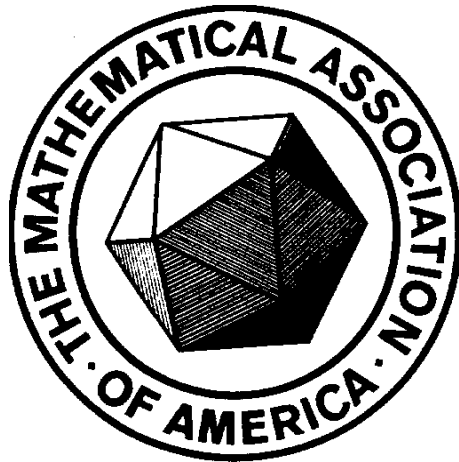# The Mathematical Association of America

Meeting of the New Jersey Section

Fairleigh Dickinson University
Madison, NJ

Saturday, November 1, 2008

Abstracts and Biographies of Speakers and Panelists

From National to International: Marshall Stone and the Transformation of the American Mathematical Research Community
Karen Parshall, University of Virginia

The American mathematical research community celebrated, symbolically at least, its fiftieth anniversary in 1938. Many of those fifty years had marked a period of consolidation and growth at home of programs in mathematics at institutions of higher education supportive of high-level research as well as of a corps of talented researchers capable of making seminal contributions in a variety of mathematical areas. By the middle decades of the twentieth century---the 1930s, 1940s, and 1950s---members of that community began increasingly to look outward beyond the national boundaries of the United States and toward a larger international arena. This paper explores the contexts within which the American mathematical research community, in general, and the American mathematician Marshall Stone, in particular, deliberately worked in the decades around mid century to effect the transformation from a *national* community to one actively participating in an *internationalizing* mathematical world.

Karen Parshall is one of a rare breed on the faculty at the University of Virginia- a native Virginian. She did her undergraduate studies in French and mathematics as well as her M. S. in mathematics at the University of Virginia before pursuing graduate work at the University of Chicago. She earned her Ph.D. in history from Chicago, working under the supervision of I. N. Herstein in mathematics and Allen G. Debus in the history of science, on the history of the theory of algebras and especially the role played by Joseph H. M. Wedderburn.

Since 1988, she has been on the faculty at UVa where she has a joint appointment in the Departments of Mathematics and History, teaching mathematics and the history of mathematics in the Mathematics Department and the history of science in the History Department. She is active as an editor and member of several learned societies. In 2002, she was elected a Corresponding Member of the Académie internationale d'histoire des sciences and Chair of the International Commission for History of Mathematics, a position she continues through 2009.

Her research interests lie in the history of science and mathematics in the nineteenth and twentieth centuries, with a special mathematical focus on the history of algebra. In addition to exploring technical developments of algebra—

the theory of algebras, group theory, algebraic invariant theory— she also works on more thematic issues such as the development of national mathematical research communities (specifically in the United States and Great Britain) and the internationalization of mathematics in the nineteenth and twentieth centuries. She has recently finished a long-range research agenda on the nineteenth-century British mathematician, James Joseph Sylvester, which resulted, among other publications, in a book published in 1998 with Oxford University Press of Sylvester's selected correspondence with historical and mathematical commentary and in 2006 in his full-scale biography published with the Johns Hopkins University Press. Her work on Sylvester also continued to focus her interests both on issues of internationalization and on the history of nineteenth- and twentieth-century algebra. At present, she is embarking on a new long-range project on the development of the mathematical research community in twentieth-century America.

Polynomial Equations Over Matrices
Robert Wilson, Rutgers University

What can be said about the number of solutions of an *n*-th degree polynomial equation $X^n + A_{n-1}X^{n-1} + A_{n-2}X_{n-2} + ... + A_1X + A_0 = 0$ where $X, A_{n-1}, A_{n-2}, ..., A_1, A_0$ are *k* by *k* matrices over the complex numbers? If $k = 1$ this is just an equation over the complex numbers and one of the oldest and most basic theorems of algebra states that it has exactly *n* solutions (counting multiplicity). There can be considerable variety when $k > 1$. For example, if $n = k = 2$, the number of solutions is either 0, 1, 2, 3, 4, 5, 6, or infinite. We will show how to use the basic ideas from a first course in linear algebra (i.e., determinants and eigenvectors) to obtain this result and to analyze the problem for arbitrary *n* and *k*.

Robert Wilson received his BA from American Univesity in 1966 and his PhD from Yale University in 1969. He joined the Rutgers faculty in 1971 after two years as an Instructor at NYU's Courant Institute. He has worked in several areas of algebra including the classification of finite-dimensional simple Lie algebras over fields of prime characteristic, the representation theory of affine Lie algebras, the theory of quasideterminants, and the study of universal algebras related to factorizations of polynomials.

Panel: What Mathematics Do Our Partner Disciplines Want Students to Know After One or Two Years of College?
Moderator: *Amy Cohen, Rutgers University*
Panelists: *Stan Dunn, Dean of the Graduate School, Rensselaer Polytechnic Institute; David Payne, Psychology Department, Monmouth University; Ronald Strange, Chemistry Department, Fairleigh Dickinson University, Madison*

Three panelists from disciplines that use mathematics in their courses for majors will present and analyze some assignments they make that require lower division mathematics. The assignments may come from exams, homework, labs, or projects. The analysis will focus on both the mathematical computation and mathematical reasoning that is involved and will demonstrate "typical" work which might be graded "A", "C", and "F". (The quotes on "typical" indicate that the work will be "cooked" to avoid invading the privacy of individual students.)

Amy Cohen has 35 years teaching experience at Rutgers, with increasing attention to ways to make mathematics instruction more effective and more satisfying for students and faculty alike. She was a member of the organizing committee for the February 2008 conference on articulation issues in mathematics arising from the new NJ rules on transfer credit.

Stan Dunn taught in Biomedical Engineering at Rutgers University before moving recently to Rensselaer Polytechnic Institute as Dean of the Graduate School. He has worked in many fields which use mathematics, including medical image reconstruction and design of prosthetics. Many of his REU students have been undergraduate math majors.

David Payne's Ph.D. is in Experimental Psychology from Columbia University. He has taught psychology at Monmouth University for 22 years. He teaches applied statistics and various topics in cognitive psychology, including learning, memory, and perception, which all involve mathematical models on occasion.

Ron Strange finished his Ph. D degree at U. of Illinois in 1971 in inorganic and physical chemistry. After one year at Illinois Institute of Technology, he started teaching at Fairleigh Dickinson University, Madison Campus, teaching physical and inorganic chemistry. His background is largely in quantum mechanics with an emphasis in spectroscopy and various computational methods. In mid-career (1984) he received the M. S. degree in Computer Science at Stevens Institute and, for four years, taught computer science courses.

Abstracts and Biographies of Workshop Leaders

Articulation Issues in the Transition from Precalculus to Calculus
Amy Cohen, Rutgers University

Participants are invited to bring and share examples of test items from precalculus and calculus exams and sample grading rubrics. The idea is to get an idea of the range of items and the expectations for students and the relation between precalculus and calculus courses at various institutions. While this workshop is primarily motivated by the challenges of working with transfer students (both before and after the transfer), we hope that the discussion will be more generally useful.

Amy Cohen has 35 years teaching experience at Rutgers, with increasing attention to ways to make mathematics instruction more effective and more satisfying for students and faculty alike. She was a member of the organizing committee for the February 2008 conference on articulation issues in mathematics arising from the new NJ rules on transfer credit.

Helping Our Students Learn to Read Mathematics
Bonnie Gold, Monmouth University

Students often come to college with little experience reading mathematics. In high school usually the teacher presents material in class, and students use their textbooks primarily as a source of homework problems. However, by the time students graduate from college, they are supposed to be independent learners. At least for mathematics majors (and to some extent for other students), this needs to include an ability to learn mathematics from written material – textbooks, journal articles, etc. In this workshop we will discuss a range of ways to (1) get the students to read their textbooks, and (2) help them learn how to read these materials effectively. This is a workshop, not a lecture: so participants are invited to share activities they have used successfully, as well as problems they have encountered.

Bonnie Gold has been doing several activities to get her students to learn how to (and to actually) read their textbooks, which she will share. As editor of MAA Online's Innovative Teaching Exchange, she has edited a series of articles with a range of approaches on this topic. She also participated in a contributed paper session on the topic at MathFest this past summer.

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Announcements

Election of MAA-NJ Officers
Slate of candidates proposed by the MAA-NJ Nomination Committee:

Chair-elect:	Bonnie Gold, Monmouth University
Vice-Chair for Speakers:	Tom Hagedorn, The College of New Jersey
Vice-Chair for Two-Year Colleges	Carol Avelsgaard, Middlesex County College
Vice-Chair for Student Activities	Lawrence D'Antonio, Ramapo College
Vice-Chair for Innovations	Theresa C. Michnowicz, NJ City University
Secretary	Aihua Li, Montclair State University

Nominations will also be accepted from the floor.

Lunch Discussion Tables - Fall 2008 Meeting
Organized by Theresa C. Michnowicz, New Jersey City University
There will be 4 discussion tables at lunch (in addition to one for NJ-NExT).

1. *The Mathematician and the History of Mathematics*, led by Karen Parshall, University of Virginia..
2. *How Much Theory Should be in an Elementary Linear Algebra Course*, led by Robert Wilson, Rutgers University.
3. *Articulation*, led by Carol Avelsgaard, Middlesex County College, and Amy Cohen, Rutgers University.
4. *Mathematics and the Climate*, led by Srabasti Dutta, College of St. Elizabeth, and Patricia Kenschaft, Bloomfield College.

Those who pre-registered have priority at these discussion tables. We look forward to a set of lively and interesting discussions!

Call for Nominations for the New Jersey Section Award for Distinguished College or University Teaching
The MAA-NJ Section Distinguished Teacher Award Selection Committee is seeking nominations for the 2009 Award. There are many excellent teachers in our section. Please be sure to nominate one. Information about the simplified nomination process and eligibility requirements are posted at http://www.maa.org/newjersey. Award nominations are due by **Nov. 7, 2008**.

Mathematical Association of America
New Jersey Section Fall 2008 Meeting Program
All talks except the workshops will take place in Lenfell Hall in the Mansion

8:30 – 9:30	**Registration and Coffee**, The Mansion, first floor
8:30 – 1:30	**Book Exhibits**, The Mansion, first floor
9:30 – 9:40	**Welcome by Geoffrey Weinman**, Dean, Becton College of Arts and Sciences, Fairleigh Dickinson University
9:40 – 10:30	*Polynomial Equations Over Matrices,* Robert Wilson, Rutgers University Presider: David Nacin, William Paterson University
10:30 – 11:10	**Intermission**, (Coffee and Book Exibits), The Mansion, first floor
11:10 – 12:00	**Panel:** ***What Mathematics Do Our Partner Disciplines Want Students to Know After One or Two Years of College?*** **Moderator**: Amy Cohen, Rutgers University **Panelists**: Stan Dunn, Dean of the Graduate School, Rensselaer Polytechnic Institute; David Payne, Psychology Department, Monmouth University; Ronald Strange, Chemistry Department, Fairleigh Dickinson University, Madison
12:00 – 1:15	**Lunch**, Cafeteria, Student Center (Book exhibits end at 2:00.)
1:30 – 2:45	**Workshops** • **Articulation Issues in the Transition from Precalculus to Calculus,** Amy Cohen, Rutgers University, Hartmann Lounge • **Helping Our Students Learn to Read Mathematics,** Bonnie Gold, Monmouth University, Lenfell Hall **NJ-NExT Workshop**, Sarah Sullivan Lounge (**NExT Fellows only**)
2:45-3:15	**Intermission and Refreshments**, The Mansion, first floor (Silent auction bidding ends at 3:15)
3:15 – 3:30	**Business Meeting and Elections**, Lenfell Hall
3:30 – 4:20	*From National to International: Marshall Stone and the Transformation of the American Mathematical Research Community,* Karen Parshall, University of Virginia Presider: Katarzyna Potocka, Ramapo College
4:20 - 4:25	**Prizes:** Drawing of door prizes, and announcement of silent auction winners (must be present to win)
4:30 – 6:00 5:00	**NJ-NExT Workshop**, Sarah Sullivan Lounge (**NExT Fellows only**) **Dinner**

NJ-NExT

The 2007-2008 NJ-NExT Fellows are participating in their last round of workshops during this Fall meeting. The workshops, **open to NExT Fellows only**, will meet in the Sarah Sullivan Lounge.

- *Teaching Methods*. Organizer: Serita Nemani, Georgian Court University, 1:30-2:45pm.
- *Technological Resources.* Organizer: Tatyana Stepanova, Raritan Valley Community College, 4:30-6pm.

Future MAA-NJ Meetings

The Spring 2009 MAA-NJ Section meeting will be held, in conjunction with the sixth annual Garden State Undergraduate Mathematics Conference, at Monmouth University on Sunday, March 29. Joseph Gallian of the University of Minnesota-Duluth will be the joint MAA-GSUMC speaker. The other invited speakers are Catherine Roberts, College of the Holy Cross, and John Swallow, Davidson College.

The Fall 2009 MAA-NJ Section meeting will be held at The College of St. Elizabeth on Saturday, November 7, 2009.

Call for Contributed Papers and Lunch Table Discussion Topics for the Spring 2009 MAA-NJ Meeting

There will be one general contributed paper session and three special sessions. All papers will be reviewed by the organizers and the selection committee. Please submit title, 3-4 line summary, and 1 page abstract by **February 18, 2009** to the organizer of the session.

- *Statistics: Practice and Pedagogy*. Organizer: Dexter C. Whittinghill, Rowan University, whittinghill@rowan.edu
- *Mathematics and the Climate*. Organizers: Srabasti Dutta, College of St. Elizabeth,srabastidutta@gmail.com, and Patricia Kenschaft, Bloomfield College, kenschaft@pegasus.montclair.edu
- *Articulation.* Organizer: Carol Avelsgaard, Middlesex County College, avelsgaard@msn.com
- *General Contributed Paper Session*. Organizer: Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu

People interested in leading a Lunch Table Discussion at the Spring 2009 meeting are asked to submit their proposals to Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu, by **February 4, 2009**.

GSUMC 2009

Mark your calendars and bring your students! The Sixth Annual Garden State Undergraduate Mathematics Conference will be held on Sunday, March 29, 2009 at Monmouth University. Over 150 students and 25 schools participated in last year's conference. There will be a team mathematics competition, a student poster session, invited student talks, and a keynote address for students by current MAA President Joseph Gallian. For more information, contact Tom Hagedorn hagedorn@tcnj.edu or Chris Simons simons@rowan.edu.

Student presentations: Up to 12 15-minute student presentations will be given. Since no more than one presentation will be accepted per institution, the local math department must determine who they select to nominate. For further information (and for departments to make their one nomination) contact Dr. Ron Czochor (czochor@rowan.edu).

Students poster session: There will be an open student poster session (that can accommodate more than one student poster per institution). Sign-ups will occur at the time of advance registration. It is expected there will be prizes for the top posters. For further information contact Dr. Abdul Hassen (hassen@rowan.edu).

Joint Meetings 2009

The 2009 Joint Meetings of the AMS and MAA will take place in Washington, D.C., January 5-8. More information about the meetings can be found online at http://www.ams.org/amsmtgs/2110_intro.html.

MathFest 2009

The Mathematical Association of America will hold its annual MathFest in Portland, OR, August 6-8. Check MAA Online at http://www.maa.org for more information about MathFest.

Other Future National MAA Meetings
- 2010 Joint Mathematics Meeting, San Francisco, CA, January 13-16.
- 2010 MathFest, Pittsburg, PA, August 5-7.

2009 PREP Workshops
The program costs as well as the costs of food and lodging during the workshop are covered by PREP. However, there is a registration fee for each workshop. Visit MAA Online at http://www.maa.org/prep/ for information.

Dinner Honoring the Invited Speakers
The Section will honor the invited speakers at dinner following the meeting. Everyone is cordially invited.

Why I Joined the MAA
If you would be willing to have your 2-3 paragraph statement, "Why I Joined the MAA", be posted on the MAA website, contact Bob Anastasio, Director of Marketing and Management, ranastasio@maa.org.

JOIN THE MAA: http://www.maa.org/subpage_1.html

Governor's Report

An appeal was made at MathFest 2008 to tell new officers of the information available on the MAA website. Math Reviews has reviews of 4,352 books posted and is now open to everyone. The Math Classified website offers both faculty positions and leads for undergraduates. The MONTHLY website already gets 200,000 hits per month.

The national MAA is now studying sections, and how we can strengthen the bond between section members and the national organization. One suggestion was that section newsletters should list members of the section who are on national committees.

 National is willing and able to send emails (announcements or more) to all members of the section and can also send an email to only the department representatives. It can also host section websites, avoiding transition problems when the webmaster changes. It can facilitate joint meetings, and help sections obtain speakers.

 Individual section situations were discussed in focus groups. Missouri has agreed to pay the costs of being a governor beyond the $600 subsidized by national. (The costs can be significantly more.)   The Pacific Northwest governor said they include more land area than the continuous 48 states, and transportation costs to section meetings are a major problem.   Florida's

governor expressed concern that they have no interaction with Puerto Rican members in the Florida/Puerto Rico section.

About ten percent of MAA members do not live in the United States. There are about 1000 in Western Europe, so organizing a section there might be possible. Should we rearrange the sections so they are more nearly equal in membership? One has fewer than 170 members and another about 1700. New Jersey has about 800, so we probably wouldn't be affected by these discussions.

The United States' team had just returned from the International Mathematics Olympiad in Madrid where we placed third. China placed first and Russia second. Two teams of four girls each will attend the Chinese Girls' Mathematical Olympiad in August.

About 1400 people were registered at MathFest, about 1000 of them mathematicians and the others students, teachers, and guests. There were many children, a great change from 20 years ago. I enjoyed one three-week-old who came from New Mexico. The program was rich; the only problem was making decisions about which of several simultaneous appealing sessions to attend. Personally, I enjoyed both MathFest and Madison enormously.

News from NJ Departments

Monmouth University Monmouth University welcomes new mathematics faculty member Wai K. "Johnny" Pang, who joins the department this year after completing his Ph. D. in statistics at Texas Tech University.

New Jersey City University The NJCU Mathematics Awareness Lectures will be held at New Jersey City University on Thursday, April 23, 2009. The theme of the program is Mathematics and The Climate, www.mathaware.org. If you are interested in giving a contributed paper, please contact Theresa C. Michnowicz, tmichnowicz@njcu.edu

MAA-NJ Section Officers

Chair	Hieu D. Nguyen, Rowan University
Vice Chair for	
Speakers	Bonnie Gold, Monmouth University
Innovations	Theresa C. Michnowicz, NJCU
Two-Year Colleges	Carol Avelsgaard, Middlesex County College
Student Activities	Lawrence D'Antonio, Ramapo College
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GSUMC Co-Directors	Thomas Hagedorn, The College of New Jersey
	Christopher Simons, Rowan University
Project NJ-NExT Co-Directors	John Saccoman, Seton Hall University
	Kaaren B. Finberg, Ocean County College

Committees

Organizing Committee Carol Avelsgaard, Middlesex County College; Karen Clark, The College of New Jersey; Amy Cohen, Rutgers University; Larry D'Antonio, Ramapo College; Srabasti Dutta, College of St. Elizabeth; Bonnie Gold, Monmouth University; Thomas Hagedorn, The College of New Jersey; Olcay Ilicasu, Rowan University; Patricia Kenschaft, Bloomfield College; Mark S. Korlie, Montclair State University; Aihua Li, Montclair State University; Reginald Luke, Middlesex County College; David Marshall, Monmouth University; Theresa C. Michnowicz, New Jersey City University; Hieu D. Nguyen, Rowan University; Naomi Shapiro, Georgian Court University

Hosting Committee Robert Mayans, Javad Namazi, Marek Slaby, Richard Wagner, Fairleigh Dickinson University

Awards Committee Mark Korlie, Montclair State University; Reggie Luke, Middlesex County College; Theresa C. Michnowicz (chair), New Jersey City University; Naomi Shapiro, Georgian Court University

Nomination Committee Carol Avelsgaard, Middlesex County College; Mark Korlie, Montclair State University; Theresa Michnowicz (chair), New Jersey City University; Hieu D. Nguyen, Rowan University

Teaching Award Committee Janet H. Caldwell, Rowan University; Amy Cohen (chair), Rutgers University; Roger Pinkham, Stevens Institute of Technology; Arthur Schwartz, Mercer County Community College; Kenneth Wolff, Montclair State University

Selection Committee for Contributed Papers Carol Avelsgaard, Middlesex County College; Lawrence D'Antonio, Ramapo College; Olcay Ilicasu, Rowan University.

Acknowledgments