

## MICHAEL A. JONES

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### EMPLOYMENT HISTORY

- 2003-present Associate Professor, Department of Mathematical Sciences, Montclair State University, Upper Montclair, NJ.  
1998-2003 Assistant Professor, Department of Mathematical Sciences, Montclair State University, Upper Montclair, NJ.  
2001-2004 Visiting Scholar, Department of Politics, New York University, New York, NY.
- 1997-1998 Visiting Assistant Professor, Department of Mathematical Sciences, Loyola University, Chicago, IL.  
1994-1997 Assistant Professor, Department of Mathematical Sciences, US Military Academy; West Point, NY.  
1996 Adjunct Assistant Professor, Business Division, MBA Level, Mt. Saint Mary College, Newburgh, NY.

### EDUCATION

Ph.D. Mathematics, Northwestern University, Evanston, IL, June 1994.

Dissertation: *Indefinitely Repeated Games and Cooperation*.

Committee: Professors Donald G. Saari (Advisor), Ehud Kalai, and Sandy Zabell.

Course work concentrated in mathematics, as well as the requisite M.S. courses from the Managerial Economics and Decision Sciences Program at the Kellogg Business School; member of the Mathematical Methods in the Social Sciences Program (headed by Professor Roger Myerson); M.A. awarded June 1991.

B.S. Mathematics, Santa Clara University, Santa Clara, CA, June 1989, *magna cum laude*.

Professor Gerald L. Alexanderson (Advisor). Honors Program, Pi Mu Epsilon, Sigma Xi, Phi Beta Kappa.

### PUBLICATIONS

- **Forming Stable Coalitions: The Process Matters.** S. Brams, M.A. Jones, and D.M. Kilgour. (To appear in *Public Choice*).
- **Win, Lose, or Draw: A Markov Chain Analysis of the National Football League's Overtime Rules.** M.A. Jones. (to appear in *College Mathematics Journal*, Nov. 2004).
- **Controlling Wound Healing through Debridement.** M.A. Jones, B. Song, and D. Thomas. (to appear in *Mathematical and Computer Modelling*).
- **Integrating Combinatorics, Geometry, and Probability through the Shapley-Shubik Power Index.** M.J. Haines and M.A. Jones. (to appear in *MAA Notes: Innovative Methods Beyond Calculus*; Dick Maher, editor).
- **A Proofs Course that Transitions Students to Advanced, Applied Mathematics Courses.** M.A. Jones and A. Mukherjee. (to appear in *MAA Notes: Innovative Methods Beyond Calculus*; Dick Maher, editor).
- **The Sprinkler Problem: A Mathematician Waters the Lawn.** M.A. Jones and J.L. Stonick. (To appear in *The Mathematical Gazette*, July 2006).
- **Reputation, Compliance, and Development.** G.W. Downs and M.A. Jones. Chapter 5, p. 117-133, in *The Impact of International Law on International Cooperation: Theoretical Perspectives*. (Ed. by Eyal Benvenisti), Cambridge University Press, June 2004.
- **A Sophomore-Level Transitions Course: Pedagogy, Projects, and Evaluation.** M.A. Jones, A. Mukherjee, and G. Weinstein. *Proceedings of the Hawaii International Conference on Statistics, Mathematics, and Related Fields*, June 9-12, 2004.
- **Fairness, How to Achieve It, and How to Optimize in a Fair Division Procedure.** M.A. Jones and S.F. Cohen. *Mathematics Teacher*, Volume 97, Issue 3, (March 2004), 170-174.
- **Connecting Fair Division and Game Theory through the Optimization of Knaster's Procedure.** M.A. Jones. *PRIMUS (Problems, Resources, and Issues in Mathematics Undergraduate Studies)*. Vol XIII n4 (Dec. 2003), 321-336.
- **Partitioning Triangular Numbers.** M.J. Haines and M.A. Jones. *College Mathematics Journal*, V34, n4, (Sep. 2003), 295.
- **Dynamic Models of Coalition Formation: Fallback vs. Build-Up.** S. Brams, M.A. Jones, and D.M. Kilgour. *Proceedings of the Ninth TARK (Theoretical Aspects of Rationality and Knowledge) Conference*, edited by M. Tennenholtz, (June 2003) 187-200; also in: *Graph Theory Notes of New York*, XLV, (Nov. 2003), 32-40.

- **Proof without Words: Nonnegative Integer Solutions and Triangular Numbers.** M.J. Haines and M.A. Jones, *Mathematics Magazine*, V75, n5, (Dec. 2002), 388.
- **Proof of a “Possibly New” Definition of a Circle** in Reader Reflections. M.A. Jones. *Mathematics Teacher*, V95, n8, (Nov. 2002), p.642.
- **Equitable, Envy-free, and Efficient Cake Cutting for Two People and Its Application to Divisible Goods.** M.A. Jones, *Mathematics Magazine*, V75, n4, (Oct, 2002), 275-283.
- **Single-Peakedness and Disconnected Coalitions.** S. Brams, M.A. Jones, and D.M. Kilgour. *Journal of Theoretical Politics*, V14, n3, (July 2002), 361-386.
- **Reputation, Compliance, and International Law.** G.W. Downs and M.A. Jones. *Journal of Legal Studies* (Special Issue on Rational Choice and International Law) V31, n1, Part 2, (Jan. 2002) S95-S114.
- **The Wallet Paradox Revisited.** M. Carroll, M.A. Jones, and E. Rykken. *Mathematics Magazine*, V74, n5, (Dec. 2001) 378-383.
- **General Flip-Shift Games,** J.G. Cheong, M.A. Jones, and K. Kaneko (Cheong and Kaneko are two undergraduate students). *Pi Mu Epsilon Journal* Vol 11, n5, (Dec. 2001) 229-239.
- **The Complexity of Artificial Grammars.** E. Bollt and M.A. Jones. *Nonlinear Dynamics, Psychology, and Life Sciences* V4 n2 (April 2000) 153-168.
- **Eliminating False Positives in a Cryptographic Method.** A.M. Daddea and M.A. Jones (Daddea is an undergraduate student). *Pi Mu Epsilon Journal* Vol 11, n3, (2000) 125-133.
- **Emphasizing Saddle Points through Game Theory: A Classroom Activity.** J. Dorrington and M.A. Jones. *PRIMUS (Problems, Resources, and Issues in Mathematics Undergraduate Studies)*. Vol X n3 (2000) 206-218.
- **The Effect of Punishment Duration of Trigger Strategies and Quasifinite Continuation Probabilities for Prisoners' Dilemmas.** M.A. Jones, *International Journal of Game Theory*. V28 n4 (1999) 533-546.
- **The Mathematical Control of Sleep/Wake Cycles.** M.A. Jones and D. Thomas. Proceedings of the Second Regional Conference on Quantitative Reasoning Across the Disciplines, 95-123. March 6, 1999.
- **Cones of Cooperation, Perron-Fröbenius Theory, and the Indefinitely Repeated Prisoners' Dilemma.** M.A. Jones, *Journal of Mathematical Economics* V30, n2 (Sep. 1998) 187-206.
- **Interviewing for a Job in Academia.** T. Hull, M.A. Jones, and D. Thomas. *Notices of the AMS* (1998) 1353-1357.
- **Communication Networks with Varying Capacities: Examples and the Effects of Variance.** M.A. Jones, Proceedings of the Fourth Annual Army Research Lab (ARL)/USMA Technology Symposium, October 1996.
- **An Infinite Horizon Dynamic Programming Approach to Communication Networks with Varying Capacities.** M.A. Jones and C. Pehlivanian. Proceedings of the Third Annual ARL/USMA Technology Symposium, November 1995.
- **Perfect Cake-Cutting Procedures with Money.** S.J. Brams, M.A. Jones and C. Klamler. (Submitted to *The American Mathematical Monthly*, December 2003).
- **The Pythagorean Theorem of Baseball and Alternate Models.** M.A. Jones and L. Tappin. (Submitted to *The UMAP Journal*, May 2004).
- **Nim Induced Dynamical Systems.** M.A. Jones and D.M. Thomas. (Submitted to *Discrete and Continuous Dynamical Systems*, September 2004).

## POPULAR PRESS COVERAGE

- Ben Stein (American Institute of Physics) refers to **The Pythagorean Theorem of Baseball and Alternate Models** in Inside Science News Service “Streamlining the ‘Pythagorean Theorem of Baseball’” (3/29/04): <http://www.aip.org/isns/reports/2004/007.html>
- Wall Street Journal’s Science Journal “Pigskin Overtime Rules And Beaned Batters Spur Math Theorems” by Sharon Begley refers to the articles: **Win, Lose, or Draw: A Markov Chain Analysis of the National Football League's Overtime Rules** and **The Pythagorean Theorem of Baseball and Alternate Models** (1/9/04; pA07, first page of Market Place section)
- Nature Online’s “Cake Cutting Perfected” by Philip Ball refers to the article: **Perfect Cake-Cutting Procedures with Money** (1/7/04; <http://www.nature.com/nsu/040105/040105-3.html>)

## BOOK REVIEWS

- Games and Decision Making by Aliprantis and Chakrabarti. Spring 2002: *Math. and Computer Educ.* 36(2):195-197.
- The Mathematical Universe by W. Dunham. Fall 1999: *Math. and Computer Educ.* 33(3):298-300.
- Calculating and Computing for Social Science and Arts Students by R. Solomon and C. Winch. Winter 1996: *Math. and Computer Educ.* 30(1):107-108.
- Introduction to Analysis (4th Edition) by E. Gaughan. Fall 1995: *Math. and Computer Educ.* 29(3):330-331.

## TALKS/PRESENTATIONS

Sequences of P/N Positions in Nim without Preperiods.

- Contributed Paper Session on Advances in Recreational Mathematics, MAA MathFest, Providence, RI. August 2004.

Perfect Cake-Cutting Procedures with Money.

- Public Choice Society Meetings, Baltimore, MD. March 2004.

Forming Stable Coalitions from Preferences over Coalition Partners.

- AMS Special Session on The Many Lives of Lattice Theory and the Theory of Ordered Sets, with Connections to Combinatorics, AMS/MAA Joint Meetings, Phoenix, AZ. January 2004.

Whether You Win or Lose, It's How the Overtime is Played: A Markov Chain Analysis of the NFL's Overtime Rules.

- MAA Session on Mathematics and Sports, AMS/MAA Joint Meetings, Phoenix, AZ. January 2004.

A Sophomore-Level Transition Course

- Poster Session for NSF DUE Grants, AMS/MAA Joint Meetings, Phoenix, AZ. January 2004.

Using the Writing Process to Help Teach the Mathematical Modeling Process.

- MAA Session on Mathematical Modeling ..., AMS/MAA Joint Meetings, Baltimore, MD. January 2003.

A Common Question Yields an Answer in Content: Finding the NCTM Content Standards in Undergraduate Mathematics.

- MAA Contributed Paper Session, AMS/MAA Joint Meetings, Baltimore, MD. January 2003.

Optimization of Knaster's Procedure and How to Use it as a Transition to Game Theory for a Liberal Arts Math Course

- Invited, Session on Innovative Methods in Courses Below Calculus, MathFest, Burlington, VT. August 2002.

Forming Stable Coalitions: The Process Matters.

- Public Choice Society Meetings, San Diego, CA. March 2002.
- American Political Science Association Meetings, Boston, MA. September 2002.

Equitable, Envy-free, and Efficient Cake Cutting for Two People and Its Application to Discrete Goods.

- Contributed paper session, AMS/MAA Joint Meetings, San Diego, CA. January 2002.
- Panel on Fair Division, Society for Economic Design Meetings, New York, NY. July 2002.
- Invited, Department of Mathematics Colloquium, Adelphi University, Garden City, NY. November 2002.

The Mathematics of Flip-Shift Puzzles.

- Invited to speak in Science Seminar Series, Sarah Lawrence College, Bronxville, NY. October 2001.
- As part of the CSAM Visiting Professor Series, Dover High School, Dover, NJ. December 2001.

Integrating Combinatorics, Geometry, and Probability through the Shapley-Shubik Power Index

- Contributed Paper Session on Innovative Methods ... Beyond Calculus, MAA MathFest, Madison, WI. August 2001.

Geometric Implications of the Shapley-Shubik Power Index

- Public Choice Society Meetings, San Antonio, TX. March 2001.
- International Game Theory Conference. 12<sup>th</sup> Summer Festival on Game Theory. Stony Brook, NY. July 2001.

The Paradox of Disconnected Coalitions

- Midwest Political Science Association Annual Meetings. Chicago, IL. April 2000.
- International Game Theory Conference. 11th Summer Festival on Game Theory. Stony Brook, NY. July 2000.

The Effect of Uncertainty and Punishment on Cooperation in Repeated Prisoners' Dilemmas

- Mathematics Department Colloquium, Towson University. Towson, MD. December 2000.
- Mathematics Department Colloquium, Hunter College (CUNY). New York, NY. March 2000.

A Continuous Version of the Dodgson Winner

- Mathematical Association of America: New Jersey Section Meeting. Trenton, NJ. April 1999.

The Mathematical Control of Sleep/Wake Cycles

- Invited to speak as part of a Contributed Paper Session at MathFest (MAA), Providence, RI. July 1999.
- Invited to speak at Mathematics Awareness Month. University of Scranton. Scranton, PA. April 1999.
- Second Regional Quantitative Reasoning Across the Disciplines Conference. Stockton College, NJ. March 1999.

Perron-Fröbenius Theory and the Repeated Prisoner's Dilemma.

- American Mathematical Society Joint Meetings. San Diego, CA. January 1997.

Developing Symbolic Dynamics to Measure the Complexity of Repeated Game Strategies by Topological Entropy.

- Midwest Mathematical Economics and International Trade Meetings. St. Louis, MO. October 1996.

Communication Networks with Varying Capacities: Examples and the Effects of Variance.

- Fourth Annual ARL/USMA Technology Symposium. Adelphi, MD. October 1996.

The Classification of Continuation Probabilities.

- International Game Theory Conference. 7<sup>th</sup> Summer Festival on Game Theory. Stony Brook, NY. July 1996.
- Social Choice and Welfare. Maastricht, Netherlands. June 1996.
- American Mathematical Society Joint Meetings. San Francisco, CA. January 1995.

A Dynamic Model of a Continuous Blotto Game that leads to Extreme, Close Policy Positions.

- International Workshop on Game Theory and Politics. Santiago de Compostela, Spain. July 1996.
- Public Choice Society Conference. Houston, TX. March 1996.

Cones of Cooperation for Indefinitely Repeated, Generalized Prisoner's Dilemma Games.

- New Directions in the Theory of Markets and Games (In Honor of R. Aumann). Toronto, Canada. October 1995.
- Midwest Mathematical Economics and International Trade Meetings. Minneapolis, MN. October 1995.
- Public Choice Society Conference. Long Beach, CA. March 1995.

An Infinite Horizon Dynamic Programming Approach to Comm. Networks with Varying Capacities.

- Third Annual ARL/USMA Technology Symposium. November 1995.

Cones of Cooperation and Their Use to Substantiate Intuition and Compare Correlated Strategies.

- Southeast Economic Theory and International Trade Conference. Charlottesville, VA. November 1994.
- Midwest Mathematical Economics and International Trade Meetings. Ann Arbor, MI. May 1994.

## **SERVICE FOR MATHEMATICAL ASSOCIATION OF AMERICA**

- Member Editorial Advisory Board, *The College Mathematics Journal*, December 2003 - present
- Public Information Officer, NJ Section of the MAA, October 2003 – present
- Co-Organizer/Presider of MAA General Contributed Paper Session for Joint Meetings, Phoenix, AZ, January 2004.
- Organizer/Presider of MAA General Contributed Paper Session for Joint Meetings, Baltimore, MD, January 2003.
- Organizer/Presider of MAA-NJ Contributed Paper Session on Popular and Recreational Mathematics, March 2004.

## **OTHER EXPERIENCE AND SERVICE**

- Referee for *Games and Economic Behavior*, *Mathematics Magazine*, *Brain Research Bulletin*, *Social Choice and Welfare*, *PRIMUS*, *Journal of Politics*, *Computer Information Systems Conference 2004*, *College Mathematics Journal*, and *Mathematical Social Sciences*.
- Graded, by invitation, the 56<sup>th</sup>, 59<sup>th</sup>, 60<sup>th</sup>, and 62<sup>nd</sup> Annual International William Lowell Putnam Competitions, Decembers 1995, 1998, 1999, and 2001.
- Judged, by invitation, the 28<sup>th</sup>, 29<sup>th</sup>, 31<sup>st</sup>, 32<sup>nd</sup>, 33<sup>rd</sup>, 35<sup>th</sup>, and 36<sup>th</sup> Annual Greater Metropolitan New York Area Math Fairs. Pace University, NY. March of 1996, 1997, 1999, 2000, 2001, 2003, and 2004.
- Panel Member for Project Next's Fun, Fame, and Fortune: Advising Students on Mathematical Competitions; Joint Meetings, Phoenix, AZ, January 2004.
- Member of Pure and Applied Math Search Committee, AYs 2002-2004.
- Member of Department Personnel Advisory Committee – evaluate candidates for reappointment, tenure, and promotion, AY 2003-2004.
- Member of the Undergraduate Curriculum Committee, AY 2002-2003.
- Chairperson of the Special Interest Group in Pure and Applied Mathematics in the Department of Mathematical Sciences at Montclair State University. Academic Years 2000-2002. (administrative responsibilities)
- Member of the Assistant Dean Search Committee, AY 2001-2002.
- Math 106 Course Coordinator (AY 2000-2002). Wrote the accepted GER proposal for this course.
- Academic Adviser to 15 undergraduate students, each semester at Montclair State University.
- Math Club Adviser; Montclair State University, Upper Montclair, NJ. Academic Years 1998-2000. Including the initiation of the Biweekly Mathematics Problem Contest.
- Appeared on the national radio program, "Math Medley," as part of the program: Mathematics Reform at the University Level. February 1999.
- Faculty Sponsor for a team in the COMAP Mathematical Competitions in Modeling. February 1999 & 2001.
- Math Club Adviser; Loyola University, Chicago, IL. Fall 1997 and Winter 1998. Including the initiation of the Biweekly Mathematics Problem Contest.
- Pi Mu Epsilon Honor Society Faculty Adviser; Loyola University, Chicago, IL. Fall 1997 and Winter 1998. Including the organization of the annual induction ceremony.
- Member of MBA Thesis Committee; Mt. Saint Mary College, Newburgh, NY. Fall 1996.
- Performed research for Army Research Labs, Directorate of Signals and Information Technology. Summers 1995 and 1996.
- Editor, *Mathematica Militaris*, Bulletin of the Math Departments of the Federal Service Academies. 1994 - 1996.
- Organized an interdisciplinary Mathematics Seminar with members from the Economics, Mathematics, and Computer Science Departments, USMA, Fall 1995 - Fall 1996.

## **PROFESSIONAL SOCIETIES AND ORGANIZATIONS**

- Member of the Mathematical Association of America, American Mathematical Society, Game Theory Society, and

the Society for Chaos Theory in Psychology and the Life Sciences.

## GRANTS/AWARDS/FELLOWSHIPS

### Montclair State University

- Received NSF CCLI A&I: A Sophomore-Level Transition Course. With A. Mukherjee (NSF DUE #0310753); July 2003-July 2005; \$52,000.
- Received Sokol Faculty/Student Research Award: Explicitly Determining the Relationship between Implicit Learning and the Complexity of Artificial Grammars, Summer 2003.
- Applied for NSA Special Situations Grant: Research Opportunities for Commuter Students. September 2003.
- Applied for NSF RUI: Geometric Analysis of Power, Apportionment, and Sequential Apportionment (Proposal Number 0308076) November 2002. (Division of Mathematical Sciences: Applied Mathematics)
- Applied for NSF RUI: Mathematical and Computer Modeling of Evolution, Spread, and Control of West Nile Encephalitis. With D.M. Thomas and J. Hartman. (Proposal Number 0314542) January 2003. (Division of Mathematical Sciences: Applied Mathematics.)
- Received Separately Budget Research Grant for Summer 2001: "Reputation in Game Theory."
- Received GRIPSAM Grant for Summer 2001: "A priori Quota Selection in Simple Weighted-Voting Games."
- Received Student Faculty Research Grant for Summer 1999: "Determining the Properties of Numbers in a Cryptographic Method to Eliminate False Positives" to mentor a student to do research and write an article.

### US Military Academy

- Superior Civilian Service Award, for "... outstanding instruction and leader development ..." May 1997.
- Army Research Office Grant for the proposal "A Dynamic Model of a Continuous Blotto Game," 1995-1996.
- Faculty Development Research Fund Grant for the proposal "The Geometry of Allocations," 1994-1995.

### Northwestern University

- Summer Research Support under NSF grant IST 9103180, Summer 1993.
- Mathematics Departmental Fellowship, 1990-1991; 1993-1994; University Fellowship, 1989-1990.
- Assistantship in the Mathematical Methods in the Social Sciences Program, 1991-1993.

## REFERENCES

Professor Donald G. Saari  
Department of Mathematics  
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