

POINTS AND ANGLES

Newsletter of the Metropolitan
Mathematics Club of Chicago



Volume XLII

October 2007

No. 2

The Mathematical Wonders of the Alhambra

Laurie Boswell, Riverside School, Lyndonville, Vermont

By PHIL GARTNER

Laurie Boswell is a mathematics teacher at the Riverside School in Lyndonville, Vermont, and has taught mathematics at all levels, elementary through college. A recipient of the Presidential Award for Excellence in Mathematics Teaching, she was also a Tandy Technology Scholar. She served on the NCTM Board of Directors from 2002–2005, and she speaks frequently at regional and national conferences on topics related to instructional strategies and course content. You may recognize her name from the cover of numerous textbooks. Ms. Boswell has co-authored a variety of mathematics textbooks over the years.

She will share with MMC some fascinating insights into the works of M.C. Escher. The images that inspired M.C. Escher will inspire your students as well. Ms. Boswell's presentation will include some of the history and culture of the Alhambra (in Granada, Spain), along with the mathematics found in the structure of the buildings and the tilings on the walls, floors, and ceilings. Even those of us who know Escher quite well should walk away after this talk with some new information, a deeper appreciation of the mathematics involved, and some interesting new ideas to share with our students.

Not only will you want to come early to catch up with your colleagues and grab a prime table, but you will also be treated to free and tasty appetizers, compliments of McDougal Littell.

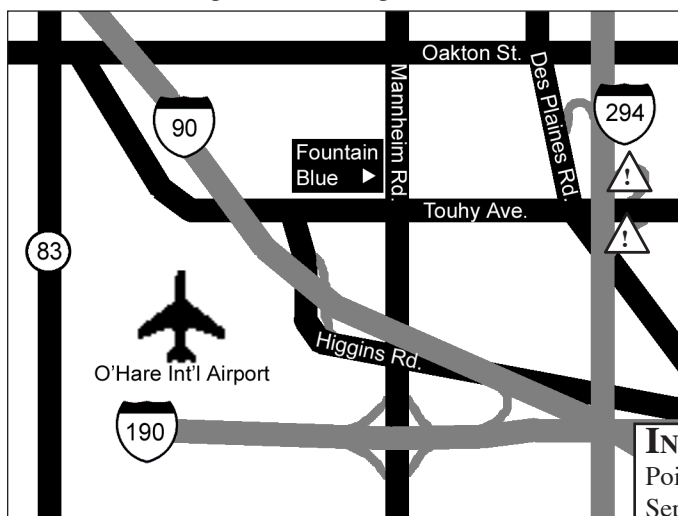
We are fortunate to have Laurie Boswell coming to our next dinner meeting this October 12th. This promises to be a very interesting talk that will stimulate both sides of the brain. Please put it on your calendar now because you will not want to miss this evening. See you there!

REMEMBER!! You can earn CPDU credits for attending dinner meetings!

Date: Friday, October 12, 2007
Time: 5:30 p.m. Doors Open
6:00 p.m. Social Hour
7:00 p.m. Dinner and Talk
Place: Fountain Blue Banquets & Convention Center
2300 Mannheim Rd.
Des Plaines, IL
(847) 298-3636
Cost: Members \$31
Nonmembers \$37

RESERVATION DEADLINE
Monday, Oct 8, by noon, please!

TO RESERVE:
Call 847-486-4690 or email
reservations@mmcchicago.org
Day or night, leave a voicemail.
Requests for special meals *must* be made
in advance.



For those of you who come north on I-294 to Fountain Blue, please be aware that the Touhy east and west exits will be closed for a few months. Please exit onto I-190 toward the airport and exit Mannheim Road north during construction.

From I-294 & Eastbound I-290:
Exit at I-190 West to O'Hare; Exit onto North Mannheim Rd.; Take Mannheim Rd. North 2.25 miles.

Public Transit:
Take the CTA Blue Line to the Rosemont Bus Terminal; Take Pace Bus #223; Exit at Touhy Ave. & Lee Rd.; Walk East on Touhy to Mannheim Rd.

Future Meetings:
Nov 2, Dec 7, Jan 11, Feb 8,
Mar 14 (π), May 9

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Points from the Interior

BY CONRAD WAYNE

Two years ago, after a thirty-six year teaching career in the Rich Township School District, I took a position at Chicago State University as the campus-based supervisor of secondary mathematics pre-service teachers. Besides teaching a Methods class each semester and a Technology For High School Mathematics Teachers one semester a year, I supervise the student teachers during their one semester student teaching assignments. There are at least seven Chicago area universities that place secondary mathematics student teachers in the metropolitan area. I would like to encourage those of you who are qualified to consider accepting the supervision of a student teacher.

What does it take to be qualified? Chicago State requires that the Field Based Supervisor (that's you) be (1) state certified in mathematics, (2) have at least three years teaching experience in mathematics, (3) be rated an excellent teacher based on annual ratings, and (4) have a master's degree or have made significant progress to-

wards a master's degree. When I was still teaching at the high school level, I had the chance to supervise a student teacher only twice and both times were very rewarding experiences. In fact, both teachers were hired by my district and still teach full time there.

There are many rewards to supervising a student teacher, including the opportunity to help pass on the MMC legacy of strong mathematic leadership in the Chicago area. Sometime in the past, a teacher allowed you into his class to "learn the ropes" while teaching his classes. Now it is your opportunity to return the favor.

A word of caution: a successful student teaching experience requires that you must be willing to give up some control of your classes. If the student teaching experience is to be successful, the student teacher needs to be given a chance to really teach the classes, not just be a teacher's aide. I hope you will have the opportunity to help a pre-service teacher become an excellent full time teacher. Besides myself, MMC has a number of members who are college professors supervising pre-service teachers: Ron Vavrinek, Harlan Goldberg, Paul Christmas, George Pryjma, John McConnell, and former supervisor, Al Holverson (I apologize if I left anyone out). Talk with one of us if you have any questions.

As long as we are talking about making contributions to our great profession, please take the time to congratulate four MMC members who are the recipients of this year's ICTM annual awards (this is out of only five possible awards!). They are: Heidi Skorin—the Promising New Teacher Award; Rich Rukin—the T.E. Rine Award; Steve Viktora—the Lee Yunker Award; and Sue Phippen—the Distinguished Life Achievement Award. They will officially be honored at the ICTM 2007 Awards Banquet during the ICTM Annual State Conference in Peoria October 19.

MMC BOARD OF DIRECTORS		Term
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POINTS AND ANGLES

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Correspondence may be directed to the editor:

Isaac Greenspan
Chicago Math, NFP
1400 Devon Avenue Suite 344
Chicago, IL 60660
ilg@chicagomath.org

New and Networked Calculators

BY BOB RUZICH

Dr. Allan Bellman kicked off the new MMC season with his presentation on New and Networked Calculators and their Potential to Transform the Way We Teach. He began the evening with a little history. Allan first took us through his experience in a small 8th grade Algebra class transitioning to a large public high school where individual instruction went by the wayside. We then journeyed through his years as an educator, but more through the different trends that were in vogue in education through the years. The trail was a long road from Humanistic education to objectives, objectives, objectives... From SRA kits to programmed instruction to teaching with networked computers... the list went on. Allan pointed out that all these attempts through the years were efforts to meet the *needs of the individual* in some manner. We then reached that fork in the road where he had to assess the prior knowledge of the audience, much as we as teachers do in the classroom daily, to decide which path he would follow in his talk. The audience was first queried for its experience with TI-Navigator where the responses varied from *using it in their classroom now* to *he is talking to us about an SUV*. The group was then asked about their experience with the new TI-Nspire handheld with a similar range of results.

Dr. Bellman then began to tie the pieces together with the assertion that each student needs to be successful each period and still challenged while not thinking that math class is a race. He posed the questions, "How do you assess pre-requisite knowledge in your class and how do you handle remediation for those in need"? He then shared a comparison of models of teaching. The first being one that many grew up with: opener, homework review, lesson-lecture, work period, bell rings and students leave. Dr. Bellman then described efforts of the group of young, pre-service and new teachers he is working with in California, the most experienced of which is in their second year of teaching. They all have been trained in using the TI-Navigator and have a strong background with TI-Nspire. The group meets weekly to discuss and share activities they are using in the classroom. Class begins with an opener as in the previous model. Using the Navigator network and its ability to link the results from each student to the teacher's computer, they were then able to get immediate results to class opener *for each student*. This then drove the way in which the

students were grouped for the class. Those in need of remediation may have been grouped with stronger students or with the teacher for extra help. All students would continue on with an interactive lesson using the TI-Nspire that incorporated various levels of scaffolding to reach a level of mastery with the day's topic. The grouping could vary from day to day or even within the period. The Navigator was then used with the end of the period closer, evaluated on the spot with appropriate class discussion and solid feedback for the teacher on how to proceed the next day.

As the day of teaching and the evenings dinner was beginning to have it's cumulative effect on people, much like running a classroom, Dr. Bellman decided it was time for a "math-break." The audience was then asked to rise and with their arms demonstrate a line with a positive slope, a negative slope. Our next task was to show the graphs of $y = x^2$, $y = x^2 + 3$ and then $y = (x - 2)^2 + 3$ using only one hand and their nose as the origin. This provided some members of this august group with a creative opportunity and was one of those classroom events that could not be recreated for those who were absent that day. It was then pointed out that this was not just an activity to refresh the audience, but a form of assessment that we use in the classroom to determine our students understanding of transformation. It is a form of forced engagement, but it is difficult to archive, track, benchmark and customize for individual needs, the very issues at the center of the evening's presentation.

Dr. Bellman then shared some of the activities that his group had done with their students. The first detailed efforts to connect graphical and numerical information
SEE BELLMAN, PAGE 4

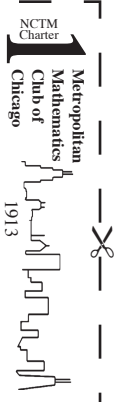
What's this card about?

All the information is on the next page...

NEW TEACHER INCENTIVE CARD

IMPORTANT DATES 2007-08

- | Friday, September 7th—Allan Bellman
- | Friday, October 12th—Laurie Boswell
- | Friday, November 2nd—Tom Oettinger
- | Friday, December 7th—Jerry Cummins
- | Friday, January 11th—P.J. Karafiol
- | Saturday, January 26th—Conference of Workshops
- | Friday, February 8th—Michael Keyton
- | Friday, March 14th (π)—David Thiel
- | Friday, May 9th—Zalman Usiskin



Bellman

CONTINUED FROM PAGE 3

in linear equations. Using the Nspire's ability to link applications, students were able to move points around a plane that had the graph of a line. The students were able to see the results when the pairs were evaluated in the spreadsheet with the equation from the graph. They were then asked to conjecture about the relation between the points and the line. This followed with several more interactive electronic interactive "worksheets" using the Nspire handheld to reinforce the connection. The period closed with a switch to the Navigator system and a quick learning check poll to give the teacher immediate results that were easily be archived, tracked and used to construct the next day's lesson.

A second example used a similar graph-spreadsheet connection with linear inequalities. As the students move point around the spreadsheet displayed the results when the ordered pair of that point was substituted into the inequality. The students were then asked to con-

SEE **BELLMAN**, PAGE 5

Special Offer for the 2007-2008 School Year

New Teacher Incentive

For this school year, 1st and 2nd year teachers who become members of MMC will receive ½ off their second and third dinner meetings! Take advantage of this tremendous opportunity to get involved with a great organization, hear top-notch speakers and meet fellow math teachers from throughout the Chicagoland area.

To participate, cut out the form at the left and bring it with you to all 3 dinner meetings and have it signed at the registration desk. You will receive your 2nd and 3rd dinner meetings at ½ price!

Thanks to an anonymous MMC member for generously funding this program.

Name _____					
FOR USE OF MMC REGISTRATION PERSONNEL ONLY					
Meeting 3		Meeting 2		Meeting 1	
Approved:	Date:	Approved:	Date:	Approved:	Date:
_____	_____	_____	_____	_____	_____
MMC 2007-08					

MMC Problems

October, 2007

BY MICHAEL KEYTON

After the opening with geometry, we look at a few algebraic problems, one with proof (of course). What would mathematics be without proof?

1. If $a = \log_6(30)$ and $b = \log_{15}(24)$, find an expression using a and b for $\log_{12}(60)$.

2. Prove: $\sum_{k=1}^5 \frac{1}{\log_{a^k}(n)} = 15 \log_n(a)$

Board Report—Meeting of 26 August 2007

BY STEVE VIKTORA

The Board of Directors held its first meeting of the 2007-2008 academic year on 26 August 2007.

Mary Wiltjer reported a club membership of 540.

The treasurer's report indicated that the club is in good financial shape; the Board approved his report unanimously.

In addition to dealing with normal procedural and organizational matters, the Board made two significant decisions:

- The amount of each scholarship award would be increased to \$1500.
- Members would be given the option of receiving Points and Angles electronically or by mail (but not both).

The next meeting of the Board is scheduled for 2 December 2007 at the Braxton Grill in Oakbrook. Members of the club are welcome to attend any Board meeting, but please contact Conrad Wayne at cwayne4833@sbcglobal.net before 25 November if you plan to attend. Because this is a dinner meeting, you would be expected to pay for your meal.

USACAS⁵
(2)CAS OR NOT(2)CAS

Save the date! **June 28–29, 2008**

More information available soon at MEECAS.ORG

Bellman

CONTINUED FROM PAGE 4

ture about the nature of the ordered pairs in the shaded region on the graph screen and their connection to the inequality. This lesson also followed with several more interactive electronic interactive “worksheets” using the Nspire handheld to reinforce the connection. The period again closed with a switch to the Navigator system and a quick learning check poll to give the teacher immediate results that could easily be archived, tracked and again used to direct the next days lesson.

The last activity was a culminating project titled “The Great Car Meet,” in a unit on linear equations. The students had worked through various linear activities using standard pencil and paper along with electronic interactive ones using Navigator and Nspire. The students had also been working with CBR (motion detectors) and electric cars in which the students could adjust speed. Using these the students were able to connect speed to slope and initial position to y-intercept. They then put the two together in the $y = mx + b$ equation to predict the position of the car at any time. In “final exam” each team was

to start their car from along one of the four “poles” on a coordinate system on the classroom floor. Using their knowledge of linear equations they then adjusted the speed (slope) and starting position (y-intercept) of their cars so that all four (starting at the same time) would travel to a three-foot circle at the center of the system. The goal was to have all four cars in the circle at the same time and have no crashes. The audience was then treated to several videos of the student’s successes.

Dr. Bellman then concluded with some more background on how his new teachers were handling this work. They all attend weekly meetings where they discuss and share lessons and assessments. They have lots of time to discuss how each other students are doing. Finally they are able to create and share extensive plans with alternative routes through the lesson.

The MMC thanks Dr. Bellman for getting our new season off to a great start. I would like to add this personal note in thanking him for his efforts in education throughout the years going back to the early 90’s when Allen was one of the co-instructors of a Woodrow Wilson workshop that inspired this teacher in the use of graphing calculator technology.

MMC Membership and Change of Address Form

Mail to: MMC
 415 S. Ridgeland Ave. #2
 Oak Park, IL 60302

*Make check payable to **MMC**.*

Please use a different form for each person.

Name _____

Address _____

Phone _____

School _____

Address _____

Phone _____

E-Mail _____

Membership: New Renewal

Choose one:

1 year (\$20) _____

2 year (\$35) _____

3 year (\$50) _____

1st year teacher }
 retired } (\$12) _____
 student

Donations:

Scholarship Fund _____

Speaker Fund _____

Total amount of check: _____

Check preferred mailing address above.

Change of Address

NOTICES & REMINDERS

Upcoming MMC Events

Friday, October 12th—Laurie Boswell
The Mathematics of the Alhambra

Friday, November 2nd—Tom Oettinger
How To Encourage Student Creativity in Mathematics

Friday, December 7th—Jerry Cummins
**The Past and Future of Mathematics Teaching:
 Where Have We Been? Where Are We Going?**

Friday, January 11th—P.J. Karafiol
Exploring Complex Numbers with CAS and Sketchpad

Saturday, January 26th—Lemont High School
Conference of Workshops

Friday, February 8th—Michael Keyton
The Mystery In Geometry

Friday, March 14th (π)—David Thiel
The Mathematics of Las Vegas

Friday, May 9th—Zalman Usiskin
**Are You Still Teaching
 Your Grandma's Geometry?**

[HTTP://WWW.MMCCHICAGO.ORG/](http://www.mmcchicago.org/)

MATH EDUCATORS EXPLORING COMPUTER ALGEBRA SYSTEMS

Neat Things We Learned at USACAS

Saturday, September 29, 9 am – Noon
 Get specific activities and ideas from an excellent conference.
 You won't leave empty-handed.

Future Meetings and Topics

November 17th—Improving Teaching & Learning of Algebra

February 2nd—The Transition to CAS

April 19th—Rich Problems Made Richer with CAS

And don't forget USACAS 2008 on June 28–29!

All meetings will be held at York High School,
 355 W St. Charles Road, Elmhurst. If you plan to attend a
 meeting, please let us know at dhall@elmhurst205.org
 Technology will be available at all meetings for your use.

[HTTP://WWW.MEECAS.ORG/](http://www.meeecas.org/)

If you would like a notice or reminder to appear in **POINTS AND ANGLES**, please email the text you would like to appear to ilg@chicagomath.org no later than the date of the MMC meeting preceding the issue in which you would like it to appear. All notices are subject to editing.

Your membership renewal date appears in the upper right corner of the label.

MAILING LABEL

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 c/o MMC
 415 S. Ridgeland Ave. #2
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