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# The Seaway Current

NEWSLETTER OF THE SEAWAY SECTION  
MATHEMATICAL ASSOCIATION OF AMERICA

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Volume 27, Number 2

Spring 2004

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SUNY CORTLAND, CORTLAND, NY, APRIL 23 – 24

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## Huge Program Highlights Spring Meeting

SUNY Cortland will host this spring's meeting on Friday, April 23 and Saturday, April 24. This is the only the second time the section has met there, our first visit being in the fall of 1975.

Located atop one of the hills in this central New York "City of Seven Valleys," SUNY Cortland was founded in 1868 as the Cortland Normal School. The college began offering bachelor's degrees in 1941, and joined the SUNY system at its founding in 1948. Today, approximately 7500 students are pursuing degrees within the College's three academic divisions: arts and sciences, education, and professional studies. More than 400 faculty across twenty-three departments offer 59 majors.

The college's main campus covers 191 acres and includes 30 buildings with architecture ranging from the traditional to the modern. SUNY Cortland also operates its Outdoor Education Center at Raquette Lake in the Adirondacks, the Hoxie Gorge Nature Preserve outside Cortland, and the Brauer Memorial Geological Field Station on the Helderberg Escarpment near Albany.

Both the Friday evening and Saturday programs will take place on campus. Friday's activities begin at noon in the Corey Union, with a luncheon and meeting of Seaway NExT/PFF. The group will hear **Gary Towsley** of SUNY Geneseo talk on "Navigating Through the Tenure Process." Then, following a break for refreshments, there will be parallel sessions, with **Tom Rishel** of Cornell University leading a discussion on "Job-Hunting Strategies," while **William Hooper** of the Clarkson University leads a panel discussion on "Master's Degrees and Careers for Math Majors." The program concludes with a presentation by

**Olympia Nicodemi** on "Good Teaching," and a wrap-up session.

Friday evening's activities will also take place in the Corey Union. The ever-popular social hour begins at 6:00, followed by the banquet. After dinner, the 2004 Distinguished Teaching Award will be presented to **Bill Ralph** of Brock University, and the section's own **Tom Rishel**, will give the after-dinner talk on *Reasoning about Dimensions You Cannot See*.



**Tom Head, Gehman Lecturer**

After graduating from Youngstown State in Ohio, Dr. Rishel received his Ph.D. from the University of Pittsburgh, where he worked in topology under Jun-iti Nagata. Following post-doctoral and research fellowships in Canada and Japan, Tom took a one-year position at Cornell. Twenty-seven years later, he left Cornell to become Director of Programs and Services at the MAA in

Washington, D.C. Recently, he returned to Cornell – but not the one in Ithaca – the one in Qatar, where Tom is the mathematics department at the new medical school there!

The meeting returns to SUNY Cortland on Saturday, with the morning session in Sperry Hall, named for alumnus Elmer Sperry of Sperry-Rand Corp. fame.

As is our tradition at the spring meeting, the program on Saturday morning features the annual Harry M. Gehman Lecture, to be given this year by **Tom Head** of SUNY Binghamton. The title of his address is, *MicrobeSoft Computing: Writing on Molecules in Fluid Memory*.

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## **Future File**

### Future Meetings of the Section:

November 5–6, 2004  
Canisius College  
Buffalo, New York

April TBA, 2005  
Queen's University  
Kingston, Ontario

### Future Meetings of the MAA:

2005 Annual Meeting  
January 5–8  
Atlanta, GA

Mathfest 2004  
Aug 12–Aug 14  
Providence, RI

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The Seaway Current is published twice per year by the Seaway Section of the Mathematical Association of America for the benefit of its members. Its pages are open to all members of the MAA, and sometimes by invitation to others, for the exchange of information and opinion. Contributed announcements, articles, and editorials are welcome and should be sent to the editor.

Material may be submitted on paper, by e-mail, or on 3.5" computer diskette. Presently, this newsletter is produced using Microsoft Word, which can import plain text files or files produced by most standard word-processing software. The deadline for submissions for the Fall 2004 Issue is Monday, September 13, 2004.

Opinions expressed in this newsletter are those of the editor or of individual authors and do not necessarily represent the views of the MAA or of the Seaway Section.

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**SEAWAY SECTION  
MATHEMATICAL ASSOCIATION  
OF AMERICA**

**2004 SPRING MEETING**

**April 23 – 24  
SUNY Cortland  
Cortland, New York**

**PROGRAM**

**Friday Afternoon, Corey Union, 206 – 209**

12:00 – 5:30      Seaway NExT Lunch and Meeting

**Friday Afternoon, Corey Union, 304**

3:00 – 6:00      Meeting of the Executive Committee

**Friday Evening, Corey Union Function Room**

6:00 – 7:00      Social Hour (cash bar)

7:00 – 8:30      Dinner

8:30 – 8:45      *Presentation of the Seaway Section  
Clarence F. Stephens Distinguished  
Teaching Award*

8:45 – 9:30      *Reasoning About Dimensions You Cannot  
See*  
Tom Rishel,  
Weill Cornell Medical College, Qatar

**Saturday Morning, Sperry Hall**

08:00 – 11:00      Registration

**Saturday Morning, 120 Sperry Hall**

08:40 – 08:45      *Welcome*  
Dr. Erik Bitterbaum, President  
SUNY Cortland

08:45 – 09:35      *Recently Uncovered Flaws in  
Standards-Based Mathematics Tests*  
Alan Tucker,  
SUNY Stony Brook

09:45 – 10:35      *How to Always Win at Limbo*  
Ed Burger,  
Williams College

10:35 – 11:00      Business Meeting

11:10 – 12:00      ***Harry M. Gehman Lecture***  
*MicrobeSoft Computing: Writing on  
Molecules in Fluid Memory*  
Tom Head,  
SUNY Binghamton

**Saturday Afternoon, Neubig Dining Hall**

12:00 – 1:30      Lunch

**Saturday Afternoon, 311 Sperry Hall**

1:30 – 1:55      *Good Questions*  
Maria Terrell, Cornell University

2:00 – 2:25      *Teaching A Writing Intensive Math Course –  
Really!*  
Tim Biehler, Finger Lakes CC

2:30 – 2:55      *Writing and the Mathematical Process*  
Collin Bleak, SUNY Binghamton

3:00 – 3:25      *A Geometric Approach to Teaching Linear  
Algebra*  
Magdalena Mosbo, SUNY Oswego

3:30 – 3:55      *Calculators in Developmental  
Mathematics*  
Denise Yull, SUNY Binghamton

**Saturday Afternoon, 313 Sperry Hall**

1:30 – 1:55      *A Polynomial Test for  $n$  by  $n$  Matrices*  
Daniel Birmajer, Nazareth College

2:00 – 2:25      *Error Detection and Correction Codes*  
Nicholas Koban, SUNY Binghamton

2:30 – 2:55      *Abstract Algebra for the High School Teacher*  
Olympia Nicodemi, SUNY Geneseo

3:00 – 3:25      *Is There Any Order In Groups?*  
Joshua Palmatier, SUNY Binghamton

3:30 – 3:55      *A Curious Relationship Between Bessel  
Functions and Fibonacci Numbers*  
Osman Yurekli, Ithaca College

**Saturday Afternoon, 315 Sperry Hall**

1:30 – 1:55      *Balanced Versions of the Harmonic Series*  
James Marengo, RIT

2:00 – 2:25      *The Dual of a Simplicial Complex*  
Risto Atanasov, SUNY Binghamton

2:30 – 2:55      *Applications of the Logarithmic Mean*  
Peter Mercer, SUNY Buffalo

3:00 – 3:25      *Dynamics of Transcendental Entire Functions*  
David A. Brown, Ithaca College

3:30 – 3:55      *A Cohomology Two Form Canonically  
Associated with Certain Flows on 3-Manifolds*  
Rich Escobales, Canisius College

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*See Program and Abstracts, Next Page*

## Program and Abstracts

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### Saturday Afternoon, 317 Sperry Hall

- 1:30 – 3:55 *Circles, Logs, Sines, Area, Sketchpad, and More: A Presentation of Teachers' Masters and Honors Projects in School Mathematics*  
Keary Howard, Moderator  
SUNY Fredonia

### Saturday Afternoon, 114 Sperry Hall

- 1:30 – 1:55 *Word Representations of  $n$  by  $m$  Proper Arrays Associated with Non-Crossing Trees on  $n+2$  Vertices*  
Jocelyn Quaintance, SUNY Fredonia
- 2:00 – 2:25 *Newton's Method for 2 by 2 Matrices*  
Sam Northshield, SUNY Plattsburgh
- 2:30 – 2:55 *A Freshman Seminar for Math Majors*  
Carol Bell, Chris Hanford, Karla Helstrom, and Bruce Mattingly, SUNY Cortland
- 3:00 – 3:25 *Some Common Probability Misconceptions*  
Lynn Carlson, SUNY Oswego
- 3:30 – 3:55 *Intrinsic Knotting in Graphs*  
Garry Bowlin, SUNY Binghamton

### Saturday Afternoon, 126 Sperry Hall

- 1:30 – 1:55 *ESL and Nontraditional Students at the Learning Assistance Center*  
Gabriela Mendoza, SUNY Binghamton
- 2:00 – 2:25 *Teaching A Junior-Level Geometry Course Using Technology*  
Isa Jubran, SUNY Cortland
- 2:30 – 2:55 *The Collage Theorem*  
Adam Weisblatt, SUNY Cortland
- 3:00 – 3:25 *A Parity Analysis of the Set of Tridrafters*  
Matthew Coppenbarger, RIT
- 3:30 – 3:55 *Wavelets and Image Compression*  
Malinda Wesley, SUNY Geneseo

**Student Program:** Organized by Bob Rogers of SUNY Fredonia. At this time, the only student talk we have received is the one by Malinda Wesley listed above. If more student talks are received, we will schedule a separate session for them. Any student wishing to contribute a talk should have his or her faculty advisor send the title and brief abstract to Professor Rogers at [rogers@fredonia.edu](mailto:rogers@fredonia.edu).

## ABSTRACTS

### Alan Tucker

The speaker was a member of the special Regents Panel that investigated the high failure rate on the June 2003 Math A graduation test. This report found serious problems in the design of the Math A course and test, but did not have the time to analyze the psychometric methodology that was the ultimate cause of the high failure rate. The speaker subsequently undertook such an analysis and found very serious problems that underlie all standards-based tests.

### Ed Burger

Have you ever dated someone for a while and asked yourself, "How close are we?" This presentation will answer that question by answering: What does it mean for two things to be close to one another? We'll take a strange look at infinite series, dare to mention a calculus student's fantasy, and momentarily consider transcendental meditation. In fact, we'll even attempt to build some very exotic series that can be used if you ever have to flee the country in a hurry. We'll either succeed or fail ... you'll have to come to the talk to find out. Will you be at the edge of your seats? Perhaps. But if not, then you'll probably fall asleep and, either way, after the talk, you'll feel refreshed. No matter what, you'll learn a sneaky way to always win at Limbo.

### Tom Head

Several schemes are suggested for recording information on DNA molecules while they are dissolved in water. The resulting solution of information-bearing molecules is considered to constitute a fluid memory. Schemes for reading information from these molecules are suggested.

A simple instance of the Satisfiability Problem (SAT) of a set of boolean clauses is discussed. A procedure for solving this SAT is described that illustrates the DNA-computing method we call the "Aqueous Algorithm." This wet-lab procedure has been carried out in the laboratory of Susannah Gal at Binghamton University. A projected transparency illustrates the reading procedure and confirms that the computation was correctly carried out.

This work is part of a worldwide search for information-storage techniques and computational procedures that take advantage of the vast parallelism of biomolecular operations. All known sequential solutions of the SAT problem (which is NP-complete) require a number of steps that grows exponentially (in the size of the problem instance). The number of steps required by the Aqueous Algorithm grows only linearly.

If time allows, wet-lab solutions of two graph theoretic problems will also be presented. These have been carried out using the Aqueous Algorithm in the laboratory of Herman Spaik at Leiden University.

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See **More Abstracts** Next Page

## More Abstracts

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### Maria Terrell

Good questions stimulate discussion and debate about the key concepts of calculus. Two tools – in-class polling questions and pre-class warm-ups – deliver good questions that give an instructor formative assessment tools essentially every day.

### Tim Biehler

Despite the immense value of writing skills in both academic and business settings, writing is seldom seen as a key component of undergraduate math coursework. Nonetheless, there are many situations where written work can complement or even enhance student learning in math classes. I will discuss some situations where I have found writing assignments useful and some situations where I have found them not quite so useful. In particular, I will share my experiences teaching a Writing Intensive section of Business Math in the fall of 2003.

### Collin Bleak

If we go looking, we will generally not have to go too far to find students of mathematics trying to solve some problems whose content they do not comprehend, with tools they do not understand. This inspires a discussion of one of the reefs lurking just beneath the surface of mathematical pedagogy: students must recognize the role of learning mathematics as a language, and not just as a collection of techniques, in order to be successful.

In line with this, I have added two writing assignments into the applied calculus course I am teaching at Broome Community College. We will discuss how these assignments have enabled students to recognize and overcome the standard language barriers inherent in learning calculus.

### Magdalena Mosbo

What should future teachers get out of their linear algebra course? The two traditional approaches have been the abstract, proof-based vector space approach, and, on the other side of the spectrum, the computation-driven, applied approach. In my talk I discuss yet another approach, centered about linear transformations, which stresses visual thinking and dynamic interpretation of matrices.

### Denise Yull

Some people think that developmental mathematics is not a place where students should use calculators, because it makes it difficult for students to understand the concepts. Others feel that students in these courses are at a disadvantage if they don't use calculators. In this talk, we discuss the pros and cons of this issue.

### Daniel Birmajer

In this talk, we present a result concerning polynomial identities. It was proved by Giambruno-Sehgal and Chang that the double Capelli polynomial of total degree  $4n$  is a polynomial identity for  $M_n(F)$ . (Here,  $F$  is a field and  $M_n(F)$  is the algebra of  $n$  by  $n$  matrices over  $F$ .) Using a strengthened version of this result obtained by Domokos, we show that the double Capelli polynomial of total degree  $4n-2$  is a polynomial identity for any proper  $F$ -subalgebra of  $M_n(F)$ .

### Nicholas Koban

This talk will examine a coding scheme that allows the receiver of a (binary) code to detect and correct up to two errors in the message. During the talk, we will investigate why this works and use those ideas to generalize to three or more errors. Along the way, we will discover that in order to gain in the number of errors that we can detect, we must lose some information. We will also discover some “magical” instances where this does not happen.

### Olympia Nicodemi

Future secondary teachers search for connections between the mathematics they study and the mathematics they will teach. In this talk, I will look at ways I have found to link topics in abstract algebra to the secondary curriculum, with the hope of fostering discussion and gathering more ideas.

### Joshua Palmatier

We will discuss whether or not it is possible to place an ordering on the elements of a group in such a way as to preserve the structure of the group. Partial orderings will be introduced, which will then be extended to the idea of a lattice structure. These order structures will then be applied to the elements of groups to form partially-ordered groups, or po-groups, and lattice-ordered groups, or l-groups. The talk is meant to be an introduction to the concepts, with examples.

### Osman Yurekli

In this presentation, we will develop an operational technique to evaluate Laplace transforms of Bessel functions of the first kind. The operational technique also leads to an interesting relationship between Bessel functions and Fibonacci numbers.

### James Marengo

Suppose that for each term of the harmonic series, the result of a fair coin toss is used to decide whether to multiply this term by plus one or minus one. What is the probability that the resulting series converges?

## Additional Abstracts

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The speaker has been somewhat surprised at the many correct answers that he has received almost immediately after presenting this question informally to both colleagues and students. The proof that the answer so often received is correct is interesting, but it intrinsically relies on advanced techniques that would be a nice topic for another talk. When asked for the reason behind their correct answer, the respondent has usually made reference to the fact that the alternating harmonic series converges. In this talk, we will argue that the correct answer should be somewhat surprising in light of the fact that there are uncountably many balanced versions of the harmonic series that diverge to plus infinity.

### Risto Atanasov

We will define the dual complex of an abstract simplicial complex and discuss an embedding of a simplicial complex in a sphere such that its dual complex is a deformation retract of its complement.

### Peter Mercer

It is well known that  $G < L < A$ , where  $G$  is the geometric mean,  $L$  is the logarithmic mean, and  $A$  is the arithmetic mean of two positive numbers. We offer a simple proof of this result and then we discuss various applications. Among these is an improvement of a basic inequality from information theory. This is joint work with undergraduate student Garry T. Halliwell. It will appear in an upcoming issue of the *Journal of Inequalities in Pure and Applied Mathematics*.

### David Brown

We will present some basic theory of the iteration of transcendental entire functions, comparing and contrasting with the dynamics of polynomial functions. We will see the appearance of quadratic-like Julia sets and Mandelbrot-like sets in the examples of transcendental functions provided.

### Rich Escobales

Let  $(M, g)$  be a closed, connected, oriented,  $C_\infty$  Riemannian 3-manifold with tangentially oriented flow  $F$ . We show that if  $\{X, Y\}$  are basic vector fields, the flow component of  $[X, Y]$ ,  $V[X, Y]$ , is a local infinitesimal isometry along the plaques of an integral curve of  $F$  with respect to the induced metric if and only if  $I'(i) \wedge \chi(F)$  is a closed (possibly zero) de Rham cohomology two form, where  $\chi(F)$  is the characteristic form for the flow. As an application we offer an improvement to a recent result of ours that appeared in the *International Journal of Mathematics and Mathematical Sciences* (April 2003). If time permits, we will prove an analogue of the main result for foliations of codimension 2 on a Riemannian manifold. The statement and proof in the more general setting are a little less elementary.

## Special Session

This session is highlighted by the presentation of research results from area middle and high school mathematics teachers completing their capstone Masters and Honors projects. Tentative topics include:

- Students' application of the Law of Sines and Law of Cosines
- Students' use of logarithms in real-world contexts
- The effect of Geometer's Sketchpad technology in high school mathematics
- Tenth-graders misconceptions of area and perimeter
- Alternative student solution methods in circle geometry

Panel members will briefly present their primary results followed by a short discussion. Individual posters/papers will be available for review following the session.

### Jocelyn Quaintance

An array of directed cubes is called proper if and only if it satisfies certain geometric conditions that allow for classification via the right edge structure. In particular, the underlying geometric structure of the right edge of an  $n \times m$  array is recorded as a column of  $n$  arrowed letters. This column of arrowed letters is the word representation of a proper  $n \times m$  array. By varying  $n$ , a sequence  $B_n$  is formed, where  $B_n$  is the set of all possible word representations associated with  $n \times m$  proper arrays. It is shown, using hypergeometric functions, that the cardinality of  $B_n$  is the same as  $t(1, n+2)$ , the number of non-crossing trees on  $n+2$  vertices.

### Sam Northshield

We consider Newton's method for approximating the square root of  $A$ , where  $A$  is a 2 by 2 matrix. Explicitly, we define  $X(n+1) = (X(n) - AX^{-1}(n))/2$ . We shall show that for almost all  $X(0)$  which commute with  $A$ ,  $X(n)$  converges to a square root of  $A$ .

There exist, however, many matrices  $X(0)$  for which  $X(n)$  grows without bound. The set  $S$  of such matrices forms a complicated subset of the 4-dimensional space of 2 by 2 matrices; we shall exhibit interesting pictures of two-dimensional slices through  $S$  which highlight its fractal nature. We shall discuss several open problems and/or progress in understanding the set  $S$ .

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*See Rest of Abstracts, Page 13*

## COMMITTEE REPORTS

### Report of the Selection Committee for the Distinguished Teaching Award

#### Bill Ralph to Receive the Section's Distinguished Teaching Award

Dr. Bill Ralph, Professor of Mathematics at Brock University in St. Catharines, Ontario, has been chosen to receive the 2004 Seaway Section Award for Distinguished College or University Teaching of Mathematics. This award honors Professor Ralph for his distinguished career in teaching at both the undergraduate and graduate levels.

Dr. Ralph was selected by a committee consisting of: Sandy Segal (Chair), University of Rochester; Maruja Lander, Broome Community College; Olympia Nicodemi, SUNY Geneseo, and Len Malinowski, Finger Lakes Community College (ex-officio).



An algebraic topologist with a Ph.D. in Mathematics from the University of Waterloo, Dr. Ralph's current interests lie in mathematical art and the use of multimedia and computer software to aid the teaching of mathematics. Going along with these themes, he gave a very interesting talk at the Fall 2001 meeting at Brock University entitled, *Can Mathematics Recognize Great Art?*, and a workshop on Saturday afternoon at that same meeting entitled, *Calculus Meets Interactive Multimedia: The 'Journey Through Calculus' Software*.

The Distinguished Teaching Award will be presented to Dr. Ralph following the Friday evening banquet. Although he will not be present at the Cortland meeting to receive the award in person, Professor Ralph has promised to grace the section with another address in the near future.

The story of her life really has been one of trying to balance the fascination of mathematics and the time consuming but immensely fulfilling challenge of teaching. More recently she has again done some research related to the teaching and learning of mathematics (specifically, students' beliefs about proof), and continues to be especially interested in the task of educating future teachers.

Margaret has been involved at the section level with Project NExT, chairing the advisory committee from 2000 to 2002.



### Report of the Nominations Committee

#### Gary Towsley Nominated for Chair-Elect; Margaret Morrow for First Vice-Chair

The Seaway Section will hold its annual election for section officers during the business meeting at the spring meeting at SUNY Cortland. The Nominations Committee, consisting of Constant Goutziers (Chair), SUNY Oneonta, Patricia Burgess, Monroe Community College, and Michael Gage, University of Rochester, is pleased to present the following slate of candidates: for a 1-year term as Chair-Elect, Gary Towsley of SUNY Geneseo; and for a 2-year term as First Vice-Chair, Margaret Morrow of SUNY Plattsburgh. After serving for one year, the Chair-Elect automatically moves on to a two-year term as Chair, followed by a 1-year term as Immediate Past Chair.

Gary Towsley is SUNY Distinguished Teaching Professor of Mathematics at SUNY Geneseo.

Dr. Towsley received his BS from Case Institute of Technology and his Ph.D. from the University of Rochester. His scholarly interests include the history of mathematics (particularly of the Middle Ages), compact Riemann surfaces, and algebraic geometry. He has served the section on the Randolph Lecture Committee, and for the past two years, as First Vice Chair. In 1999, he received the section's Distinguished Teaching Award, and went on to win the MAA's Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.



Margaret is an associate professor at SUNY Plattsburgh, where she has taught 1999, when the availability of a position provided an excellent solution to a two-body problem. Prior to that she taught for four years at the University of St. Thomas in Minnesota.

Margaret came from South Africa to the University of Rochester, where she obtained her Ph.D. in 1994. She worked in algebraic topology with Professor Charles Watts.

Prior to coming to the United States, Margaret taught in South Africa at the secondary school level, and at a college devoted to the training of elementary and middle school teachers. Also before coming to the States, she completed an M.Sc. in mathematics education at the University of Keele, in the United Kingdom. She did her initial undergraduate studies at the University of the Witwatersrand in Johannesburg.



## The Governor's Report

### Luisse-Charlotte Kappe

Greetings from sunny Arizona, where I attended the Board of Governors meeting at the Joint Mathematics Meetings in Phoenix on January 6, 2004. Here are some of the highlights of the meeting I want to share with you.

The MAA has two new programs involving other segments of the mathematical community in national and section activities, namely graduate students and community college faculty. The MAA has given small grants to several sections to develop pilot programs for involvement of graduate students on the section level. The Seaway Section has one such grant, and for us it will go towards the enhancement of our existing Section NExT/PFF program, where graduate students have been involved since the beginning. All the grant money will be used to help graduate students with their expenses at the spring meeting at SUNY Cortland. A particular attraction for graduate students at this meeting will be the workshop on the academic job search, organized by Tom Rishel, which will be held in conjunction with the Seaway NExT/PFF program on Friday afternoon.

Project ACCESS, short for Advancing Community College Careers: Education, Scholarships and Service, is a mentoring and professional development initiative for two-year college mathematics faculty funded through a three-year grant from the Exxon Foundation. The project is being developed jointly by the MAA and AMATYC, and is modeled after Project NExT. ACCESS fellows will attend two consecutive national meetings of AMATYC and participate in a pre-conference workshop. In the intervening year, fellows will attend an MAA section meeting near their home institution, where they will participate in Section NExT activities and the regular meeting. We hope to welcome ACCESS Fellows in the Seaway Section. The deadline for applications is July 1, 2004. Further details and application materials are available at:

[www.maa.org/ProjectACCESS](http://www.maa.org/ProjectACCESS)

In 2015, the MAA will celebrate its 100<sup>th</sup> anniversary. This is still more than ten years away, but preparations are already under way. One project for the centennial is establishing and expanding the MAA archives on the national and section level. It is not clear yet what should be archived and where the repository would be. In the meantime, until a clearer picture emerges, we should make an inventory where boxes with Seaway material exist so that we can get to work as soon as we get the guidelines. In as far as the current archives are concerned, Fernando Guzman, the Section's webmaster, is in the process of updating Paul Schaefer's section history of the first fifty years (1940 – 1990), and will post the results on the section web page as they become available. I want to thank Fernando for his efforts and for giving our web page a new look. It also has a new, easier URL, namely,

[www.math.binghamton.edu/maa\\_seaway/](http://www.math.binghamton.edu/maa_seaway/)

## A Report from the Chair

### Cheri Boyd

The Joint Meetings in Phoenix were indeed full of information and activity, including a great deal of networking outside in the sunshine between program sessions. Luisse Kappe has covered many of the informational items discussed at the Meeting of Section Officers in her Governor's Report.

Officers from all of the sections shared their difficulties in conjuring up nominations for the Distinguished Teaching Award, so this seems to be a fairly universal experience across the sections. We were pleased this year to receive numerous questions about the Seaway Section nomination process (in response to those inviting messages I hope you read), and in fact we did receive several nominations for our Seaway Section Distinguished Teaching Award. Please take a couple of days and put together a nomination for a deserving colleague, perhaps during the summer months.

The section officers also discussed the upcoming creation of national MAA archives. You may have records that we can include in our Seaway Section archives and also send on to the national collection, so consider making them available to this project. Also, please submit your ideas for what information you feel we should begin archiving.

Many thanks to Fernando Guzman for updating our Seaway Section website this year. We are ready to use its new layout as a way to communicate information about meetings, events, and projects happening within the section. Please send me links and information about items to post.

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## Minutes

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Under new business, Richard Escobales proposed a motion concerning the content of New York State's mathematics Regents examinations and to support the concept of a committee on the state level to review/revise the current content of the exams. After much discussion about the wording of the motion it was withdrawn. A new motion with two major parts was passed. The first part forwards to the Educational Policy Committee the task of reviewing the concerns with the examinations and how the section could possibly respond to those concerns. The second part directs Cheri Boyd, as chair of the section, to write a letter to the appropriate individuals or offices in New York State acknowledging that there were problems with the June 2003 Math A Regents examination and the willingness of the MAA Seaway Section to identify and provide members of the section to any committee charged with the review and revision of the mathematics curriculum.



## **Committees of the Section**

### **Program Committee:**

Gary Towsley, SUNY Geneseo, Chair (4/04)  
towsleyg@geneseo.edu  
Mark McKinzie, Monroe CC (4/05), ex-officio

### **Student Program Committee:**

Victoria Klawitter, SUNY Potsdam, Chair (4/04)  
klawitv@potsdam.edu  
Robert Rogers, SUNY Fredonia (4/04)  
Gary Towsley, SUNY Geneseo (4/04), ex-officio

### **Educational Policies Committee:**

Stephen West, SUNY Geneseo, Chair (4/04)  
west@geneseo.edu  
Morris Orzech, Queen's University (4/04)  
Joseph Straight, SUNY Fredonia (4/05)  
Luise-Charlotte Kappe, SUNY Binghamton (06/06),  
ex-officio

### **Gehman Lecture Committee:**

Harris Kwong, SUNY Fredonia, Chair (4/05),  
kwong@cs.fredonia.edu  
Robert Connelly, Cornell University (4/04)  
Kathryn Lesh, Union College (4/04)  
Robert Rogers, SUNY Fredonia (4/04), ex-officio

### **Randolph Lecture Committee:**

Grace Orzech, Queen's University, Chair (11/04)  
orzechg@post.queensu.ca  
Maureen Cox, St. Bonaventure University (11/04)  
Eric Muller, Brock University (11/04)  
Mark McKinzie, Monroe CC (4/05), ex-officio

### **Distinguished Teaching Award Committee:**

Sandy Segal, University of Rochester, Chair (4/04)  
ssgl@math.rochester.edu  
Maruja Lander, Broome CC (4/05)  
Olympia Nicodemi, SUNY Geneseo (4/05)  
Len Malinowski, Finger Lakes CC (4/04), ex-officio

### **Nominations Committee:**

Constant Goutziers, SUNY Oneonta, Chair (11/04),  
goutzicj@oneonta.edu  
Patricia Burgess, Monroe Community College (11/04)  
Michael Gage, University of Rochester (11/04)

### **Seaway NeXT/PFF Advisory Committee:**

Joel Foisy, SUNY Potsdam, Chair (4/03)  
foisyjs@potsdam.edu  
Carol Bell, SUNY Cortland (4/04)  
Cheri Boyd, Nazareth College (4/05)  
Maureen Cox, St. Bonaventure University (04/05)  
Michael Gage, University of Rochester (4/04)  
Bill Hooper, Clarkson University (04/05)  
Luise-Charlotte Kappe, SUNY Binghamton (4/05)  
Margaret Morrow, SUNY Plattsburgh (4/04)  
Olympia Nicodemi, SUNY Geneseo (4/04)

## **Treasurer's Report**

### **Len Malinowski, Secretary/Treasurer**

<i>Balance as of June. 30, 2003</i>		10159.62
Meeting Expenses	6898.22	
Program Expenses	649.00	
Expense for MAA Book Sale	235.65	
Receipts from Meetings		5370.00
Project NExT Reimbursement		375.00
Income from MAA Book Sale		305.94
Total Expenses/Income	7782.87	6050.94
<i>Balance as of Dec. 31, 2003</i>		8427.69

## **Minutes of the Business Meeting November 8, 2003, RIT**

### **Len Malinowski, Secretary/Treasurer**

Cheri Boyd, Section Chair, called the meeting to order and immediately thanked the organizing committee of Bernard Brooks, Carl Lutzer, Darren Narayan and Hossein Shahmohamad for their Herculean efforts to arrange this meeting. The membership echoed Cheri's expression of gratitude by giving a thunderous round of applause for the RIT organizing committee.

The minutes and the treasurer's report of the Spring 2003 meeting were approved. Luise-Charlotte Kappe, the Governor for the section, stated that the Seaway Section's meeting registration prices are slightly below average as compared to other sections of the MAA. Furthermore, we appear to be the most active section in addressing the needs of graduate students, as evidenced by our NExT and PFF programs. Luise ended her report by announcing that Olympia Nicodemi is one of three national recipients of the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

Cheri Boyd gave the Executive Committee report. Cheri stated that the website would be reviewed by the executive committee and thoughts of how to more effectively use the site need to be explored. In addition, the development of archives for the website for the section is being pursued.

Gary Towsley, Program Chair, announced preliminary plans for the Spring 2004 meeting at SUNY Cortland, and announced that the Fall 2004 meeting would be held at Canisius College, November 5-6.

The membership had agreed at the Spring 2003 meeting to name the section's distinguished teaching award in honor of Clarence Stevens. Professor Stevens, who was in attendance, was given a standing ovation and presented a gift by Olympia Nicodemi.

## Rest of Abstracts

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### Carol Bell, Chris Hanford, Karla Helstrom, and Bruce Mattingly

For seven years, SUNY Cortland has required incoming freshmen to take COR 101: The Cortland Experience, a one-credit seminar designed to help new students make the transition to college. In Fall 2003, the Mathematics Department established two sections of this course specifically for math majors. In this talk, faculty instructors and student assistants will discuss their experiences.

### Lynn Carlson

Common probability misconceptions include: the equal likelihood bias, the availability heuristic, the representativeness heuristic, and the outcome approach. I will discuss these misconceptions, illustrate their occurrence, and discuss possible ways to help students overcome their misconceptions. I will also discuss the measurement heuristic, a previously unidentified misconception.

### Gary Bowlin

A graph is considered intrinsically knotted if every spatial embedding has a cycle that is not ambient isotopic to the unknot. This talk will introduce several new theorems related to intrinsic knotting, including the following: If one deletes two vertices from an intrinsically knotted graph, the resulting graph is non-planar. A minor minimal intrinsically knotted graph is 3-connected. An intrinsically knotted graph has at least 19 edges. All the intrinsically knotted graphs on nine or fewer vertices are expansions and  $\Delta$ - $Y$  variants of  $K_7$  or  $K_{3,3,1}$ . Finally, several open questions are left for the audience to consider.

### Gabriela Mendoza

College is a challenging experience for everyone, but for some ESL and non-traditional students, success requires more than hard work. The Learning Assistance Center (LAC) at Broome Community College offers many services to all students, in particular to those for whom attending lectures is not enough. Peer tutoring is one of these services in which the students are offered one-to-one sessions with their appointed tutors.

Those tutoring ESL and non-traditional students are faced with a much more difficult audience to reach. In response to this situation, the LAC requires tutors to attend seminars in which they learn to become aware of the many stumbling blocks that this particular group of students faces. I will discuss my experiences with non-traditional and ESL students and how this training became an important tool to deal with their problems.

### Isa Jubran

Technology, when used appropriately in geometry, has the effect of encouraging a process of discovery in which students first visualize and analyze a problem, and make conjectures, before attempting a proof. Software packages, offering straightedge and compass constructions in Euclidean, hyperbolic, and spherical geometry, have been successfully used at SUNY Cortland to enhance the teaching/learning of geometry. A number of these packages will be explored and participants will have a chance do some hands-on activities.

### Adam Weisblatt

Artificial fractal landscapes have become a standard aspect of science fiction filmmaking. The Collage Theorem provides a way of finding an iterated function system (IFS) that has an arbitrary image as its attractor. A wide variety of strange, natural looking, and wonderful images can be drawn with IFSs made up of just three or four contractions. A precise statement of the Collage Theorem and, time permitting, a proof of it will be presented. Also, several examples of images and IFSs having them for attractors will be shown using a program called Fractint.

### Matthew Coppenbarger

A tridrafter is a special type of polyomino. The base shape is a 30-60-90 "drafter" triangle. Three of the base shapes are glued together along edges under some restrictions to form a set of 14 tridrafters. A parity analysis is used to exhibit one shape equal in area to the set of tridrafters that the pieces cannot completely cover, with only one minor mistake.

### Malinda Wesley

Due to many recent technological advances, finding easier ways to transmit, compress, and analyze information has become more important than ever. Wavelets provide a means of representing a vast array of information that is generally better than the more traditional method of Fourier transforms. Examples include, but are not limited to, mathematical functions or physical signals, such as voice, fingerprints, radio signals, seismic waves, or photographs. Wavelets will be presented and applied to image compression.

## Seaway NExT/PFF Program on Friday, April 23

12:00 – 1:15	Registration and Lunch
1:15 – 2:00	<i>Navigating Through the Tenure Process</i> Gary Towsley, SUNY Geneseo
2:00 – 2:30	Refreshment Break
2:30 – 4:00	<i>Job-Hunting Strategies</i> , Tom Rishel  <i>Master's Degrees and Careers for Math Majors</i> , William Hooper
4:15 – 4:45	<i>Good Teaching</i> Olympia Nicodemi, SUNY Geneseo
4:45 – 5:15	Wrap-up Session

## Meeting Highlights

*continued from page 1*

Dr. Head received his BS in Mathematics from the University of Oklahoma in 1954 and his Ph.D. from the University of Kansas in 1962. His teaching and research interests have expanded through several areas of abstract algebra and theoretical computer science.

During the last two decades, Professor Head has encouraged research at the interface between biomolecular and computing sciences. He is thankful for the success of his students, the “Yellow Tulip Award,” presented at the 2002 Workshop on DNA Computers in Sapporo, Japan, and for the presentation on his 70<sup>th</sup> birthday of the Festschrift volume, “Aspects of Molecular Computing,” edited by his dear friends Natasha Jonoska, Gheorghe Paun, and Gregorz Rozenberg.

Leading off on Saturday morning will be **Alan Tucker** of SUNY Stony Brook, who will speak on *Recently Uncovered Flaws in Standards-Based Mathematics Tests*.

Dr. Tucker is a SUNY Distinguished Teaching Professor in the Department of Applied Mathematics and Statistics. He has been at Stony Brook since receiving his Ph.D. from Stanford in 1969.



Over time, Alan's interests have shifted from combinatorics to mathematics education at the collegiate and school levels. He was the lead author on the very influential 2001 CBMS report, “The Mathematical Education of Teachers,” as well as the 1981 CUPM Recommendations for a General Mathematical Sciences Major and a 1994 publication assessing efforts at calculus reform.

Dr. Tucker has served as First Vice president of the MAA, and in 1994 received the association's Haimo Award for distinguished teaching of mathematics. Currently, he co-directs the MAA PMET initiative, Preparing Mathematicians to Educate Teachers, which has received funding from the NSF and Texas Instruments.

Completing the Saturday morning program is the always entertaining **Ed Burger**, who will tell us *How to Always Win at Limbo*.

Dr. Burger is Chair and Professor of Mathematics at Williams College. His research interests are in diophantine analysis and the geometry of numbers. He is the author of over 30 research articles, five CD-ROM video texts, and two books, “Exploring the Number Jungle: A Journey into Diophantine Analysis,

published by the AMS, and the popular textbook, “The Heart of Mathematics: An Invitation to Effective Thinking,” co-authored with Michael Starbird, which won the Robert W. Hamilton Book Award in 2001. Ed currently serves as Associate Editor of the American Mathematical Monthly, and was recently named the recipient for 2004 of the prestigious Chauvenet Prize.

Like Alan Tucker, Ed is also a Haimo Award winner (2001). In 2002–2003, he was the Ulam Visiting Professor at the University of Colorado in Boulder, where he won the Residence Life Teaching Award. Ever in high demand as a lecturer and keynote speaker, he has also made numerous appearances on radio and television, including NPR and NBC. He was named an MAA Polya Lecturer for 2001–2003, and many section members will remember his very entertaining after-banquet talk at the Fall 1997 meeting at Siena College.



Following lunch at the Neubig Dining Hall, we will return to Sperry Hall. The Saturday afternoon program offers what may be a record number of contributed talks from which to choose, from exploring the relationship of writing and mathematics, to ideas for improving courses in linear and abstract algebra and geometry, to talks that cover the whole spectrum of mathematics. One special session, *Circles, Logs, Sines, Area, Sketchpad, and More*, will feature presentations by pre-service and in-service school teachers on their honors or master's capstone projects.



**Tom Rishel, Banquet Speaker**

## SUNY Cortland to Host Spring Meeting

The Department of Mathematics at SUNY Cortland will host the Spring 2004 meeting of the Seaway Section. Chairing the local arrangements committee is **Bruce Mattingly**, chair of the department.

Located within the School of Arts and Sciences, the Department offers BA and BS degrees in both mathematics and mathematics adolescence education, as well as a Master of Science in Education and a Master of Arts in Teaching. There is also a program leading to joint certification in mathematics and physics.

Currently, the department has nine tenured or tenure-track faculty. There are about 150 mathematics majors and 30 graduate students. The department has an active Mathematics Club, whose members participate in regional undergraduate mathematics conferences, and the department also sponsors teams for the Putnam Exam and the Mathematical Contest in Modeling. The department is an institutional member of the MAA, the Association for Women in Mathematics, and the National Council of Teachers of Mathematics.

For the latest program information or to register online, access the meeting webpage at

[www.cortland.edu/math/seawaymeeting/index.html](http://www.cortland.edu/math/seawaymeeting/index.html)

### Registration, Lunch, and Refreshments

Registration will take place in Sperry Hall on Friday evening during the social hour, and also on Saturday morning from 8:00 until 11:00 in Sperry Hall. Refreshments will be available in the registration area on Saturday morning, and following the sessions on Saturday afternoon. The Saturday Lunch will be served from noon to 1:30 in the Neubig Dining Hall.

### Directions to SUNY Cortland and Parking

From I-81, Comfort Inn or Holiday Inn: Take Exit 11 to Clinton Avenue/Route 13 South. Drive approximately one mile, get into the center lane and make a left-hand turn at the light onto Church Street. From Church Street make a right-hand turn onto West Court Street. Take West Court Street to the top of the hill and make a right-hand turn onto Graham Avenue. Make the first left-hand turn onto Gerhart Drive. Look for signs for MAA parking.

From EconoLodge: Take Church Street southbound and turn right onto West Court Street. Take West Court Street to the top of the hill and make a right-hand turn onto Graham Avenue. Make the first left-hand turn onto Gerhart Drive. Look for signs for MAA parking.

From Comfort Inn and Suites: Take Route 281 north for approximately 1 mile to Route 222/Groton Avenue. Turn right and follow Groton Avenue approximately 1.5 miles to the second traffic light. Turn right onto Graham Avenue. Turn right onto Gerhart Drive. Look for signs for MAA parking.

From Ithaca and points southwest: Take Route 13 North to Route 281 and follow the directions above for the Comfort Inn and Suites.

### Pre-registration Form

Name: \_\_\_\_\_

Institution: \_\_\_\_\_

MAA Member: Yes \_\_\_\_\_ No \_\_\_\_\_

Registration Fee: \_\_\_\_\_ @ \$15 \$ \_\_\_\_\_

Friday Dinner: \_\_\_\_\_ @ \$25 \$ \_\_\_\_\_

Entrée Choice: \_\_\_\_\_ Sole Florentine  
 \_\_\_\_\_ Chicken Oscar  
 \_\_\_\_\_ Tortellini with Pesto

Saturday Lunch: \_\_\_\_\_ @ \$10 \$ \_\_\_\_\_

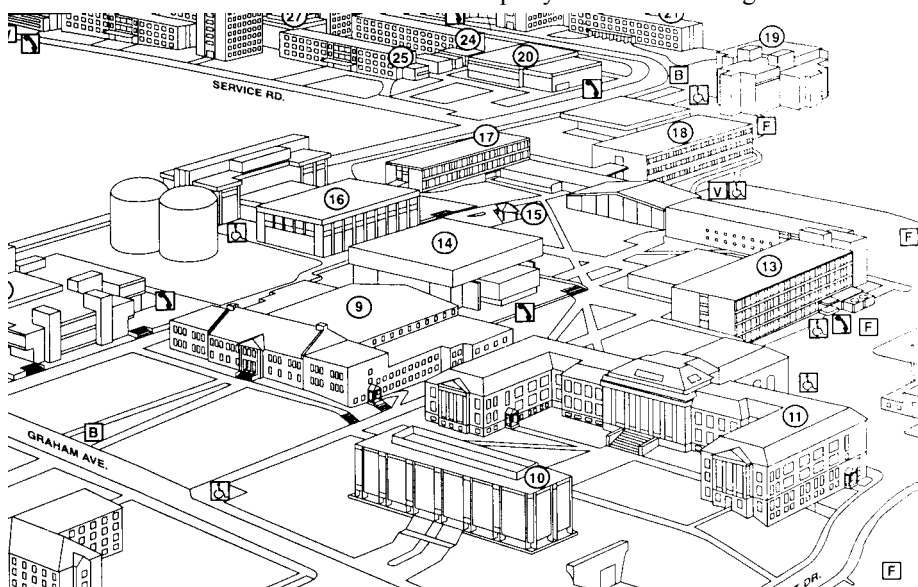
Total: \$ \_\_\_\_\_

Please pay in U.S. funds and make checks payable to **Seaway Section, MAA**. Note that there is no registration fee for students, and students who pre-register qualify for a free lunch on Saturday.

The address for registration by mail is:

Terri Peebles  
 Mathematics Department  
 SUNY Cortland  
 P.O. Box 2000  
 Cortland, NY 13045-0900

MAP KEY: 19 = Core Union  
 14 = Sperry Hall 20 = Neubig Hall



## Accommodations

Blocks of rooms have been reserved at:

Comfort Inn, 2 ½ Locust Ave, 607-753-7721 or 800-228-5150; \$59 double, mention Seaway Conference; Maria is the contact person; reserve by 3/23.

Country Inn and Suites, 3707 Route 281, 753-8300; \$75-\$109, mention MAA Seaway Section Meeting; Amy is the contact person; reserve by 3/23.

EconoLodge (formerly Downes Motel), 10 Church Street, 607-756-2856 or 1-800-800-0301; \$69 double; Harry is the contact person; reserve by 4/1.

Holiday Inn, 2 River Street, 607-756-4431 or 1-800-Holiday; \$74.95 double, mention MAA; Rachel is the contact person; reserve by 3/24.

## Directions to the Hotels

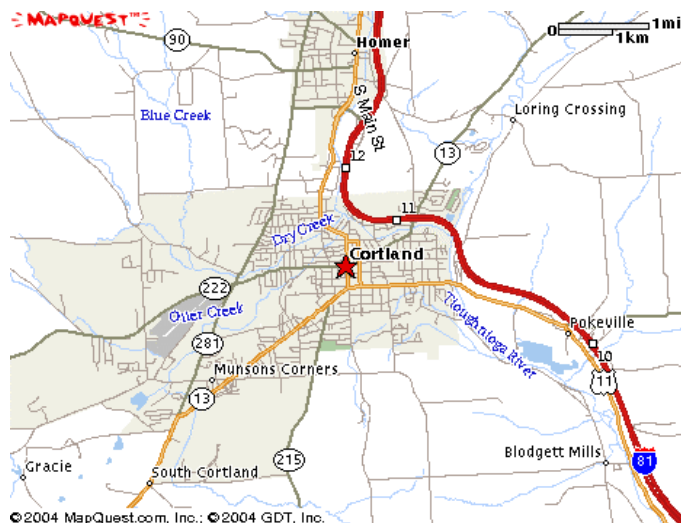
Comfort Inn: From I-81 North take Exit 11. At the exit ramp drive across Route 13 to Locust Avenue. From I-81 South take Exit 11. Turn left onto Route 13 and then left onto Locust. The hotel is located behind Denny's Restaurant.

Country Inn and Suites: From I-81 take Exit 12 to Route 281. Turn left and follow Route 281 south for approximately 2 miles. The hotel is on the right.

EconoLodge: From I-81 take Exit 11 to Clinton Avenue/Route 13 South. Drive approximately one mile, get

into the center lane and turn left onto Church Street. The hotel is on the right.

Holiday Inn: From I-81 take Exit 11 to Clinton Avenue/Route 13 South. Turn left at the second light onto River Street.



Joseph Straight, Editor

*The Seaway Current*

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