

Camillia Smith Barnes
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EDUCATION

Harvard University PhD, Mathematics AM, Mathematics	<i>Cambridge, MA</i> expected June 2009 June 2007
Cambridge University Certificate of Advanced Study, Mathematics (MS equivalent) with Merit	<i>Cambridge, England</i> June 2003
Michigan State University MS, Mathematics Honors BS, Mathematics with Highest Distinction, Lyman Briggs School Honors BA, English Literature with Highest Distinction Honors BA, French Literature with Highest Distinction	<i>East Lansing, MI</i> May 2002 May 2002 August 2002 August 2002

DISSERTATION

“Enumeration of the distinct shuffles of two permutations of any length”

- Enumerate the distinct shuffles of two permutations of any two lengths, where the permutations are written as words in the letters $1, 2, 3, \dots, m$ and $1, 2, 3, \dots, n$, respectively.
- Discuss the sequences given by this enumeration in special cases.
- Outline further results and generalizations.

Advisor: Prof. Richard P. Stanley, Massachusetts Institute of Technology

Research Interest: Algebraic Combinatorics

SELECTED GENERAL HONORS & HONORS IN MATHEMATICS

American Mathematical Society Travel Grant	2008
AT&T Laboratories Fellowship Program	2003
National Science Foundation Graduate Research Fellowship	2002
National Defense Science and Engineering Graduate Fellowship (declined)	2002, 2003
Winston S. Churchill Foundation Scholarship	2002
National Physical Sciences Consortium Fellowship (declined)	2002
Graduate School of Arts and Sciences Grant , Harvard University	2002
Presidents’ Fellowship , Princeton University (declined)	2002
Olga Tauskey-Todd Fellowship , California Institute of Technology (declined)	2002
University Fellowship , Yale University (declined)	2002
Graduate School Fellowship , Rutgers University (declined)	2002
Lyman Briggs School Academic Excellence Award , MSU	2002
Jennie Creer Stoddard Foundation Housing Scholarship , MSU	2002
L. C. Plant Math Award , MSU	1999, 2002
Merit Prize, Oral Presentations in the Physical Sciences , MSU	2001
Regional Finalist, Marshall Scholarship , Midwest Region	2001
State Finalist, Rhodes Scholarship , Michigan	2001
William Lowell Putnam Mathematics Competition Top 500	2000, 2001
Richard E. Phillips Memorial Scholarship , MSU	2000
Herbert T. Graham Scholarship , MSU	2000
Honorable Mention, Alice T. Schafer Mathematics Prize , Association of Women in Mathematics	1999

Phi Beta Kappa Society , MSU	1999
Honor Society of Phi Kappa Phi , MSU	1999
Golden Key International Honor Society , MSU	1999
Honorable Mention, COMAP Mathematical Contest in Modeling	1998, 1999
College of Natural Science Dean's List , MSU	1997, 1998, 1999
Pi Mu Epsilon National Mathematics Honor Society , MSU	1998
Herzog Mathematics Prize , MSU	1997
Alumni Distinguished Scholarship , MSU	1997
National Merit Scholarship (John M. Stalnaker Memorial)	1997
Grand Prize Winner, USA Mathematical Talent Search	1997
Advanced Placement State & National Scholar	1997

ADDITIONAL RESEARCH EXPERIENCE

Summer Research Intern Summer 2003
AT&T Shannon Laboratories *Florham Park, NJ*

- Assisted with research in non-standard coding theory.
- Wrote and implemented computer programs for calculating bounds on optimal codes.

Mentor: Dr. Neil Sloane

Research Assistant Summer 1999
University of Minnesota Duluth Department of Mathematics *Duluth, MN*

- Found solutions to mathematical research problems in network-related graph theory.
- Contributed research talks on results at national mathematics conferences.

Director: Prof. Joseph Gallian

Research Assistant Summer 1998
Michigan Technological University Department of Mathematical Sciences *Houghton, MI*

- Found solutions to mathematical research problems in discrete random structures.
- Contributed research talks on results at national mathematics conferences.

Director: Prof. Anant Godbole

Professorial Assistant Academic Years 1997-1998 & 1998-1999
Michigan State University Department of Mathematics *East Lansing, MI*

- Aided professor's historical research by translating 19th-century treatises on Set Theory from French into English.

Advisor: Prof. Jacob Plotkin

Laboratory Assistant Academic Year 1997-1998
Michigan State University Department of Microbiology *East Lansing, MI*

- Assisted in preparation and implementation of clinical tests on the antibiotic resistance of animal pathogens.

Principal Investigator: Prof. Robert Walker

TEACHING, MENTORING, & EDITING EXPERIENCE

Teaching Fellow Fall 2008 to present
Harvard College Mathematics Department *Cambridge, MA*

- Teach integrated Calculus and Pre-Calculus (Math Xa) three hours weekly, as students' sole instructor.
- Meet students by appointment and during office hours.
- Help to write and grade exams.

Course Head: Dr. John Hall

Mentor Academic Year 2007-2008 & Fall 2008 to present
Girl's Angle Math Club *Cambridge, MA*

- Mentor small groups of junior high school girls in mathematics enrichment activities approximately bi-weekly.

Director: Dr. Ken Fan

Course Assistant Summer 2008
Harvard Summer School Cambridge, MA
• Team taught an Introduction to Proof course in Point-set Topology (Math S-101), four and a half hours weekly.
• Held intensive office hours and also met students by appointment.
• Graded homework and exams.
Course Head: Dr. Thomas Judson

Proofreader May 2008 - July 2008
Paul Dry Books Philadelphia, PA
• Proofread new edition of Lillian Lieber's *Einstein Theory of Relativity: A Trip to the Fourth Dimension*, with endnotes.

Teaching Fellow Spring 2008
Harvard College Mathematics Department Cambridge, MA
• Taught Linear Algebra with Differential Equations (Math 21b) three hours weekly, as students' sole instructor.
• Held office hours weekly and also met students by appointment.
• Helped to write and grade exams.
Course Head: Dr. Oliver Knill

Math Editor February 2005 - October 2005
McDougal Littell, a division of Houghton Mifflin Company Boston, MA
• Edited and customized content for Texas Edition of the Larson High School Geometry textbook.
• Wrote and solved standardized test preparation exercises.
Supervisors: Lisa Hodsdon & Martha Brewer

Supervisor Academic Year 2004-2005 & Fall 2005
Harvard College Math Question Center Cambridge, MA
• Coordinated on-site tutoring in Calculus for Harvard College undergraduates.
• Supervised course assistants and answered students' questions in a range of Calculus and Linear Algebra courses.
Head Coordinators: Dr. Derek Bruff & Dr. Bret Benesh

Advisor Academic Year 2001-2002
Michigan State University Undergraduate Math Club East Lansing, MI
• Assisted a group of math majors in creating a new math club.
• Supervised meetings and helped to organize lectures.

Assistant Coach Spring 1998, 1999, & 2002
Michigan All-Star Math Team Albion, MI & Iowa City, IA
• Traveled around lower Michigan to attend and help supervise three weekend practice sessions to prepare high school students for the American Legions Mathematics League Competition in June of each year.
• Chaperoned students on trip to Iowa City.
• Helped to administer and grade the contest problems.
Head Coaches: Prof. Robert Messer (Albion College) & Prof. Ruth Favro (Lawrence Technological University)

Teacher Summer 2001
MASCOT [Mathematics Augmentation Series: Cultivating Optimum Teaching Through Cooperative Learning]
Gifted & Talented Programs, Ingham Intermediate School District Okemos, MI
• Led talented seventh graders in summer enrichment activities
• Helped to foster their enthusiasm for and creativity in mathematics.
Director: Sylvia Buie

Teaching Assistant Spring-Summer 2001 & Academic Year 2001-2002
Michigan State University Department of Mathematics East Lansing, MI
• Assisted in development and implementation of a new online AP Calculus course.
• Created interactive homework.
• Provided online mathematics tutoring and technical support.
Project Heads: Prof. P.K. Wong & Prof. Stephen Dragosh

Teaching Assistant

Academic Year 1998-1999 & Fall 2000

Michigan State University Department of Mathematics

East Lansing, MI

- Led recitations for Multivariable Calculus.
- Graded student quizzes and exams.
- Held weekly office hours.
- Tutored at the Math Learning Center.

Course Instructors: Prof. Stephen Dragosh, Prof. William Brockman, & Prof. Bruce Sagan

- Extensive experience **tutoring mathematics**, especially high school **geometry** and college **calculus**.
- Also experience free-lance **editing** and **proofreading** of mathematics-related educational materials.

SEMINAR & CONFERENCE PRESENTATIONS

“Enumeration of the distinct shuffles of permutations”

Joint Mathematics Meetings

upcoming January 2009

*Washington, DC***“Enumeration of the distinct shuffles of permutations”**

MIT Combinatorics Seminar

November 2008

*Cambridge, MA***“Enumeration of the distinct shuffles of two permutations of any length”**

NSF ADVANCE Workshop, Rice University

October 2008

*Houston, TX***“Bounds for Optimal Single-Transposition Correcting Codes”**

Mathematics Seminar Series, AT&T Shannon Laboratories

August 2003

*Florham Park, NJ***“Optimal Oriented Diameters”**

Mathematical Association of America MathFest, University of Wisconsin-Madison

August 2001

*Madison, WI***“The Optimal Oriented Diameter of the 3×5 Torus”**

University Undergraduate Research and Arts Forum, Michigan State University

April 2001

*East Lansing, MI***“The Optimal Oriented Diameter of the 3×5 Torus and of Joins of Graphs”**

Nebraska Conference for Undergraduate Women in Mathematics, University of Nebraska-Lincoln

February 2001

*Lincoln, NE***“The Number of Repeated Parts in an Integer Composition”** with Nils Barth

Thirtieth Southeastern International Conference on Combinatorics, Graph Theory, & Computing, Florida Atlantic University

March 1999

*Boca Raton, FL***“The Representation of the Future in Spoken French”**

Le français d’hier, d’aujourd’hui et de demain: Association for French Language Studies Annual Conference, University of St Andrews

September 2002

St Andrews, Scotland

ACADEMIC SERVICE

Board Member and Department Representative

Harvard Graduate Women in Science & Engineering (HGWISE), Harvard University

Fall 2008 to present

*Cambridge, MA***Assistant to the Coordinator**

Conference on Geometric Analysis: Present & Future, Harvard University

August 2008

*Cambridge, MA***External Events Officer**

Churchill College Middle Common Room Committee, Cambridge University

Academic Year 2002-2003

Cambridge, England

Vice-president	Academic Year 2001-2002
Treasurer	Academic Year 1998-1999 & Spring 2001
Honors College Student Advisory Committee, MSU	<i>East Lansing, MI</i>
Member	Spring 1999, 2001, & 2002
Selection Committee for Honors Contributions Award, MSU	<i>East Lansing, MI</i>
Member	Academic Year 2000-2001
University Committee on Honors Programs, MSU	<i>East Lansing, MI</i>

SELECTED HONORS IN LANGUAGE & LITERATURE

Dorothy Carr Memorial Scholarship, MSU	2002
Hymen and Miriam Stein Endowed Scholarship, MSU	2001
Outstanding Student in French, MSU	2001
Certificat pratique de langue française, premier degré, “bien”, Université de Paris VI-Sorbonne	2000
Phi Beta Delta Honor Society for International Scholars, MSU	2000
Coca-Cola Global Fellows International Study Award Scholarship	2000
Jeffrey Kathryn Cole International Study Award Scholarship, MSU	1999
Robert G. Marshall Scholarship, Sweet Briar College	1999
College of Natural Science Study Abroad Scholarship	1999
Third Prize, North American Open Poetry Competition, International Library of Poetry	1996

ADDITIONAL INTERNATIONAL STUDY

Université de Paris VII (Jussieu)	Academic Year 1999-2000
Sweet Briar College Junior Year in France	<i>Paris, France</i>
• Completed year of study in mathematics, literature, and art history at a French University.	
English Literature in London	Summer 2000
Michigan State University Study Abroad	<i>London, England</i>
• Completed literature study program, including coursework and field trips.	
Archaeology and History of Religion in Israel	Summer 2000
Michigan State University Study Abroad	<i>Jerusalem & Bethsaida Excavation Site, Israel</i>
• Completed religious studies program, including coursework, field trips, and excavation on the Sea of Galilee.	
Mathematics Exchange Program	Summer 1995
American Legions Mathematics League	<i>Moscow & St. Petersburg, Russia</i>
• Participated in exchange program promoting cross-cultural mathematical communication.	

ADDITIONAL SKILLS

- Fluent in written and spoken **French**.
- **Violinist**; played in Cambridge University Musical Society & Michigan State University Orchestras.

PROFESSIONAL SOCIETIES

American Mathematical Society
 Mathematical Association of America
 Society for Industrial and Applied Mathematics
 Association for Women in Mathematics

REFERENCES

Richard P. Stanley

Norman Levinson Professor
of Applied Mathematics
Department of Mathematics
Massachusetts Institute of Technology
Room 2-375
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Robin Gottlieb

Professor of the Practice
in the Teaching of Mathematics
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Neil J. A. Sloane

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Lauren K. Williams

Benjamin Pierce Assistant Professor
& NSF Mathematical Sciences
Postdoctoral Fellow
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