

# Preface

In the preface to Volume 1 of this work David Zitarelli revealed his animating philosophy, “I find that the human factor lends life and vitality to any subject.” This philosophy permeates the narrative of this history. History of mathematics, in the Zitarelli conception, is not just a collection of abstract ideas and their development. It is a community of people and practices joining together to understand, perpetuate, and advance those ideas and each other. Telling the story of mathematics means telling the stories of these people: their accomplishments and triumphs; the institutions and structures they built; their interpersonal and scientific interactions; and their failures and shortcomings.

The time period covered in this history was an extraordinary one in the history of American mathematics.<sup>1</sup> The first volume of this history closed in 1900. At that point the American mathematics community was in its infancy. The American Mathematical Society was just over a decade old. There were about a dozen institutions that offered PhDs in mathematics and a couple of journals. The first generation of US-trained researchers was just being produced; before 1900 it was essential for an aspiring professional mathematician to study in Europe. A career in mathematics was achievable almost exclusively by white men from privileged economic classes.

By 1940, the end date of this volume’s story, the American mathematical community was preeminent in the world. This was partly the result of the immigration of Europeans fleeing war and persecution on that continent. But, even more, it was a consequence of organic and deliberate growth within the American community. There were more than fifty institutions offering PhDs in mathematics. America had world-leading research communities in algebra, logic, topology, statistics, and several branches of applied mathematics. Aspiring mathematicians from other countries were now coming to the US for research training, reversing the flow of half a century earlier.

In these pages we detail the work of building the infrastructure of this community. We describe the building of departments at, among others, Berkeley, Princeton, Harvard, Missouri, and Toronto and the ebb and flow of Chicago’s primacy. We examine the creation of the Institute for Advanced Study and NYU’s Courant Institute. We analyze the establishment of all five research communities mentioned in the previous paragraph. This work to build and grow the community is seen as the cumulative effect of both the vision of leaders and the daily labors of ordinary mathematicians doing research, teaching, and contributing to the creation of community. There are valuable lessons to be learned here about creating and maintaining effective communities

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<sup>1</sup>NB: In these volumes “American mathematics” is our shorthand for the mathematical community of English-speaking North America, i.e., the United States and Canada. We ignore, at least partly for linguistic reasons, developments in Mexico, the Caribbean, and Central and South America.

and about managing the clash and mesh of personalities and individual goals into a coherent advance.

David's vision of mathematics extends beyond the arena of research. He is interested in teaching and learning, so we describe curricula and textbooks and instruction. The founding of the Mathematical Association of America is examined in detail. We provide an early history of the Putnam competition, the Fields Medal, and computing. Several early conferences, national and international, are described in detail. There are histories of buildings and fellowships and prizes and lecture series. Over and over again we see the underlying theme of this history: mathematics is not just the research accomplishments of its leading practitioners. It is a human institution preserved and extended by the contributions of tens of thousands of individuals.

One of the hopeful developments detailed in this volume is the opening of the American mathematical community to more people. Before 1900 only a handful of women had earned PhDs in mathematics. By 1940, while still vastly underrepresented, a modest fraction of PhDs were awarded to women. The pioneering efforts and accomplishments of the first few Black Americans who earned PhDs are also detailed in these pages. The incorporation of scores of refugees and immigrants over these decades also enriched the American mathematical community. It is true that we have not yet completely solved the problems of equal access to and equal opportunity in mathematics, but it is heartening to read of the visionary efforts of leaders like Oswald Veblen, J.R. Kline, and Cornell president Andrew White. And it is satisfying to read of the accomplishments of the women, Black, and immigrant mathematicians they supported in the face of the challenges of inequality these colleagues confronted.

David's focus on the "human factor" expresses itself most fully in the cast of hundreds he chooses to highlight. This is the history of the everyday mathematician. In discussing the challenges facing immigrant mathematicians David remarks (Chapter 12): "Rather than discussing these issues in abstract form, I raise them in the contexts of particular individuals." David's focus on the individual captures the lives of celebrated members of the community along with the more "ordinary" members who attended meetings, considered curricular changes, and encouraged students in their classrooms. He shows there is a place for all of us and that mathematics benefits from wide participation.

David Zitarelli died in December 2018 shortly after completing the first volume of this work. David's vision of mathematics as the cumulative enterprise of thousands of mathematicians resonates deeply with us so we were honored when the Zitarelli family asked us to cooperate with them to bring this second volume to completion. Our job was to finish David's book, not present our own vision of early twentieth-century American mathematics. Preserving David's voice meant preserving his sometimes playful wit. Della appreciated David's description of Dick Lehmer, who started his career at Lehigh, as "the rising star of Bethlehem." Steve enjoyed his description of the university presidency that "got off to a blazing start when fire destroyed the university's main building." We confess that we removed some of David's more heavy-handed attempts at humor and we also did not always resist the temptation to insert an occasional pun of our own; we imagine David would have approved.

David spent fifteen years of his life on this work, we have spent nearly three more completing it. Even then, the three of us could not have brought the task to completion

without the help of scores of individuals. We want to particularly thank the following people. Carmela Ortiz who taught David how to convert his Word files into LaTeX. Maggie Kennedy and Sam Kennedy who both helped polish David's imperfect first attempts at LaTeX. Madeline Polhill for heroic work tracking down photos and photo permissions. The members of the MAA's Spectrum editorial board who pored over these pages, offered sage advice, and saved the authors from the embarrassment of hundreds of errors large and small. Jennifer Wright Sharp brought her exquisite care to preparing the final volume, and Brian Bartling provided technical help. The University of Richmond Gaines Chair allowed Steve to visit Richmond for the final semester of work on this volume. Sergei Gelfand and Christine Thivierge of the American Mathematical Society for unwavering support and wise counsel. And the Zitarelli family for allowing us the great privilege of collaborating one last time with our dear friend David.

Della Dumbaugh  
Stephen Kennedy

### **Family Note**

When my father died in December 2018 the first volume of this work had been delivered to the publisher. This volume existed only in draft form. Complete drafts of all seven chapters existed, but my father died before he could carefully edit them. That meant the drafts contained redundancies and errors. Some of his citations were informal, and he occasionally followed his sources' wording in ways he doubtless would have revised, just as he did in the first volume of this work. Alas, he ran out of time. Our family is so very fortunate that Della and Steve were willing to step in and engage in the necessary revisions to bring this book to completion. Those revisions ranged from minor to radical—in one case they completely replaced a twenty-page section—and yet they have managed to preserve my father's voice and vision throughout the entirety of this volume.

Paul Zitarelli