

CHRISTINE STEVENS

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Where did you grow up and go to school?

I was born in Maryland, but lived on Long Island (in New York State) and in two cities in California, and I graduated from high school in Morristown, New Jersey. Except for three years, I attended public schools. Looking back at my schooling, I can see that moving around so much led to some problems in “articulation,” but I managed to navigate the educational system. In the 8th grade, for example, I was taught a little algebra and then finished the material on my own. In the 9th grade, I started in a new school that used the SMSG (School Mathematics Study Group) material for algebra. Then, halfway through the year, my family moved and I was back in a traditional algebra class. If I hadn’t finished the 8th grade algebra on my own, I would not have been able to make the transition back to a traditional algebra curriculum. Earlier, in the 6th grade, a problem arose when I started in a new school and my mother was notified that I was weak in mathematics. When the teacher showed her my work, it turned out that my answers were correct, but I had given them in a format that the teacher had not expected.

When did you get interested in mathematics? What were the circumstances?

I had many interests, and mathematics was certainly one of them. I always enjoyed mathematics and I thought about it a lot. When I did science projects in school, they were mathematics projects, involving the Klein bottle and the Möbius strip. It may also be significant that, when I was in high school, I was hired to write the solutions manuals for several elementary and secondary mathematics textbooks. Although I didn’t realize it at the time, the books on which I worked had been written by some of the leading figures in K-12 mathematics education, such as Steve Willoughby, who would later become President of NCTM. This was my first paying job, and perhaps it foreshadowed my later interest in educational issues.

I chose Smith College, among various good liberal arts colleges, because it seemed to me to be the strongest one in mathematics and science. I was a chemistry major at first. I switched to mathematics because of an undergraduate research experience after my sophomore year. It was a chemistry project supported by the National Science Foundation. I discovered that I enjoyed analyzing the data more than collecting them. So my interest shifted from chemistry to applied mathematics. Between my junior and senior years at Smith, I worked at Bell Laboratories in Whippany, N.J., doing Fortran programming and working with the simplex algorithm. I was doing cost-benefit analyses for anti-ballistic missiles, and I was struck by the fact that every number in the programs I wrote represented a nuclear weapon. I began to wonder whether I wanted to

focus all my energies on destruction. So my interest moved to pure mathematics in my senior year.

What was the special attraction of mathematics?

The logical structure of the subject made more sense to me. There was less memorizing, and I found the work in mathematics less frustrating than in the laboratory sciences. Also, the science applications with which I was familiar at that time seemed to be related to weaponry. Later, I realized that the applications of science were much more diverse than that, but by that time I had already chosen pure mathematics as my field of study.

What did your parents do? Did they influence your interest in mathematics? If yes, how?

My father was an aeronautical engineer who worked for defense contractors, which is why we moved around so much. He designed aircraft components like thrust reversers. He also invented a passenger loading ramp that would automatically convey passengers up to a plane's door from ground level, like an escalator; he had not anticipated the current set-up in airports, where passengers board directly from the terminal by walking through a horizontal jetway. My mother was what was called a homemaker. She graduated from high school and was especially interested in literature and the humanities. My parents were originally from New Jersey.

How about siblings or other family members?

My older brother, Henry, earned a Ph.D. in classics. We are quite close and, in fact, we have a current joint project involving translating some of Euler's work.

You obtained your Ph.D. with Andy Gleason. Everyone, including me, feels that Andy was a great guy, and I reckon you agree. Anything you'd like to add to that? Was the transition from Smith College to Harvard difficult?

I applied to Harvard, Cornell and Princeton and was accepted by all three. However, my application to Princeton was for their program in the philosophy and history of mathematics, and I realized that I wanted a more mathematical program. I ended up choosing Harvard over Cornell.

The transition to Harvard was difficult, though Smith had a good liberal arts program and my senior project was an extremely valuable experience in which I had learned how to learn on my own. So I had a pretty good background, but still found myself on the "remedial track" at Harvard, since many of the incoming hotshots had already taken several graduate courses as undergraduates.

I've described some of my experiences with Andy Gleason in a memorial article that appeared in the *Notices of the AMS* (November, 2009). Even among Harvard people, Gleason was regarded as extra bright. I didn't realize until later how broad his interests were, which included work with the MSEB (Mathematical Sciences Education Board) and with K-12 mathematics curricula.

I had started out working on manifolds with John Mather, but Mather left Harvard for Princeton, so I approached Gleason because I had taken a course with him on topological groups, during which he had posed some open questions that involved Lie groups. I thought my knowledge of manifolds might help with those questions. At first I was afraid to show Gleason how little I knew, so I was a little too eager to be independent. But when I really needed help, Gleason gave me good advice. Now that I have had Ph.D. students of my own, I can see that he provided me with a good combination of encouragement and independence.

It's clear that good teaching has been important to you throughout your career, so it was natural for you to get involved in the MAA. How and when did that happen? I note that the Missouri Section honored you with its teaching award in 1996, and that you obtained the Haimo Award in 1997.

I had good teachers myself, and they were early models. I taught at Mount Holyoke College for four years, and this made a big difference because teaching at a liberal arts college leads you to think about the role of a teacher in a different way. For example, I taught a "reform-style" calculus course there long before the term "calculus reform" had even been invented. But teaching *per se* wasn't my entry to the MAA. In fact, my career path is much more complicated.

Tell me about it.

I should mention that I met my future husband, Thomas Moisan, at Harvard. In fact, I recruited him to work on the McGovern campaign in 1972. I had already been active in the anti-war movement. Tom and I were married in 1974. His degree was in English, and he obtained a teaching job at Middlebury College in Vermont.

While finishing up my degree, I taught at Lowell State College (now the University of Massachusetts Lowell). I then got a job at Mount Holyoke College in 1977, and for the next four years Tom and I had two apartments in two different states. Each of us kept looking for a job that would bring us geographically closer to the other, but without success. Finally, we realized that we were more marketable as a couple. In 1981 we received two pairs of offers and took the one from Arkansas State University in Jonesboro. They had agreed to an unpaid sabbatical the next year, which we took in Cambridge, England. I spent the year in Cambridge working on some problems in topological groups and also on the history of Lie groups. It was my first trip outside North America,

and it was great fun! The year in Cambridge was a productive one for both Tom and me.

We returned to Arkansas State in 1983-1984. The University's President at that time was Ray Thornton, who had represented an Arkansas district in the U.S. House of Representatives. With his help, I successfully applied to become the 1984-85 AMS/MAA/SIAM Congressional Science Fellow in Washington, D.C., where I worked as a legislative assistant to Rep. Ted Weiss of New York. Meanwhile, Tom did research at the Folger Shakespeare Library. After that, we returned to Jonesboro for the years 1985-1987. From 1987-1989, I was at the NSF as a program officer in teacher enhancement. During that period, Tom taught at Mary Washington College (now Mary Washington University) in Fredericksburg, Virginia.

In 1989, Tom was hired as chair of the English Department at Saint Louis University. Fortunately, their Mathematics Department had an open position, and I was hired, too. Later we were simultaneously chairs of our respective departments. I think that administrators were sometimes worried by the fact that these two large departments were "in bed with" each other.

Finally, I can explain my entry into the inner workings of the MAA.

It was undoubtedly my experiences in Washington that led to my appointment in the early 1990s to the MAA's Science Policy Committee, which I eventually chaired. While at the NSF, I had participated in some of the deliberations of the MAA's Task Force on Minorities in Mathematics, which was chaired by Louise Raphael. The report of the Task Force led to the establishment of SUMMA (Strengthening Underrepresented Minority Mathematics Achievement) and the Committee on Minority Participation in Mathematics, to which I was subsequently appointed. Then in 1993 Marcia Sward arranged for me to be a Visiting Mathematician at the MAA for a few months, while Tom had a research fellowship at the Folger Shakespeare Library.

This must be about the time you got involved with Project NExT (New Experiences in Teaching). How did that program get started?

As a Visiting Mathematician at the MAA, I worked on strategic planning and learned a lot about the structure of the organization. In the spring of 1993 I had several conversations with Jim Leitzel, who had previously been a Visiting Mathematician at the MAA, and he suggested that the MAA sponsor a conference for new Ph.D.s in mathematics about issues in teaching undergraduate mathematics. Our original objective was to bring new faculty up to date on changes in curriculum and pedagogy that had been occurring while they were in graduate school. I discussed the concept with some people at the NSF, and they thought it was a good idea. When Jim Leitzel and I computed the budget for a week-long workshop, however, we decided that it was too

expensive. Then we had the idea of piggy-backing on the summer meetings, with two or three days of sessions just before the meetings (which were still, at that time, joint meetings of the MAA and the AMS). Jim and I worked out the details and drafted a sample workshop program. Jim wrote up a proposal for the MAA, but we heard nothing back from the MAA leadership.

During the summer, the Exxon Education Foundation approached Marcia Sward (who was the MAA Executive Director) about the possibility of expanding their mathematics program to include the undergraduate level. Marcia responded that there was a big need for professional development for faculty and mentioned, as an example, the conference that Jim and I had proposed for new Ph.D.s in mathematics. The Exxon Education Foundation liked this example and asked for a formal proposal within a month! Jim and I wrote the proposal together, with a lot of input from Marcia Sward. Only six weeks after getting the Exxon Education Foundation's request for a proposal, Marcia received a letter telling her that they would fund the program. This led to eighteen years of support for Project NExT from the Exxon Education Foundation and its successor, the ExxonMobil Foundation. Our program officer was Bob Witte, who was very knowledgeable about mathematics education and a key supporter of Project NExT.

When the MAA received the request to submit a formal proposal for the program that would eventually be called "Project NExT," Jim Leitzel invited me to co-direct it with him. When I expressed some reservations about my availability, he said that he would go it alone if I declined. So I agreed to co-direct the program with him. Sadly, Jim died in 1998, so I then became the director of Project NExT.

**Did you receive mentoring in the MAA at the early stages of your career?
By whom?**

Not at the earliest stages of my career. While I was at Arkansas State, one of my colleagues, who happened to be one of the department's most active researchers, passed out MAA membership forms at a department meeting. As I thought about my participation in the Joint Mathematics Meetings in January, I realized that I spent about half my time at MAA sessions of one kind or another. Obviously the MAA was offering me something that I found professionally valuable, so I decided that I should support it by becoming a member. But I was not active in the MAA at the section or national level.

My first mentor in the MAA was Marcia Sward, whom I met when I was interviewed in 1984 for the Congressional Science Fellowship. I'm sure she was instrumental in getting me appointed to my first MAA committees, and I worked closely with her when I was a Visiting Mathematician at the MAA. Jim Leitzel was another key mentor. His incredible work ethic was both a challenge and an inspiration, and it was from him that I learned how to run a large national project. Joe Gallian and Aparna Higgins, who worked with me on Project NExT, helped me to understand the important role that is played by the MAA Sections.

You've been at St. Louis University for 20 years and served as your department chair during 1994-1999. Are there any special programs there that you were instrumental in?

Yes. I encouraged the department to adopt "reform-style" pedagogy in calculus, and we integrated the use of calculators into our curriculum. Also, while I was chair I established a new hiring procedure that made it easier to identify candidates who excelled both in teaching and research.

What other accomplishments in the MAA are you especially proud of?

My work with Project NExT is undoubtedly my most significant contribution to the MAA. Closely related to that was the role that I played in helping to establish the James R.C. Leitzel Lecture at Mathfest, which honors Jim's many contributions to the profession. I also worked to broaden the scope of the mathematics community's advocacy for mathematics. When I became chair of the MAA Science Policy Committee, I realized that the Joint Policy Board for Mathematics (JPBM) focused exclusively on funding for mathematical research. I argued that funding for undergraduate mathematics education was also important and managed to get a concern for it voiced in JPBM's Congressional testimony.

What changes have you seen in the mathematics world since you first became involved?

I think I've witnessed a lot of changes in the world of mathematics. Substantively, it was exciting to be around for the classification of finite simple groups and the proofs of Fermat's Last Theorem and the Poincaré Conjecture. It has also been fun to observe the rapidly growing role of calculators and computers in mathematical research and applications.

There have been changes in the mathematical community, as well. When I attended my first Joint Mathematics Meeting in Biloxi, Mississippi, in January of 1979, women mathematicians were much less visible than they are now. I think that the program also paid less attention to undergraduate and graduate education than current programs do. The meeting schedule itself was quite demanding. There were AMS contributed paper sessions in the evening, and my talk (about my dissertation) was scheduled at 7:45 p.m.!

Fortunately, one thing that has not changed is the friendliness of the mathematical community. Although I went to Biloxi knowing hardly any mathematicians at all, I met a lot of interesting people there, and I've continued to find mathematicians much more outgoing than the usual stereotype would suggest.

Have you been active in other organizations, such as AMS and AWM?

I am currently a Member at Large of the AMS Council. I have served on a couple of AWM committees, and I am currently a member of the AWM Committee on Committees. I'm a Fellow of the AAAS, and I served a term on the Electorate Nominating Committee for its section on mathematics. I've also served on several SIAM Committees, including the Science Policy Committee and the Education Committee.

What personalities have stood out in the mathematical community, in the MAA and elsewhere?

I learned a lot about the MAA and its role in the mathematical community from all the MAA Presidents with whom I worked on Project NExT: Don Kreider, Ken Ross, Jerry Alexanderson, Tom Banchoff, Ann Watkins, Ron Graham, Carl Cowen, Joe Gallian (whom I've already mentioned), and David Bressoud. Ken Hoffman gave me some insight into how to build support for mathematics and mathematics education. And naturally all the Project NExT Fellows stand out for me, but especially Judith Covington and Gavin LaRose, who worked with me as associate co-directors of Project NExT.