

have as lasting an impact on mathematics as her theorems." I submit there is much to be gained by internalizing her axioms, for students, educators, and all those inhabiting the mathematical world alike.



Sinan G. Aksoy

### Credits

Figure 1 is courtesy of Todd Kemp.

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## Celebrating Karen Parshall as an Advisor

Karen Parshall is the Commonwealth Professor of Mathematics and History at the University of Virginia. Her extensive research focuses on the history of nineteenth- and twentieth-century mathematics. She was named an inaugural Fellow of the American Mathematical Society in 2012 and a Fellow of the American Association for the Advancement of Science in the Section on Mathematics in 2020. In 2018, she received the Albert Leon Whiteman Memorial Prize of the American Mathematical Society "for her outstanding work in the history of mathematics, and in particular, for her work on the evolution of mathematics in the United States and on the history of algebra, as well as for her substantial contribution to the international life of her discipline through students, editorial work, and conferences."<sup>1</sup> Here, her graduate students Della Dumbaugh, Patti Hunter, Sloan Despeaux, Deborah Kent, and Laura Martini (organized in order of completion of their PhD) offer reflections on their experiences while working with Karen Parshall.

<sup>1</sup>The citation for this prize offers an overview of Parshall's scholarly work along with biographical and autobiographical insights. See "2018 Albert Leon Whiteman Prize Announcement," *Notices of the American Mathematical Society* 65 (4), 2018, 472–474. <https://www.ams.org/journals/notices/201804/rnoti-p472.pdf>.

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## Della Dumbaugh

When I arrived at the University of Virginia as a graduate student in the fall of 1988, I planned to study pure mathematics, with some combination of algebra and number theory. One rainy Friday evening that first semester I stumbled on a copy of Carl Boyer's *A History of Mathematics* at the local independent bookstore in Charlottesville. I couldn't put it down that weekend. I decided to take a class that spring in the history of mathematics. This meant listening to Karen Parshall talk about the history of calculus, learning about and reading primary sources, and writing papers on a broad range of topics, including the history of the solution to the cubic. I was hooked.

This class led to a joint project with Karen exploring the American mathematical community as it took shape in the late nineteenth- and early twentieth-centuries. This entailed me driving to Karen's lovely home on Coleman Drive, to the sunny solarium where we combed through early editions of the *Bulletin of the New York* and, later, *American Mathematical Society* and meticulously recorded information about mathematicians, talks, conferences, and institutions. These details ultimately combined to identify a growing, vibrant community of mathematicians. As we worked, we talked about our observations. Who was this Leonard Dickson who kept giving talks and writing papers? Why were there so few women recorded on these early pages of the *Bulletin*? What was going on at the University of Chicago? I listened to Karen talk more broadly about these observations and queries that arose along the way. Looking back, these long afternoons form some of my most treasured moments with Karen. I had the chance to hear her think out loud about the early American mathematical community as new ideas unfolded before us.

Sometime later, I made an appointment with Karen, drove out to Coleman Drive, handed her a single piece of paper with an outline of a dissertation on Leonard Dickson and his work in the theory of algebras, and asked her if she would take me on as a student. She said yes. That moment, I suppose, was the beginning of my work with her as a graduate advisor. Through Karen's expert guidance, that piece of paper eventually grew into a 237-page dissertation. How did that happen? That evolution hinged on what I consider the two sterling features of Karen Parshall as PhD advisor: her commitment to weekly meetings and her focus on writing. The former taught consistency and the latter attention to detail. To this day, I am never far from my current research project and I am unafraid to print out my written work and take a red pen to it. But these skills did not come easily. Meeting with Karen to discuss Bruno Latour or Thomas Kuhn could leave me frazzled and

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frustrated (but I always went back). It could be deflating to hand her twenty pages of work one week and have her hand it back to me the next week with so much red ink I could barely find the original text. Over time, however, I came to appreciate these practices. I gradually learned to ask more informed questions as I read demanding texts. (It also helped when Patti Hunter joined the research group so she and I could discuss the texts all week long in advance of the meeting with Karen.) I also grew more accustomed to the red ink and, gradually, I learned to reach for stronger verbs and write in the active voice. Lo and behold, the red ink subsided. I remember writing my parents during this time and searching for stronger verbs as I expressed my personal thoughts on lavender stationary. Karen had worked her magic. Years passed before I realized how much of herself she had given me in the process. When was the last time someone read ten or fifteen pages of your writing and offered you genuine, thoughtful feedback? That is work. It is a labor of love that advances you personally and the professional community more broadly.

Karen helped me learn to appreciate the writing process and, in particular, to value the opportunity to reconsider and revise my thoughts. She showed me how to keep both the details and the broader context in focus. She also taught me to give talks in a specified time frame (“if your talk is scheduled for 20 minutes, people stop listening at 21 minutes”). I remain grateful to Karen for believing in me before I believed in myself and for her consistent advising strategies that allowed me to grow into a scholar and pursue an immensely fulfilling life in mathematics.



Della Dumbaugh

## Patti Hunter

As a Master's Degree student in Mathematics at the University of Virginia, I took a History of Mathematics course from Karen my second year, at the recommendation of a good friend, Della Dumbaugh. “Karen will challenge you to read carefully and write clearly, and her course will open your eyes to new vistas in mathematics,” Della insisted. She was right and it was a delightful course—one of the last, I

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thought, I would take as a graduate student, since I intended to find a job teaching high school mathematics. About a year and a half later, while teaching at a small college as a sabbatical replacement, I registered for the Joint Mathematics Meetings and noticed a talk by Karen on the program. Sliding into a seat as the talk began, I caught Karen's eye, wondering whether she would remember me—her look of recognition and delight emboldened me to talk with her after the lecture, and she suggested that we have coffee. A few weeks later I submitted my application to pursue doctoral work with Karen, back at U.Va.

Over the next few years, Karen would always greet my weekly knock on her door for our meetings with that look of delight, no matter how busy she was with her teaching, scholarship, or leadership in the university's departments of history and mathematics where she holds appointments. Karen invested in us as her students as part of her calling to contribute to the community of historians of mathematics. She taught us—by example—that the people of the community are important. The subjects of our research are important, and we ourselves, as students, teachers, and scholars, are important. Her own research uncovered the crucial aspects of the formation and sustenance of scholarly communities, and I suspect her investment in her students emerged in part from what she learned in her research about the important role played by mentors in advancing those communities.

As a beneficiary of Karen's commitment to the advancement of knowledge, and to the nourishing of communities that produce and disseminate that knowledge, I am grateful for the investment she made in my own professional work.



Patti Hunter

## Sloan Despeaux

With every passing year, I am more impressed with the work and commitment Karen put into being my advisor. I once heard that completing a PhD is the most self-absorbing thing a person can do, and it is true that during my path to a PhD in the history of mathematics under Karen, I only thought about my own efforts. What I did not consider is the time, energy, and direction she devoted to me every day.

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I remember our first discussion of an article she had assigned me to read. I dutifully rattled off a summary of what the article said, but Karen quickly challenged me to analyze its argument. This challenge was the beginning of my historiographical training. Since then, Karen has taught me big things like asking intriguing questions and balancing mathematical detail with wider historical context, but she has also taught me little but important things like not jiggling change in my pocket while I give a talk. Every one of these lessons took time, which was in short supply for Karen as a professor in two different departments (history and mathematics) at the University of Virginia.

As the years go by, I also appreciate more and more how Karen prepared me to succeed in a mathematics department. While I groaned at the time about all of the graduate mathematics courses she required me to take (on top of French and British history and her seminar), I now realize how important it was for me to feel as much a mathematician as a historian. Through her foresight and planning, I sidestepped obstacles I did not even realize were there.



Sloan Despeaux

## Deborah Kent

While there are only a few pithy words of advice I recall from Karen—about job negotiations: “Don’t be milque-toast” and on juggling many tasks: “You can’t expect the luxury of doing only one thing at a time”—her example embodied advice for academic endeavors. I have witnessed firsthand her process of writing a book from start to finish, including remarkable perseverance in the face of tedious tasks like making an index or proofreading a bibliography. Sometimes, what’s left is simply to do the work. I also observed the value of working with colleagues one enjoys both personally and professionally. From crudité with the resident pet basset hound, through coconut cake dessert, her dinner parties were—like her research projects—precisely planned, meticulously organized, and successfully accomplished. The faculty book club she hosted and the dedicated weekly correspondence with her own PhD advisor likewise communicated the value of collegial community.

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In Karen’s publications, I read about the tripartite goal of a research university: teaching, research, and the training of future researchers. Under Karen’s supervision, I lived this. She had envisioned and designed a path to graduate work in History of Mathematics well before I arrived at the mathematics department at the University of Virginia. This program involved all the standard requirements for mathematics PhD students—entrance requirements, coursework, two general exams, two language exams, a proposal, a thesis defense—in addition to teaching duties, archive work, and ongoing training in historiography. Although the process sometimes felt taxing, I have many times appreciated both the thoroughness and the practicality of this preparation for the rigors of academic life. Karen intentionally equipped her students with essential tools for being an historian of mathematics in a mathematics department.



Deborah Kent

## Laura Martini

In 1998, after finishing my *laurea* degree at the University of Siena, I moved from Italy to Virginia on a traveling fellowship for advanced studies in the History of Mathematics to specifically study under Karen’s supervision. I then became her first foreign PhD student in her History of Mathematics program at the University of Virginia.

While I was undertaking PhD-related tasks in a second language for the first time, Karen went out of her way to provide extra advice and guidance. During my course of studies Karen served as a model both as a researcher and a teacher: I have witnessed and learned from her writing process of articles and books, her preparation for talks and lectures, and her delivery of seminars and classes on the history of mathematics and history of science.

I had the privilege to be advised in an academic environment characterized by high standards and directed by Karen’s methodology of meticulous organization, clarity, and rigorous historiography. From Karen I learned the value of academic community: her interactions with her own PhD adviser (historian Allen Debus—sadly, her other advisor, mathematician Yitz Herstein, had passed away before my

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time with Karen) and her colleagues both professionally and personally provide an example of academic excellence.

I will never forget my first birthday away from home when Karen organized a surprise party at her own place as well as the warm and welcoming dinner for my father visiting from Italy.

Although the path of graduate work in the history of mathematics Karen had envisioned and designed for me sometimes felt burdensome, I always recognized her genuine goal of training her students to become knowledgeable and successful professionals.

I have often treasured the rigor and the dedication that Karen required from me as her student: these qualities have proved fundamental in the development of my professional career also outside of the academic world.



Laura Martini

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## Interview with Jennifer Chayes<sup>2</sup>

### Anthony Bonato

I first met Jennifer Chayes at the 2012 Workshop on Algorithms and Models for the Web Graph conference in Halifax. She gave a keynote talk, and I chatted with her as she set up her presentation. My first impression was of her cool confidence and the force of her intellect.

Jennifer is one of the leading researchers in network science, working at the interface of mathematics, physics, computational science, and biology. She is the Managing

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<sup>2</sup>Chapter 3 of *Limitless Minds: Interviews with Mathematicians* by Anthony Bonato, <https://bookstore.ams.org/mbk-118>.

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Figure 2. Jennifer Chayes.

Director of Microsoft Research New England and New York City. She is highly awarded, being a Fellow of the American Mathematical Society, a Fellow of the Association for Computing Machinery, recipient of the Anita Borg Institute Women of Vision Leadership Award, and winner of the Society for Industrial and Applied Mathematics John von Neumann Lecture Prize. She was also recently made Microsoft Technical Fellow.

This interview was conducted in September 2017.

**AB:** *What was your first mathematical memory as a child?*

**JC:** I was four years old or so. I used to visit a neighbor—I started going there because a very nice woman gave cookies to my brothers and me. When we were choosing cookies, I heard her husband and daughter, who was a high-school math teacher, doing math problems. I thought it sounded cool, so I started asking them if they could give me puzzles. They probably thought I was weird, but they gave me puzzles, and I loved doing them.

There hadn't been any math in my household; my father was a pharmacist, and my mom couldn't add fractions (although she's very smart). But my neighbors sounded like they were having so much fun. They then started making up little word problems for me. I didn't know algebra or anything, although I did know how to count.

I liked it, and I found it very fun. They loved projective geometry, and they would give me things to work on at my level.

**AB:** *Was there a person or teacher who influenced your early scientific career before university?*

**JC:** In seventh grade, I took Euclidean geometry, and our teacher taught us how to prove things. It was an honors class for kids good in math. He taught us about logic: statements,