,475)

Electronic workshop with moderated discussion groups to identify research directions for examining fundamental causes underlying the underrepresentation of women in IT.

Travel Support to FCRC CRA-W Super-Mentoring Workshop, CFRC'99,
1999: pi's=Francine Berman, UC, San Diego and William Aspray, CRA
(Award=\$70,000).

Travel support for participants and speakers at the CRA-W Super-Mentoring Workshop, Atlanta, Georgia. This is a longer version of the career management workshops.

NSF Graduate Research Fellowships. (Award=\$687,940; includes 10 new
awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

2000 (~\$3,146,287)

Information Technology Workforce (ITWF). (Total Awards=\$5,021,970)

The ITW program is supporting a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. 20 awards were made in the first competition. The 18 supported projects funded in FY00 involved both women and minorities. Half the ITWF budget is counted towards women's projects.

Scholarship and Travel Grants for the Grace Hopper Celebration of Women in
Computing, Summer of 2000, pi=Denise Gurer, ACM, (Award=\$62,002)

On September 14–16, 2000, the third Grace Hopper Celebration of Women in Computing (GHC) was held at the Sheraton Hyannis Hotel in Hyannis, Massachusetts. A travel grant was made for students and junior faculty participants to attend this technical conference. This grant provides travel costs and registration

expenses for approximately 80 people in computing and related fields who otherwise would be unlikely to attend.

NSF Graduate Research Fellowships. (Award = \$573,300 includes 9 new awards and approximately 20 continuing awards)

9 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

2001 (~\$4,154,695)

Information Technology Workforce (ITWF). (Awards from FY00 funded in FY01 = \$499,091, Continuing Grants = \$1,244,056).

2 additional awards from the FY00 ITWF competition were funded in FY01. The 2 supported projects involved both women and minorities.

Information Technology Workforce (ITWF) (Total Awards = \$3,445,097)

The ITWF program is supporting a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. Ten new awards were made in FY01 supporting projects involving both women and minorities. Half the ITWF budget is counted towards women's projects.

NSF Graduate Research Fellowships. (Awards = \$689K; includes 13 new awards and approximately 13 continuing awards)

13 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

2002 (~\$3,812,832)

Managing the Academic Careers for Women Faculty at Undergraduate Computer Science and Engineering Institutions, 1994–1996: pi's – Joan Francioni, CRA. (Award = \$46,404, half contributed by EHR/DUE)

The workshops will present practical information, advice, and basic information needed to succeed in academic careers. The attendees will be provided with opportunities to interact with more senior women in academia, to develop mentoring relationships, and to start a professional network with their fellow attendees.

Scholarship and Travel Grants for the Grace Hopper Celebration of Women in Computing, Summer of 2002, pi = Deborah Stevens, Institute for Women and Technology (Award = \$64,500)

On October 9–12, 2002, the fourth Grace Hopper Celebration of Women in Computing (GHC) was held in Vancouver, British Columbia, Canada. A travel grant was made for students and junior faculty participants to attend this technical conference. This grant provides travel and registration funding for approximately seventy-five people in computing and related fields who otherwise would not be able to attend.

Special Issue of the ACM SIGCSE Bulletin, “Women in Computing”, John Impagliazzo, Hofstra University, PI (Award = \$35,880)

This award provides partial support for preparation and targeted dissemination of a special issue of the ACM SIGCSE Bulletin—a special issue on “Women and Computing”. This funding supports dissemination of the special issue to K-12 teachers attending the National Educational Computing Conference (NECC) at which K-12 teachers represent a large segment of the attendees. Volunteers at the conference disseminate the free issues to the K-12 teachers from the ACM exhibit booth. The Editor-in-Chief of the SIGCSE newsletter and the two ACM-W Co-chairs oversee the dissemination.

Other copies of the special issue are being distributed to university department chairs, to attendees at the Grace Hopper Celebration of Women in Computing, to ACM Special Interest Group (SIG) Chairs, and to a number of ACM sponsored conferences. These latter dissemination efforts are being carried out with support from the ACM Executive Committee and a number of other ACM groups, including the ACM Council, ACM-W, and the SIG Project Fund.

Scale-up, Evaluation and Institutionalization of the CRA Distributed Mentor Project, 2002–2005: pi’s – Nancy M. Amato, Texas A&M, William Aspray, CRA and Mary J. Harrold, Georgia Tech. (Total Award = \$1,613,911 over 5 years; FY02 = \$302,855, FY03 = 324,864, FY04 = 327,898, FY05 = 375,600, FY06 = 282,694)

The goal of this project is to increase the number of women entering graduate programs in CISE areas by providing opportunities for female undergraduates to be involved in research projects with mentors at major research universities so as to experience research and graduate life. CRA proposes to build on that success by significantly increasing the number of students participating in DMP. To do this, CRA will initiate a new outreach program targeted at undergraduate institutions and universities without active research programs. The project will initially provide support for 30 students and will increase that number by 5 each year until, by the fifth year, 45 students will be working with experienced qualified mentors during the summer months. In addition the project includes a significant evaluation component, a plan for dissemination of the results of the evaluation, and a plan to secure long-term funding and therefore institutionalization of the project from industry and other foundations.

NSF Graduate Research Fellowships. (Awards = \$960,000; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

Information Technology Workforce (ITWF) (Total Awards + supplements = \$2,523,090)

The ITWF program supports a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. Eleven awards were made in FY02 supporting projects involving both women and minorities. Half the ITWF budget is counted towards women's projects.

Information Technology Workforce (ITWF) (Continuing grants = \$2,329,700)

The ITWF program supports a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. Half the ITWF budget is counted towards women's projects.

2003 (\$4,443,999)

Travel Grants for Faculty at Minority/Female Institutions to attend FCRC'03, pi = Barbara Ryder, ACM. (Award = \$69,135)

The travel grants support faculty actively involved with the education of women and minorities to attend the constituent conferences of FCRC 2003, the primary technical conference incorporating the interests of many of the ACM special interest groups. The project incorporates a special panel and discussion session for the travel grant recipients on the issue of recruiting and retaining women and minorities in computer-related fields. Targeted schools include primarily undergraduate institutions, including HBCUs, women's colleges, and other colleges with large minority enrollments. An additional set of faculty is being similarly supported by the ACM SIG Project Fund as part of the overall effort.

Scale-up, Evaluation and Institutionalization of the CRA Distributed Mentor Project, 2002–2005: pi's – Nancy M. Amato, Texas A&M, William Aspray, CRA and Mary J. Harrold, Georgia Tech. (Continuing Award = \$324,864)

Continuation of the DMP project. The goal of this project is to increase the number of women entering graduate programs in CISE areas by providing opportunities for female undergraduates to be involved in research projects with mentors at major research universities so as to experience research and graduate life.

NSF Graduate Research Fellowships. (Awards = \$1.4M; includes 10 new awards and approximately 20 continuing awards)

10 additional 3-year awards were made as part of the Women in Computer and Information Science (WICS) Award.

Information Technology Workforce (ITWF) (10 Awards in FY03, budget=\$3,637,461)

The ITWF program supports a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. 10 awards were made in FY03 supporting projects involving both women and minorities. Half the ITWF budget is counted towards women's projects.

Information Technology Workforce (ITWF) (Continuing grants=\$1,562,539)

The ITWF program supports a broad set of scientific research studies focused on the under-representation of women and minorities in the IT workforce. Half the ITWF budget is counted towards women's projects.

Bobby Schnabel – \$50,000 planning grant

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