

Catherine A. Roberts

Overview

My professional career is driven by my core belief in the transformational potential of education. All of my work is centered around improving student success and optimizing solutions. My doctorate in applied math enabled me to develop an interdisciplinary research program in natural resource modeling. Seven years' experience as the chief executive officer of my discipline's national professional society, along with more than 25 years in higher education as a faculty member and administrator, have prepared me to provide thoughtful, creative, inclusive, ambitious, and collaborative leadership.

Education

Ph.D., Northwestern University (1992, Applied Mathematics & Engineering Sciences)
A. B., *magna cum laude*, Bowdoin College (1987, Mathematics & Art History)

Administrative Experience

Chief Executive Officer, Consortium for Mathematics and Its Applications (2023-2024)
Executive Director, American Mathematical Society (2016-2023)
Co-Chair, 2023 CEO Symposium, Council of Engineering & Scientific Society Executives (2022-2023)
Director for Diversity and Inclusion, American Mathematical Society (2019-2022)
Chair, Diversity Leadership Team, College of the Holy Cross (2014-2015)
Editor-in-Chief, *Natural Resource Modeling* journal (2004-2016)
Chair, Department of Mathematics & Computer Science, College of the Holy Cross (2009-2015)
Chair, Diversity Leadership Team, College of the Holy Cross (2014-2015)
Director, Environmental Studies Program, College of the Holy Cross (2006-2008)
Leadership Team & Senior Trainer, Intel Mathematics Program (2008-2016)

Faculty Appointments

Professor, College of the Holy Cross (Assoc. 2001-2013, Full 2013-2018, Faculty Assoc. 2018-2024, Distinguished Visiting Lecturer 2024-present)
Visiting Scholar in Applied Mathematics, Brown University (2017-2023)
Master Teacher, Massachusetts Department of Elementary and Secondary Education (2007-2010)
Professor, Northern Arizona University (Assistant 1995-1998; Associate 1998-2001)
Professor, University of Rhode Island (Assistant 1992-1995)

Administrative Professional Development

American Management Association *Developing Executive Leadership* (2019)
Higher Education Resource Services (HERS) Institute *Advancing Women Leaders in Higher Education Administration* (2010 - 2011)

Administrative Experience

Executive Director, American Mathematical Society.

The American Mathematical Society (AMS) is the premiere mathematics professional society advancing research through publishing, conferences, advocacy, and other activities. During my tenure, the AMS had a budget of over \$33 million and an endowment valued at \$250 million. I oversaw 225 employees in Michigan, Rhode Island, and Washington DC. I was responsible for acquiring and publishing about 75 books a year, supporting multiple high-quality research journals, and organizing several meetings (including the world's largest annual math conference). The AMS creates and maintains MathSciNet, the curated database of the mathematics literature, subscribed to by academic libraries around the world. I interacted regularly with international and national leaders on matters of critical interest to our discipline and to higher education. As the lead fundraiser, I helped bring in millions of dollars in grants and donations. Accomplishments include implementing an ambitious five-year strategic plan, which involved rebranding the AMS and establishing new departments for diversity/inclusion/equity, membership, education, and communication. I hired multiple senior level executives and dramatically diversified our staff. I successfully reversed a trend of expenses growing faster than revenue before the end of my second year and came in under budget every year. I led our development office's first-ever fundraising campaign, which reached its goal of three million dollars in donations during the first 18 months and was intentionally structured to enable adaptation in the future as the fund grows and our needs change. This was the first time that members, governance, and the executive team were explicitly asked to contribute, so this initiative notably strengthened our burgeoning culture of philanthropy. While curating a \$1.5 million pledge from one donor, one of my personal visits resulted in an additional new gift of \$450,000. I also elevated our Washington DC government relations efforts to enhance the voice of research mathematicians in national discussions. This was accomplished by doubling staff, relocating our office to be closer to the Hill, and dramatically increasing the organization's profile and relationships with Congress and other key stakeholders.

Chair, Department of Mathematics and Computer Science, College of the Holy Cross.

Led department through a program review and substantial curricular reform; improved recruitment and retention of under-represented students and faculty through direct mentorship; managed the growth of our computer science program and the start of our statistics program; documented office practices to ensure a smooth succession to new leadership; expanded course offerings; supervised review of tenure and promotion cases; conceptualized and secured significant improvements to the physical space. Interacted with the Board of Trustees, President, prospective students, and alumni.

Director, Program in Environmental Studies, College of the Holy Cross.

Led this interdisciplinary program involving faculty from across campus. Brought together faculty from area colleges, regional nonprofits, and government agencies to coordinate teaching, scholarship, and stewardship activities related to our local watershed.

Editor-in-Chief, *Natural Resource Modeling*.

Orchestrated the transition of the journal to a new publisher to secure financial stability and raise international profile; strengthened and diversified editorial board with several new highly regarded scholars; established robust media and online presence; secured the journal's initial impact factor (and then tripled it).

Board and Executive Committee Leadership

- Committee for Women in Mathematics, International Mathematical Union (2018-2023)
- International Council for Industrial and Applied Mathematics, Board of Directors (2016-2023)
- International Math Olympiad 2021, Board of Directors (2018-2021)
- AMS, Chair of Selection Committees for Editor in Chief of *Bulletin of the AMS* (2021)
- AMS, Chair of Selection Committees for Editor in Chief of *Notices of the AMS* (2017, 2022)
- Association of Teachers of Mathematics in Massachusetts, Board of Directors (2016)
- Association for Women in Mathematics, Executive Committee (2002-2006)
- Society for Industrial & Applied Math, Scientific Advisory Board for Math of Planet Earth (2014-2017)
- College of the Holy Cross, President's Cabinet as chair of the Diversity Leadership Team (2014-2015)
- College of the Holy Cross, Finance and Planning Council of the Board of Trustees (2013-2015)
- College of the Holy Cross, Institutional Advancement Committee of the Board of Trustees (2008-2014)
- Resource Modeling Association, Board of Directors (2002-2016)
- College of the Holy Cross, Search Committee for Vice-President of Development (2012)
- College of the Holy Cross, Board of the Alumni Association (2006-2007)
- Regional Environmental Council of Central Massachusetts, Board of Directors (2004-2007)
- Rocky Mountain Math Consortium, Board of Directors (1998-2001)
- Northern Arizona University, President's Commission on the Status of Women (1998-2001)

Teaching

Relating the significance of mathematics as a tool for understanding and improving the world is fundamental to my approach to teaching. My classroom is welcoming and inclusive. I emphasize mathematics as an opportunity to develop problem-solving skills and to learn how to communicate in a specialized language. Two of my courses were enriched by a community-based service-learning component, where student groups used quantitative methods to directly assist local nonprofit agencies engaged in environmental justice and education.

Research

I have participated broadly in interdisciplinary, quantitative research in the area of natural resource modeling. For example, I studied problems related to human decision-making and how it influences the routing of recreational white-water rafting traffic in the Grand Canyon. Additionally, I investigated mathematical models of diffusive media relevant to studies of ground water saturation and flooding events.

Presentations

Over 230 professional presentations in a wide variety of formats and forums.

Publications

37 refereed research publications; dozens of articles for magazines and newsletters.

Grants

As a faculty member, raised over \$1.7 million to support my own research and to support programs and opportunities for girls, women, and teachers in STEM. Funding was from agencies such as the National Science Foundation, U.S. Department of the Interior, and the National Security Agency. At the American Mathematical Society, I oversaw multiple existing grant-supported programs, and during my tenure secured over \$10 million in new awards.

Full CV and References available upon request.