Beckenbach Book Prize

The Beckenbach Book Prize, established in 1986, is the successor to the MAA Book Prize established in 1982. It is named for the late Edwin Beckenbach, a long-time leader in the publications program of the Association and a well-known professor of mathematics at the University of California at Los Angeles. The Prize of $2,500 is intended to recognize the author(s) of a distinguished, innovative book published by the MAA and to encourage the writing of such books. The award is not given on a regularly scheduled basis. To be considered for the Beckenbach Prize a book must have been published during the five years preceding the Award.

Ron Taylor and Patrick X. Rault

A TeXas-Style Introduction to Proof, MAA Press, Washington, DC, 2017, xiv + 161 pp., (reprinted by the AMS, 2018), which appears in the MAA Textbooks series.

The Polish mathematician Stefan Banach once said, "Mathematics is the most beautiful and most powerful creation of the human spirit." As mathematicians, we are drawn to the beauty of mathematics. Ron Taylor and Patrick Rault in *A TeXas Style Introduction to Proof* give students a guide to creating mathematics which is beautifully written and presented. They write with inquiry-based learning in mind, following Paul Halmos' mantra that "The only way to learn mathematics is to do mathematics."

Taylor and Rault introduce proofs in a style that is clear and concise, but also filled with a sense of humor and pop culture references. We are guided through Exercises and Examples to read and practice. In addition to the Statements given to prove, they provide Challenges and Explorations which allow students to build intuition and then make a conjecture to prove. This variety of exercises gives students a chance to explore and think like a mathematician. Alongside the mathematics, an introduction to LaTeX is woven throughout, giving students the opportunity to learn to beautifully typeset mathematics.

They introduce students to logic through statements and truth tables; introductory proof methods with number theory topics; proof by induction; set theory including set products, power sets and set families, leading to introductory topology; functions and relations including one-to-one and onto functions; counting, the pigeonhole principle and a study of infinite cardinalities; and axiomatic systems. Additionally, throughout the text, Taylor and Rault introduce LaTeX commands for each new symbol.

This text is perfect for young, experienced or casual mathematicians, challenging readers to think, explore, create, prove, type and learn beautiful and powerful mathematics—by doing mathematics.

Response from Ron Taylor

I am gratified and humbled that our book has been chosen for the Beckenbach Prize. The idea of being a writer had never occurred to me, even though the process of writing has always been enjoyable. I have always been a reader, but the idea of writing a book was an unimaginable concept. Then I discovered inquiry-based-learning and began writing notes for an introduction to proof class. A colleague suggested that they might be suitable for a book, so I talked to some publishers and secured a contract, with a publisher that shall remain nameless since the contract was withdrawn because I was taking too long to finish the manuscript. Good for me because, in the interim, Patrick X. Rault had started using my notes in his own class and had added some interesting material. So, when it was time to find another publisher, it was the obvious thing to ask him to be my coauthor. We were having the books printed locally to use in our classes so when we pitched this to the MAA, after making the initial contact with Don Albers, we gave Steve Kennedy a printed copy of the text and he said that it was the first time that an author had ever given him a printed book to consider.

The process of turning the book from unpolished notes to its current state was labor intensive and the resulting product owes its quality to many people, starting with Patrick, and including the many students

who found typos and asked good questions that led to changes in the text. I also owe a particular debt of gratitude to two of my professors. Bob Brown was my undergraduate speech professor and he brought words to life when he spoke. His love of language was palpable, and his voice is often in the back of my head when I am writing. Neal Carothers, one of my graduate school professors, had that same love of language and applied it directly to mathematics. He wrote and spoke so gracefully in his classes and his own books, and I have tried to live up to that high standard.

Thanks too, go to my family, particularly my aunt Alma who taught me to read, and my wife Kirsten who is more patient with me than anyone could possibly deserve. Finally, I want to thank the staff at the MAA who helped bring this book into the world.

Response from Patrick Rault

It is a great honor to be receiving the Beckenbach Book Prize. It is also a surprise, four years after the publication of our introduction to proof textbook and many more years after the project was begun. When Ron Taylor invited me to join him in co-authoring an update to his manuscript as a published MAA textbook what feels like a lifetime ago, we had a common vision for an innovative text that engages the next generation of learners in the process of mathematical reasoning. I am happy to see that there are now more and more similar textbooks written by a growing community of like-minded colleagues. If you like the style of our textbook, be sure to seek out similar inquiry-based mathematics education books for other courses! Need help using such a textbook? I personally invite you to join your local COMmunity for Mathematics Inquiry in Teaching (COMMIT).

Biographical Sketches

Ron Taylor is a professor of mathematics at Berry College. He earned his PhD in mathematics from Bowling Green State University, where he spent two years teaching in the nationally recognized Chapman Learning Community. Previously he earned bachelors' degrees in political science and mathematics & computer science from Concord College and a master's in mathematics from Winthrop University. In addition to the MAA textbook *A TeXas Style Introduction to Proof*, coauthored with Patrick X. Rault, Ron has written articles in a variety of areas including functional analysis, geometry, knot theory, and graph theory, some with undergraduate students. In 2018 he received the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics from the MAA. Ron lives in Rome, GA with his wife Kirsten, a political science professor at Berry. When they're not on campus, they enjoy watching science fiction on TV while she knits and he folds paper.

Dr. Patrick X. Rault earned his PhD from the University of Wisconsin, and in 2022 is beginning a new career as the incoming chair of the Department of Mathematics and Statistics at Idaho State University. For the past four years he served as the Haddix Community Chair of Mathematics and the assistant director of the STEM Teaching, Research, And Inquiry-based Learning (TRAIL) Center at the University of Nebraska at Omaha. As a community chair, he worked to address the critical need for STEM majors, particularly mathematics teachers. Dr. Rault directs the NSF-funded COMmunities for Mathematics Inquiry in Teaching (COMMIT) Network project, which supports and studies 12 regional communities of over 800 college math educators spread over half of the United States. As Dr. Rault sees inquiry teaching as a taste of the research problem solving experience, he has also served as chairs of both the Council on Undergraduate Research's Division of Math & Computer Science and the SIGMAA on Undergraduate Research. He currently serves the MAA as chair of the Committee on the Teaching of Undergraduate Mathematics. In 2015 Dr. Rault received the MAA's Henry L. Alder Award for distinguished teaching.