

Preface



What This Book is About

The mathematical life is a rewarding, satisfying, and fulfilling one. But it has its trials. As a clinical psychologist has observed, mathematicians and oboe players have a lot in common: they both do something very difficult that other people do not appreciate.

We have all had our fill of the shopworn lament, frequently encountered in social situations, to the effect that “I was never any good at mathematics.” Or, perhaps worse, “I was very good at mathematics until we got to the stuff with the letters—like algebra.”

Fortunately, there is evidence that the tiresome observations in the last paragraph are not really indicative of the general public feeling about mathematics. Just as an instance, the popularity of the movie *A Beautiful Mind* and the television show *Numb3rs* is an indication of some public fascination with mathematics. The public responded strongly and enthusiastically to Andrew Wiles’s solution of Fermat’s last problem. There was genuine interest and curiosity about Grisha Perelman’s proof of the Poincaré conjecture. Most anyone would like to know more about the shape of the universe. People respect mathematics; they are just intimidated by it.

At the MAA Summer MathFest in 2007, Peter Casazza, Steven Krantz, and Frank Morgan were invited to organize a special session entitled *The Psychology of the Mathematician*. The avowed purpose of that event was to discuss what mathematicians think of themselves and what others think of us. This was a well-attended session, with lively and heartfelt discussions. The speakers went into some detail, and were often quite emotional. As a consequence, MAA Editor Don Albers invited us to produce a volume inspired by our special session. Frank Morgan withdrew from that particular project, and Randi Diane Ruden joined it. So we now have a volume edited by three scholars with diverse interests.

We invited two types of articles for this volume. The plenary articles, generally by well-known mathematical figures, are putatively about the theme of the session: “What Do People Think About Mathematicians?” The secondary articles, rather more brief, are about “Why I Became a Mathematician.” Taken together, the two collections of articles paint a varied and multifaceted panorama of ways to think about our profession, our subject, and those who people it.

Among our plenary contributors are Michael Atiyah, Hyman Bass, James Milgram, Steven Krantz, Peter Casazza, Michael Aschbacher, Tom Körner, Tom Apostol, Robert Strichartz, and V. S. Varadarajan. Certainly a distinguished and varied group. Some of the plenary contributors are non-mathematicians who have been close observers of mathematics for many years (such as Pam Aschbacher, the wife of Michael Aschbacher). Several of the plenary writers have devoted a good part of their lives to the teaching and communicating of mathematics. These include Keith Devlin, Sol Garfunkel, Underwood Dudley, and Ian Stewart.

The secondary contributors number among them some notable mathematicians—including Robert E. Greene, Jenny Harrison, John D’Angelo, and Rodolfo Torres. Many of the articles are quite personal. Almost all the authors made a point of telling us how cathartic they found it to write for this volume.

Some of the contributors described above will have their work appear in the second volume of this book. Do be sure to look it up. It will increase your enjoyment and appreciation of this discourse.

The plenary articles are quite broadly distributed. The writers focused on the question at hand in a variety of ways. The results are fascinating, and will be of particular interest to budding mathematicians, budding math teachers, budding math communicators, and in turn their teachers. In order to provide some context for readers, we have divided the plenary articles into two types:

- On Becoming a Mathematician
- Who Are Mathematicians?

These are just rough guidelines, as many articles do not fit squarely into either category. But they will give the reader a hint of what the reading will entail. And they group together like-minded pieces.

What We are About

The job of a computer scientist is to find algorithms that will accomplish certain tasks. The job of an engineer is to make things that work. The job of a mathematician is to develop new theories and establish new ideas and new truths and to teach and communicate them.

And we are obsessive about it. If mathematicians seem to be other-worldly, seem to be hopeless nerds, seem to be excessively compulsive, it is because we are. Trivial worldly matters are of no interest. Nothing measures up to the discovery and establishing of a new mathematical truth, and there is no joy like communicating those truths to our students and colleagues. Nothing has the timelessness, the enduring value, the pure pleasure of mathematical learning and discovery and teaching. This is what we are about.

But one upshot of these considerations is that mathematicians can appear to be isolated. We have trouble communicating with the rest of the world, and the rest of the world has trouble communicating with us. We are perceived to be in an ivory tower, and—God bless us—we may as well stay there. And do no harm to anyone else.

But there is a price to pay for this isolation, and that price is frequently not very pretty. Even in the context of the college or university, we often do not fit in. We frequently are

unable to make a good case for our just rewards. We often find ourselves passed over for more trendy or more broadly appealing intellectual pursuits such as genetic engineering or computer visualization or biotechnology. Whereas a geneticist can speak of gene cloning and DNA matching, a computer scientist can speak of bits and bytes and megapixels, a biologist can speak of species verification and evolutionary differentiation, a mathematician has a tough time explaining what we are about. We feel disconnected and unappreciated.

This volume is an effort to reach out. It gives a significant number of mathematicians the opportunity to speak about who they are, where they come from, and what they do. There are also essays by non-mathematicians—ones who know mathematicians intimately—explaining how they see the matter. How do *they* interact with mathematicians and what do they get from that interaction? Does this relationship enrich their lives? What have they learned in the process?

There are many good people who helped to make this book happen. First we thank Jerry Alexanderson and Jim Tattersall for shepherding the book through the Spectrum Series at the MAA. Next we thank Ilya Krishtal and Neal Koblitz for helping with the translation of Yuri Manin's article. Finally we thank Carol Baxter and Bev Ruedi for bringing the book into its final form.

The production of this book has been rewarding for all of us. It has been an opportunity to ruminate and introspect. We have all taken this opportunity to re-live segments of our lives and see what we have learned. We hope that, in the process, we have produced a book that will speak to young people hoping to become mathematicians, math teachers, math communicators, or mathematical scientists. Our view is that this is a glimpse into the personal side of the mathematical equation, one which has been infrequently explored in the past. It should prove to be a productive adventure.

—Peter Casazza, Columbia, Missouri

—Steven G. Krantz, St. Louis, Missouri

—Randi D. Ruden, University City, Missouri