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William Aspray

# Participation in Computing

The National Science Foundation's  
Expansionary Programs

 Springer

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## Preface

This is the first of two books on aspects of the history of broadening participation in computing in the United States, each of which can be read independently of the other. The other book, on *Women and Underrepresented Minorities in Computing*, is expected to appear within a year after this book. This volume is focused on the efforts of the US National Science Foundation to broaden participation in computing of women, underrepresented minorities (especially African Americans, Hispanics, and American Indians), and people with disabilities.

The coverage here is intended to provide a brief but thorough and accurate history of NSF efforts in this area of underrepresentation. While the immediate goal is to provide a historical framework to the social scientists working on current Sloan Foundation grants related to underrepresentation in computing, the book is also directed at other social scientists and learning scientists interested in computing, computer scientists interested in issues of education or diversity, science policy-makers, and historians of computing in particular and historians of science and technology more generally. The intention here is to bring into public light a mostly unknown piece of NSF's history.

This book or even these two books together are not intended to provide the complete and authoritative historical coverage offered by works such as Amy Sue Bix's book (2013) on the history of engineering education for women in America or Margaret Rossiter's three volumes (1982, 1995, 2012) on the history of women in science in America. Of course, it took Rossiter an entire career to write her three volumes, whereas these brief books are the product of two highly concentrated years of work.

In order to write these two volumes so quickly, certain shortcuts were taken. No trips were made to archives to find source materials. There has been an extensive, if not exhaustive, search of the published literature for source materials. More than 900 sources have been consulted in writing these two books. This account relies not only on published books and articles but also on websites, project reports, white papers by nonprofit organizations, existing oral histories, and other sources. The project also involved recording a number of new oral histories, and they provide the largest value added to this work. These interviews are being housed at the Charles

**Table P.1** Project Advisory Group

Rick Adrion (U. Massachusetts)
Atsushi Akera (Rensselaer P.I.)
Lecia Barker (U. Texas at Austin)
Bruce Barnow (George Washington U.)
Paul Ceruzzi (National Air and Space Museum)
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Eugene Spafford (Purdue U.)
Moshe Vardi (Rice U.)
Roli Varma (U. New Mexico)
Stuart Zweben (Ohio State U.)

Babbage Institute at the University of Minnesota-Twin Cities and will eventually be available to other scholars.

What is the overall structure of the book? The first chapter discusses the importance and extent of underrepresentation in computing, and then it looks at the coevolution of computing and NSF from the end of the Second World War through the 1970s. Chapter 2 discusses the history of NSF programs intended to broaden participation in the computing and STEM disciplines. Chapter 3 examines in detail the alliances formed under the NSF broadening participation in computing program – arguably NSF’s most successful activity in this realm. Chapter 4 discusses NSF’s recent effort to revitalize formal K-12 education in the United States, while Chap. 5 contrasts these formal efforts with more informal startup efforts to provide informal computer education. Chapter 6 provides conclusions that cover the entire book.

Some 25 computer scientists, historians, and social scientists have kindly volunteered their time to advise on this project. Their names and affiliations appear in Table P.1. They have devoted many hours providing guidance, opening doors, and critiquing draft chapters. Special credit deserves to be given to one member of the advisory group, Lecia Barker, who has advised the author several times a week

throughout the project – offering thoughtful analysis, new source materials, and names of people to contact based on her many years of working in this field. Thanks also to the two doctoral students in the University of Texas at Austin School of Information, Steve McLaughlin and Rachel Simons, who provided research assistance and to another doctoral student, Melissa Ocepek, who helped to render the bibliography and the rest of the manuscript into a form suitable to the publisher. Everyone interviewed for this book as well as all the principal investigators in the Sloan Foundation program that supported this project, in addition to the Project Advisory Group members listed in Table P.1, were given a chance to comment on a complete first draft of the manuscript. This led to many improvements in the text; all factual errors and unreasonable interpretations are the sole responsibility of the author.

This study was enabled in part by a grant from the Alfred P. Sloan Foundation, which helped the author to buy out of his teaching for a year and pay for transcription of interviews. The author is also grateful for the support from his home institution, the School of Information at the University of Texas at Austin, which relieved him of some administrative responsibilities for a year and paid for a part-time research assistant for a semester, and to a grant from the Institute of Museum and Library Services, which supported a doctoral student for a semester to assist with the research.

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