Ethan D. Bolker

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EDUCATION

Ph.D.	mathematics	Harvard University	1965
A.M.	mathematics	Harvard University	1961
A.B	mathematics	Harvard College	1959

RESEARCH AND TECHNICAL INTERESTS

combinatorics, geometry, recreational mathematics, performance modeling of computer systems, queueing theory

ACADEMIC POSITIONS

2015-present: UMass Boston, Professor Emeritus, Department of Mathematics.
1972–2015: UMass Boston, Professor, Departments of Mathematics and Computer Science (Chair 1989-2001),
1964–1972: Bryn Mawr College. Assistant and Associate Professor, Mathematics,
1963–1964: Princeton University, Instructor, Mathematics

ADJUNCT AND AFFILIATE POSITIONS

2000: Massachusetts Institute of Technology, Visiting Scholar, Department of Mathematics
1986: Harvard University, Visiting Scholar, Graduate School of Design
1979, 1971–1972: Harvard University, Honorary Research Associate, Mathematics
1967–1968: University of California, Berkeley, Research Fellow, Mathematics

ELEMENTARY AND SECONDARY EDUCATION

2012-2020: Working with teachers and students at several grade levels at the Heath Elementary School (Brookline).

2000-2011: Worked with teachers and students at several grade levels at the J. P. Manning Elementary School (Boston).

2000. Consultant to Dean Edwin DeLattre (Boston University) on the revision of the Massachusetts Frameworks for Mathematics.

1995: Worked with TEAMS-BC at UMass on a grant proposal (funded) to train elementary and secondary school teachers in science.

1976-1979: Served on the steering committee to design "Another Course to College", an alternative high school staffed jointly by the Boston school system and UMass-Boston. Taught algebra for two years at the school.

INDUSTRIAL EXPERIENCE

1982–2006: Consultant to BMC Software (formerly BGS Systems), Waltham, MA. BMC builds software for performance monitoring and modeling and capacity planning of large computer systems. Responsibilities included algorithm development (queueing theory), software architecture, user interface design, development environment tools and some project management.

OTHER PROFESSIONAL ACTIVITY

Reviewer for Mathematical Reviews (American Mathematical Society), Science Books and Films (American Association for the Advancement of Science), Referee for Mathematics Magazine (Mathematical Association of America).Presenter, National Museum of Mathematics

Answer questions on stackexchange. Reputation 94,000+ at math.stackexchange.com, 36,000+ at academia.stackexchange.com, 9,000+ at tex.stackexchange.com.

Active proselytizer for mathematics. Taught more times than I can count at neighborhood public libraries, community schools, adult education programs and in my childrens' and grandchildrens' classes and schools. Family Friday at the Museum of Mathematics.

Occasional consultant to staff writers at the Boston Globe on matters mathematical. Frequent published letters to the editor.

SCHOLARSHIPS, FELLOWSHIPS, ACADEMIC HONORS

Daniel Solow Author's Award, for *Common Sense Mathematics,*
Mathematical Association of America, 2022
Chancellor's Award for Teaching, UMass Boston, 2003
Chancellor's Award for Scholarship, UMass Boston, 1979
National Science Foundation Cooperative Fellow, 1960-1964
A. B. degree *summa cum laude*

PROFESSIONAL SOCIETIES

American Mathematical Society
Mathematical Association of America
Association for Women in Mathematics

BOOKS

Common Sense Mathematics (with Maura Mast). MAA Press, Washington DC, 2016, 2021.

Java Outside In (with Bill Campbell). Cambridge University Press, Cambridge, England and New York NY, 2003.

Using Algebra, Little, Brown and Co, Boston MA., 1983; reissued Wyndham Hall Press, Bristol IN, 1990.

First Year Calculus (with Joseph Kitchen, Jr.). Addison Wesley, Reading MA, 1974.

Elementary Number Theory, an Algebraic Approach, W. A. Benjamin, New York NY, 1970, reissued Dover Publications, Mineola NY, 2007.

Notes on Harmonic Analysis, from lectures by Lynn Loomis, Mathematical Association of America, 1965.

BOOK CHAPTER

"Four Adventures in Four Decades", in *Shifting contexts, stable core: Advancing quantitative literacy in higher education,* Tunstall, S. L., Piercey, V., & Karaali, G. (Eds.) Mathematical Association of America, Washington D.C, (2018).

JOURNAL PUBLICATIONS AND CONFERENCE PROCEEDINGS

"Balance weighing - variations on a theme" (with Samuel Feuer and Catalin Zara),*Mathematics Magazine,* vol 94, no 5 (2021), 339-352.

"A Curious Possible Prime Pattern" (with Benjamin Bolker and Eleanor Bolker), *Mathematics Magazine,* vol 93, no 2 (2020), 132-135.

"The Prouhet–Tarry–Escott problem and generalized Thue–Morse sequences" (with Carl Offner, Robert Richman and Catalin Zara), *Journal of Combinatorics* vol 7, no 1 (2016), 117-133.

"Gergonne's Card Trick, Positional Notation, and Radix Sort", *Mathematics Magazine,* vol 83, no 1 (2010), 46-49.

"Andrew M. Gleason, 1921-2008" (Editor), *Notices of the American Mathematical Society*, vol 56, no 10 (November 2009), 1232-1263.

"Interactive computer simulations of genetics, biochemistry, and molecular biology" (with Brian White), *Biochemistry and Molecular Biology Education*, vol 36, no 1 (Jan 2008), 77-84.

"The Virtual Genetics Lab: a Freely-available Open-source Genetics Simulation" (with Brian White, Nikunj Koolar, Wei Ma, Naing Naing Maw and Chung YingYu), *American Biology Teacher* , vol. 69, no. 1 (Jan 2007), pp 694-697.

"How Many Guests Can You Serve? - On the Number of Partitions" (with Yiping Ding), *Proceedings* of *the 35th Computer Measurement Group Conference* (December 2006).

"A Simple Algorithm that Proves Half-Integrality of Bidirected Network Programming" (with Thomas Zaslavsky), *Networks*, vol. 48, no. 1 (2006), pp. 36-38.

"Virtual performance won't do: Capacity planning for virtual systems" (with Yiping Ding), *Proceedings* of *the 34th Computer Measurement Group Conference* (December 2005), pp 39-49.

"Performance Implications of Hyper-Threading" (with Yiping Ding and Arjun Kumar), *Proceedings* of *the 32nd Computer Measurement Group Conference* (December 2003), pp 21-29

"GIS Maps Over the Internet" (with Honglei Dai and Bill Mahoney), *Proceedings of the 2003 International Symposium on GPS/GNSS,* (November 2003, Tokyo, Japan), pp 117-120.

"Teaching programming by immersion, reading and writing" (with Bill Campbell) , *Proceedings of the 32nd ASEE/IEEE Conference on Frontiers in Education*, Boston, MA, November 2002., (http://fie.engrng.pitt.edu/fie2002/), pp T4G-23 – T4G-28.

"Interpreting Windows NT Processor Queue Length Measurements", (with Yiping Ding, William Flynn, Debbie Sheetz and Yefim Somin), *Proceedings* of *the 31st Computer Measurement Group Conference* (December 2002), vol. 2, pp 759-770.

"Fair Share Modeling for Large Systems: Aggregation, Hierarchical Decomposition and Randomization" (with Yiping Ding and Anatoliy Rikun) , *Proceedings* of *the 30th Computer Measurement Group Conference* (December 2001), pp. 808-818

"On the Performance Impact of Fair Share Scheduling" (with Yiping Ding) ,*Proceedings of the 30th Computer Measurement Group Conference*, (December, 2000), pp.71-81.

"An Existence Theorem for the Logic of Decision", *Philosophy of Science,* 67 (Proceedings): 2000, pp S14-S17.

"Goal Mode Scheduling", (with Jeff Buzen), *Proceedings of the 28th Computer Measurement Group Conference*, December 1998.

"Modeling Jury Decay in a High Profile Criminal Trial" (with Benjamin Bolker), *Math Horizons* (Mathematical Association of America), November 1997, pp. 12–16.

"The Combinatorial Radon Transform modulo the Symmetric Group" (with Jan Boman and Patrick O'Neil). *Advances in Applied Mathematics,* **12**, 1991, pp. 400-411.

"Admissible Complexes for the Combinatorial Radon Transform" (with Eric Grinberg and Joseph Kung), *Contemporary Mathematics* (American Mathematical Society), **113,** 1989, 1-3.

"Convex Polyhedra, Dirichlet Tessellations, and Spider Webs", (with Peter Ash, Henry Crapo and Walter Whiteley), Chapter 17 in *Shaping Space, a Polyhedral Approach*, Marjorie Senechal and George Fleck, Editors, Birkhauser, Boston, 1988, 231 - 250.

"The Finite Radon Transform", *Contemporary Mathematics* (American Mathematical Society) 63, 1987, 27-49.

"A Capacity Planning/Queueing Theory Primer", *Proceedings of the 18th Computer Measurement Group conference*, December 1987. (Best Elementary Tutorial Award)

"Generalized Dirichlet Tessellations" (with Peter Ash), *Geometreia Dedicata*, **20**, 1986, 209-243.

"Measuring and Modeling MVS under VM", *Proceedings of the 16th Computer Measurement Group conference*, December 1985.

"Modeling Memory "(with S. Agrawal and A. Shum), *Proceedings of the 17th Computer Measurement Group conference*, December 1986.

"Recognizing Dirichlet Tessellations" (with Peter Ash), *Geometreia Dedicata*, **19**, 1985, 175-206.

"On tuning the fair share scheduler in VM operating systems" (with S. Agrawal, J. Buzen, J. Munoz and T. Grieser), *Proceedings of the 15th Computer Measurement Group conference*, December 1984.

"The bias of three pseudorandom shuffles" (with David Robbins), *Aequationes Mathematicae*, 22, 1981, 268-292.

"When is a bipartite graph a rigid framework?" (With Ben Roth), *Pacific Journal of Mathematics*, 90, 1981, 27-44.

"Counting permutations" (with Andrew Gleason), *Journal of Combinatorial Theory, Series A*, 29, 1980, 236-242.

"Bracing rectangular frameworks, II", SIAM *Journal of Applied Mathematics*, 36, 1979, 491-508.

"Bracing rectangular frameworks, I", (with Henry Crapo), *SIAM Journal of Applied Mathematics*, 36, 1979, 473-490.

"How to brace a one story building" (with Henry Crapo), *Environment and Planning B*, 4, 1977, 125-152.

"Bracing grids of cubes", *Environment and Planning B*, 4, 1977, 157-172.

"A topological proof of a well known fact about Fibonacci numbers", *The Fibonacci Quarterly*, 15, 1977, 245.

"Simplicial geometry and transportation polytopes", *Transactions of the American Mathematical Society*, 217, 1976, 121-142.

"Remarks on M. Balch and P. Fishburn's "Subjective utility of conditional primitives"", in *Essays on Economic Behavior Under Uncertainty*, North Holland-American Elsevier, New York, 1974, 79-82.

"The spinor spanner", *American Mathematical Monthly*, 80, 1973, 977-987.

"Transportation polytopes", Journal *of Combinatorial Theory*, 13, 1972, 251-262.

"Groups whose elements are of order two or three", *American Mathematical Monthly*, 79, 1972, 1007-1010.

"The zonoid problem", *American Mathematical Monthly*, 78, 1971, 529-531.

"Centrally symmetric polytopes", *Proceedings of the 12th Biennial Seminar of the Canadian Mathematical Society*, published by the American Mathematical Society, 1970.

"A class of convex bodies", *Transactions of the American Mathematical Society*, 145, 1969, 323-345.

"Solutions of $A^k + B^k = C^k$ in n x n integral matrices", *American Mathematical Monthly*, 75, 1968, 759-760.

"A simultaneous axiomatization of utility and subjective probability", *Philosophy of Science*, 34, 1967, 333-340.

"Functions resembling quotients of measures", *Transactions of the American Mathematical Society*, 124, 1966, 292-312.

"Inverse limits of solvable groups", *Proceedings of the American Mathematical Society*, 14, 1963, 147-152.

GRANTS

Common Sense: Quantitative Reasoning in the Undergraduate Curriculum. (with Maura Mast) NSF grant number 0942186, 2010-2011.

TECHNICAL REPORTS AND ARXIV POSTINGS

"Modeling How Windfarm Geometry Affects Bird Mortality" (with Jeremy Hatch and Catalin Zara)., June 2002, arxiv.org/pdf/1408.1580.pdf.

"How is a Graph Like a Manifold?" (With Victor Guillemin, Tara Holm and Catalin Zara)., August 2014, arxiv.org/abs/math/0206103,

"Degrees of Freedom Calculations for Multiway Contingency Tables" (with Donald Olivier). Technical Report 91-1, UMass Boston Department of Mathematics and Computer Science, May 1991.

M.S. COMMITTEES

“Performance Modeling and Capacity Planning”, Lana Wheeler, MS, UMass Boston, 1991, chair.

"Workload Characterization Using UNIX System Accounting”, Jerik Tornheim, MS, UMass Boston, 1987, chair.