

THOMAS C. RATLIFF

Department of Mathematics and Computer Science
Wheaton College, Norton, Massachusetts

Education

- Ph.D.** Mathematics, Northwestern University, Evanston, Illinois, 1992.
Thesis in algebraic topology, titled “Congruence Subgroups and Elliptic Cohomology.”
- M.S.** Mathematics, Northwestern University, Evanston, Illinois, 1988.
— Computer Science, University of North Carolina at Chapel Hill, 1986.
Completed first year of M.S. program.
- B.A.** Mathematics/Computer Science, *magna cum laude*, *Phi Beta Kappa*, Rhodes College, Memphis, Tennessee, 1985.

Positions Held

- Wheaton College, Norton, Massachusetts
Professor of Mathematics and Computer Science, 2008–
Associate Professor of Mathematics and Computer Science, 2002–2008
Assistant Professor of Mathematics and Computer Science, 1996–2002
- St. Olaf College, Northfield, Minnesota
Visiting Assistant Professor of Mathematics, 1994–1996
- Kenyon College, Gambier, Ohio
Visiting Assistant Professor of Mathematics, 1992–1994

Research Publications

- “Selecting Diverse Committees with Candidates from Multiple Categories,” *Proceedings from AMS Special Sessions on the Mathematics of Decisions, Election, and Games*, 2014.
- “Complexities of electing diverse committees,” with D. Saari, *Social Choice and Welfare* (2013), DOI:10.1007/s00355-013-0773-8.
- “Selecting committees,” *Public Choice*, Vol 126, Num 3-4 (2006), pp 343–355.
- “Some startling inconsistencies when electing committees,” *Social Choice and Welfare*, Vol 21, Num 3 (2003), pp 433–454.
- “A comparison of Dodgson’s method and the Borda count,” *Economic Theory*, Vol 20, Num 2 (2002), pp 357–372.
- “A comparison of Dodgson’s method and Kemeny’s rule,” *Social Choice and Welfare*, Vol 18, Num 1 (2001), pp 79–89.

- “Classifying spaces of central group extensions,” with J. Dietz, *Proceedings of Symposia in Pure Mathematics* 63 (1998), pp 191–196.
- “Congruence subgroups, elliptic cohomology, and the Eichler-Shimura map,” *Journal of Pure and Applied Algebra* 109 (1996), pp 295–322.

Expository and Pedagogical Publications

- “Rethinking Redistricting: An Interview with Karen Saxe,” *Math Horizons*, September 2016, pp 26–27.
- “Pi on Trial and Other Prime Suspects,” *Math Horizons*, September 2013, pp 18–19.
- “Unduly Noted,” *Math Horizons*, February 2012, pg 34.
- “Lewis Carroll, Voting, and the Taxicab Metric,” *The College Mathematics Journal*, Vol 41, No 4 (2010), pp 303–311.
- “The Politics Before the Politics: Census 2010, Reapportionment, and Redistricting,” with K. Saxe, *Math Horizons*, November 2010, pp 5–9.
- “A geometric approach to voting theory for mathematics majors,” in *Innovative Approaches to Undergraduate Mathematics Courses Beyond Calculus* published in the *MAA Notes* series (2005).
- *Crushed Clowns, Cars, and Coffee to Go . . . Writing Projects for Mathematics Courses*, with A. Crannell, G. Larose, and E. Rykken, published in the *Classroom Resource Materials* series by the Mathematical Association of America (2004).
- “How we get our students to read the text before class,” with M. Boelkins, *FOCUS*, Vol 21, Num 1 (2001), 16-17, and online at <http://www.maa.org/features/readbook.html>.
- “How I (finally) got my calculus I students to read the text,” *Innovative Teaching Exchange* at MAA Online (www.maa.org), 1997.

Other Professional Activities

- Participant in the Expert Witness Training specialized track at the Geometry of Redistricting Workshop at Tufts University, August 7–11, 2017
- Governor, Northeastern Section of the Mathematical Association of America, 2012–2015
Chair of the NES/MAA, 2005–2007
Vice-Chair of the NES/MAA, 2004–2005
NES/MAA webmaster, 2006–2009
Organizer of Contributed Papers for Fall and Spring NES/MAA meetings, 2000–2004
- Chair, Membership Committee of the MAA, 2013–2016

- Review panel for National Science Foundation Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics, Type 1 grants, July 2011.
- Member of Editorial Board of *Math Horizons*, 2008–2013
- 1994–95 Project NExT (New Experiences in Teaching) Fellow
- Refereed papers for

<i>Social Choice and Welfare</i>	<i>Journal of Public Economic Theory</i>
<i>Journal of Theoretical Politics</i>	<i>Mathematical Social Sciences</i>
<i>American Mathematical Monthly</i>	<i>Discrete Applied Mathematics</i>
<i>Neural Networks</i>	<i>Mathematics Magazine</i>
<i>College Math Journal</i>	<i>DIMACS Educational Module Series</i>
<i>Mathematical and Computer Modelling</i>	<i>Journal of Wine Research</i>
<i>PRIMUS</i>	<i>The American Statistician</i>

Major Service at Wheaton since 2002

- Chair, Department of Mathematics and Computer Science
2005–2007, 2013–2016
Department completed external review in October 2005
Chair of Tenure Track Search Committee, 2006–2007
- Co-Chair of college-wide Strategic Planning Process, 2015
- Advisory Committee, 2013–2016
Chair 2014–2015
- Presidential Search Committee 2013–2014
- Chair, Faculty Planning and Priorities Committee, 2011–2012
- Faculty Liaison for Mars Center for Science and Technology, an expansion and partial renovation of Wheaton’s Science Center. Fall 2002–Spring 2012
- Educational Policy Committee, 2009–2012
- Recipient of AAUP Faculty Advocate Award, 2008
Co-recipient with other members of Presidential Search Committee, 2014
- Tenure Committee, 2005–2008
Chair, 2006–2007
- Committee on Committees and Agenda, 2002–2005 (Sabbatical, Spring 2004)
Chair, 2004–2005
- Budget Advisory Committee, Spring 2005

- Chair of Quantitative Analysis Subcommittee of the Educational Policy Committee, 2002–2003. Subcommittee drafted guidelines for courses to meet the QA requirement in the new Wheaton Curriculum.
- Supervised Honors Theses
 - Willie A. Stone, “Plurality Elections: How Many Voters Does It Take Before Anything Can Happen?,” 2003.
 - Rachel L. Bayless, “Knight Tours on a Hyperbolic Chess Board,” 2008.
 - Kathleen M. Carroll, “Determining the Number of Loops of Regular Polygons,” 2010.
 - Emma Hartmann, “Tiling the Half-Plane with Squares of Integral Sides,” 2014.

Selected Presentations and Workshops

- “The tools of the gerrymanderer,” invited talk at the Fall Meeting of the Northeastern Section of the MAA, Sacred Heart University, Fairfield, Connecticut, November 17, 2017.
- “Consistent criteria, problematic outcomes, and the hypercube,” in the Invited Paper Session on Mathematics and Democracy at MathFest, Chicago, Illinois, July 28, 2017.
- “Why can’t the process be fair? From Presidential elections to picking a movie,” invited opening talk at the Shenandoah Undergraduate Mathematics and Statistics Conference at James Madison University, September 24, 2016.
- “Who has the power in the Electoral College? You might be surprised,” Rhode Island College Mathematics Seminar, October 21, 2015, and Providence College Mathematics Seminar, November 7, 2012.
- “The future of science at Wheaton: Key enabling features of the Mars Center for Science and Technology,” invited presentation at the Tradeline College & University Science Facilities Conference, October 28, 2013.
- “Selecting Diverse Committees with Candidates from Multiple Categories,” in the Special Session on the Mathematics of Decisions, Election, and Games at the Joint Mathematics Meetings, San Diego, California, January 12, 2013.
- “Who has the power in the Electoral College? You might be surprised” and “Reading and Writing in Mathematics Classes,” invited talks at the Fall Meeting of the Ohio Section of the MAA, Baldwin Wallace University, Berea, Ohio, October 19–20, 2012.
- “Getting your students to read their calculus text,” an invited workshop for Project NExT, Hartford, Connecticut, July 30, 2013; Lexington, Kentucky, August 2, 2011; Knoxville, Tennessee, August 8, 2006; Providence, Rhode Island, August 10, 2004; and Boulder, Colorado, July 30, 2003.
- “Voting, Geometry, and Non-Political Elections,” a workshop presented for the Math for America NYC Professional Development and Outreach Group, New York City, January 22, 2011.

- “How NOT to be the Center of Attention,” at the Northeastern Section of the MAA Project NExT workshop during the Spring NES/MAA Meetings, Salve Regina University, Newport, Rhode Island, June 10, 2010.
- Special Session on Voting Theory, co-organizer with M. Jones and B. Hopkins, at the Joint Mathematics Meetings, San Francisco, California, January 14, 2010. Presented “Selecting Diverse Committees” in session.
- “Selecting Diverse Committees,” at the meetings of the Public Choice Society, Las Vegas, Nevada, March 6, 2009.
- “Getting your students to read their text,” an invited workshop at the Center for the Enhancement of Teaching and Learning, Georgia Institute of Technology, February 19, 2009.
- “A Little Geometry, a Little Linear Algebra, and a Lot of Insight into Voting” and “Voters Vote & Candidates Win: What’s so hard about that?,” invited talks at the Spring Meeting of the Indiana Section of the MAA, St. Mary’s College, South Bend, Indiana, March 28–29, 2008.
- “Mathematical and Statistical Consulting at Wheaton College” in the session *Student Research in Industrial Mathematics* at MathFest, San Jose, California, August 5, 2007.
- “Voters Vote & Candidates Win: What’s so hard about that?,” an invited talk the Pi Mu Epsilon Induction Ceremony, Manhattan College, Riverdale, New York, April 19, 2007.
- *Workshop on Faculty Development Issues*, invited participant at United States Military Academy, West Point, New York, April 11–13, 2007.
- “Becoming a Leader in Your Department,” participant in a Project NExT Panel at the Joint Mathematical Meetings, New Orleans, Louisiana, January 5, 2007.
- “Voting, Geometry, and Lewis Carroll,” Brown University Mathematics Graduate Student Seminar, Providence, Rhode Island, November 1, 2006.
- *Developing Internal Departmental Self-Studies for Mathematical Science Departments*, a MAA PREP Workshop Dickinson College, Carlisle, Pennsylvania, June 11–14, 2006. Invited participant as potential outside evaluator for departmental reviews.
- *Spatial Voting: Choice Over Multidimensional Issues*, attendee at workshop at Institute for Mathematical Behavioral Sciences at University of California, Irvine, December 5–7, 2005.
- “Selecting Committees” at the meetings of the Public Choice Society, New Orleans, Louisiana, March 11, 2005, and Graduate Student Seminar, University of California, Irvine, May 20, 2004.
- “Waffle cones, ribbons, and barbershop poles” as part of the Bridgewater-Stonehill-Wheaton colloquium series at Bridgewater State College, Bridgewater, Massachusetts, November 8, 2004.
- “A graph theoretic approach to the selection of committees” at the Institute of Public Economics, Graz University, Austria, March 16, 2004.

- “Selecting committees with incomplete preferences” at the workshop *Analysis and Design of Electoral Systems* at Mathematisches Forschungsinstitut Oberwolfach, Germany, March 10, 2004.
- Co-organizer and presenter in the session *Workshop on Student Writing - A Hands on Approach*, sponsored by the MAA Committee on the Teaching of Undergraduate Mathematics at MathFest, Boulder, Colorado, August 2, 2003.
- “Encouraging Students through Reading and Writing in Mathematics Courses,” an invited presentation at the workshop *Changing the Nature of Undergraduate Science and Mathematics Teaching* at the IMPACT Center at the University of New Hampshire, September 19, 2002.
- “Cartoon Characters and Calculus,” in the session *Using Popular Culture in the Mathematics and Mathematics Education Classroom* at MathFest, Burlington, Vermont, August 2, 2002.
- “Assessment of Writing Projects in Mathematics Courses,” an invited presentation in the Project NExT session *Assessment Ideas and Practices to Consider When Starting Your Teaching Career*, Burlington, Vermont, July 31, 2002.
- “Some Startling Inconsistencies When Electing Committees,” at the Sixth International Meetings of the Society for Social Choice and Welfare, California Institute of Technology, July 12, 2002 and at the Public Choice Society Meetings, San Diego, California, March 22, 2002,
- “Thousands of Candidates and a Handful of Voters – An Application of Voting Theory from Pharmaceutical Development,” at the Second Tutorial and Workshop on Bioconsensus, Rutgers University, October 5, 2001.
- “A Geometric Comparison of Dodgson’s Method and Kemeny’s Rule,” at the Institute for Mathematics in the Behavioral Sciences at the University of California, Irvine, May 15, 2001.
- “Cycles Do Matter! Elections with Thousands of Candidates and a Handful of Voters,” Public Choice Society Meetings, San Antonio, Texas, March 2001.
- “A Comparison of Dodgson’s Method and the Borda Count,” Public Choice Society Meetings, Charleston, South Carolina, March, 2000.
- “A Comparison of Dodgson’s Method and Kemeny’s Rule,” in the special session on *Mathematical Aspects of Consensus Theory* AMS/MAA Meetings, Washington, DC, January, 2000.
- “Marvin the Martian and Opie Taylor: The Importance of Defining the Audience for Student Calculus Papers,” in the session *The Use of Creative Writing in Teaching Mathematics* at MathFest, Providence, Rhode Island, August 2, 1999.
- Invited speaker in a panel discussion in the *Special Session on Assessment Alternatives* at MathFest, Toronto, Canada, July 16, 1998.
- “A Tried and True Approach for Writing Assignments in Calculus,” presented with Annalisa Crannell of Franklin & Marshall College AMS/MAA Summer Meetings, Seattle Washington, August 11, 1996.