

Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago
Volume XLVI No. 5 Feb./March 2017

Integers: A Space For Mathematical Play

March Speaker

Nicole Enzinger



From I-90 & Southbound I-294: Exit at I-190 West to O'Hare; Exit onto North Mannheim Rd.; Take Mannheim Rd. North 2.25 miles.

From Northbound I-294: Exit at West Touhy Ave.; Take Touhy Ave. to Mannheim Rd.; Turn right on Mannheim Rd.

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

Nicole M. Wessman-Enzinger earned a PhD in mathematics education from Illinois State University (ISU) in 2015, after earning a MA in the subject from DePaul University in Chicago (2009) and a BS in the discipline from Olivet Nazarene University (2005). She was high school math teacher at Herscher High School (Herscher, Illinois) for five years before working at ISU. After teaching high school, she taught in the mathematics departments at both Olivet Nazarene University and Illinois State University. Currently, she works as an assistant professor of education at George Fox University (Newberg, Oregon) where she teaches mathematics content and pedagogy classes for prospective teachers.

Nicole is a STAR Fellow from the Association of Mathematics Teacher Educators and has participated in other early career opportunities such as the Psychology of Mathematics Education Young Researcher programs in Vancouver, Canada and Hobart, Australia. Nicole has published articles in various journals (e.g., *Teaching Children Mathematics*, *Mathematics Teaching in the Middle School*, *The Mathematics Enthusiast*, *Convergence*). Currently, she is editor of a book on children's thinking about integer addition and subtraction. As a researcher, she is broadly interested in the teaching and learning of number, from both historical and psychological perspectives. Nicole has presented her work nationally and internationally. Most recently, she presented some of her research on children's visual mediators for integers at the International Congress on Mathematics Education in Hamburg, Germany.

The first mathematics education conference Nicole attended was MMC as a prospective teacher, and she has many fond memories of attending Friday MMC talks. For this reason, she looks forward to sharing some of her passion about integers at MMC.

Nicole's talk will address integers as a space for intellectual play. Describing instances of integer play and playing with integers, with the distinction to be explored during the meeting, is important in order to facilitate this type of intellectual play in the future. The playful curiosities of children, arising out of integer addition and subtraction, tended to be concepts that we think of prerequisite knowledge (e.g., magnitude or order, sign of zero) or knowledge that is more nuanced for integer addition and subtraction (e.g., how negative and positive integers can "balance" each other). These instances of integer play and playing with integers will be connected to the work of mathematicians, highlighting the importance of play in school mathematics. We will then discuss ways to incorporate intellectual play in all mathematics classrooms.

Friday, March 3, 2017

5:30 PM Doors Open, 6:00 PM Social Hour
7:00 PM Dinner & Talk

Fountain Blue Banquets & Convention Center

2300 Mannheim Rd., Des Plaines
(847) 298-3636

\$43 for Members, \$49 for Nonmembers

Please note: Dinner meetings can only be paid by cash or check. No credit cards are able to be accepted at this time.

Reserve by Noon, Monday Feb. 27

Online at www.mmcchicago.org
or by phone at (847) - 486 - 4291

Points From The Interior

By CARRIE FRAHER

When searching for this month's article topic, I thought back to John Diehl's review of *The Imitation Game* and decided to check out Oscar nominee *Hidden Figures*. Like many of you, I already had my favorite math movies: *Stand and Deliver*, *October Sky*, *Good Will Hunting* and *21*. I went to the theater excited to see an untold story about three black women whose mathematical talents helped us win the space race. *Hidden Figures* delivered on its promise and so much more. It moved up to my favorite math movie and I cannot stop recommending it to people.

The movie takes place in Virginia in 1961. A powerful history lesson is delivered as we are introduced to the main characters: Katherine Johnson (Taraji P. Henson), Dorothy Vaughan (Octavia Spencer) and Mary Jackson (Janelle Monáe). In the 1960's many things were segregated including schools, NASA, and even the public library. It was painful to watch the characters endure this hardship. In spite of it all, the women and their co-workers are passionate and successful in their work. They each cultivate skills that make them indispensable to the mission. While it hurts to see their mistreatment, we also witness the human capacity for growth. Their talent, determination and creativity influence the people around them.

I did not know that the term computer was originally a job title instead of a machine. I have never imagined a NASA with pools of human computers instead of engineers seated at IBMs. Katherine joins the Space Task Force to double-check the figures of the engineers. She sees connections and creatively solves problems in ways that astonish those around her. When ignored, she boldly displays her ideas on a large chalkboard in the task force headquarters.

Mary finds a flaw in the heat shield and works for an engineer that sees her potential. She goes to court to fight for her right to take evening classes at a local segregated high school in order to become the first black female engineer. Dorothy sees how the new mainframe IBM will replace the computing group. Armed with a book on FORTRAN, she teaches herself and others to program the machine and becomes the supervisor of a new division.

If you want to be inspired, run to the theater and see *Hidden Figures*. These three women will knock down every wall built in front of them as you cheer. I laughed, cried, and experienced the space race in a new way that made it so real. And now to talk about other things that are inspiring...

Thanks to all the folks who helped to make the MMC Conference of Workshops 2017 a success! So many people work hard to bring us this event, including the committee, speakers and hosts. Carol Nenne and Mary Wiltjer have chaired the event for many years and it helps so many teachers share ideas with others while gaining professional development hours. If you enjoyed the conference, please come out to a dinner meeting and continue to be involved in MMC.

Maryjoy Heineman and Matthew Kaiser helped us learn about Geometry in Construction at our last dinner meeting. I love the way they are helping students see a purpose in mathematics and get an opportunity to make a difference in their community. There was something for everyone, including a message about the amazing things students can do when they are inspired.

Please come out on March 3rd to see my friend, and MMC super-fan, Nicole Enzinger. Nicole will help us find ways to integrate our students' love of play with our love of mathematical inquiry. I hope to see you there!

MMC Election 2017

Be on the lookout for a ballot in your mailbox arriving soon for the election of a new president as well as board members to serve for a term of three years. See page 5 for a list of people running as well as a short bio about them. Ballots will be due by March 31st, 2017. You may bring your ballot to the March Dinner Meeting to cast your vote or send it via snail mail. Every vote matters!

January Talk Summary

By Tom Bond

When I first read the title of January's speaker, "Geometry in Construction", I thought we were going to have a talk about using protractors, compasses, and rulers in Common Core topics. What we got wasn't just a core, but the whole apple. The speakers shared information about a course at Evanston High School that has shown success in reaching the student who struggles with math. You know, the ones who literally tremble when you work with them one-on-one because math is a painful mystery to them.

The course at Evanston is based on a course originally created in Lakeland, CO, but now has over 200 schools duplicating it. The course is really two courses in two periods. The first period is a standard Geometry course. The second period is a CTE class that builds a complete single family home (2 story, 1500 sq. ft., 2 bath) during the school year. The topics in Geometry become knowledge the students use during the construction process. Approximately 90 students are enrolled in the dual course every year.

Examples of how Geometry is used in the construction process are as follows:

- Similarity and proportions are used in scaling architectural drawings to actual dimensions. A scale model of the house is built as a part of the class.
- Accuracy and precision are obviously important in constructing the actual house. The students also learn problem solving in the real world, such as finding the center of a 2 foot board.
- Volume is explored in calculating the insulation required for the home, as well as HVAC sizing and selection. The presenters related a mistake in construction that resulted in a wall ending in the middle of a window. The solution required volume to be calculated and considered during the problem solving process.
- Right triangles can be used when making sure the foundation is square as well as when wallpapering a room. The students have to pay attention to right angles in the construction process.
- Quadrilaterals play a role when students have to understand parallelograms and how to make sure the foundation is a rectangle and not just a parallelogram.
- Circles are used for finding centers, water sprinkler patterns, and other applications.

The talk ended with a success story of a student from Colorado who had failed Algebra I two times before finally passing. He found Geometry in the context of real world problems to be much more understandable than the traditional classroom approach. He is now a student at Colorado State University and intends to return to his high school to help other students make sense of the mathematics that at one time was so hard for him.



Attend the TENTH INTERNATIONAL Conference on CAS in Secondary Mathematics
Come explore the future of mathematics education!

Saturday and Sunday June 24-25, 2017
Hawken Upper School, Gates Mills OH (approximately 27 miles from CLE Airport)

Optional Saturday evening tour to Rock and Roll Hall of Fame -more details will be posted online
More information available at <http://usacas.org>

Organized by MEECAS (Mathematics Educators Exploring Computer Algebra Systems)

Gratitude For Conference Of Workshops

The MMC Conference of Workshops celebrated its 25 anniversary this year with a wonderful day at Evanston Township High School. Over 500 participants were on hand, attending 90 workshops given by our fantastic speakers, experiencing and sharing activities and ideas to bring back to their classrooms.

A huge thank you goes to site coordinator Peter DeCraene (who also did double duty as registrar!), and Evanston Township High School and their staff members who made everything run like clockwork, providing not only the beautiful facilities, but also food service, technology, directions, and all of the other little things that go on behind the scenes that take months of planning.

Thanks also to all our MMC volunteers who put together the participant folders, came early and stayed late to make sure everything was in the right place for the workshops and was cleaned up afterwards.

We certainly know that teachers have enough on their plates, but fortunately about 100 decided they could do even more, and generously gave of their time and expertise by running workshops for the conference. The concept of teachers sharing and helping other teachers is why the MMC Conference has been such a success. The idea that teaching doesn't end at our own classroom door is crucial to bettering Chicagoland's mathematics education. We owe all of our speakers a special thanks for all their efforts!. And six of them were willing to share another 10 minutes in the afternoon post-session. Thank-you Katie, Sheila, Joe, George, Sendhil and Esther!

Soon you'll be hearing about the MMC Conference of Workshops 2018, so start planning now! If you presented this year, think about a workshop you would want to run next year. And if you attended, plan to attend again next year, but also consider presenting – everyone has those great ideas that they can share. We have a wonderful resource in Chicagoland with our spectacular mathematics community, and it would be great to see even more people willing to share their ideas.

~ Mary Wiltjer and Carol Nenne, 2017 Conference Co-Chairs

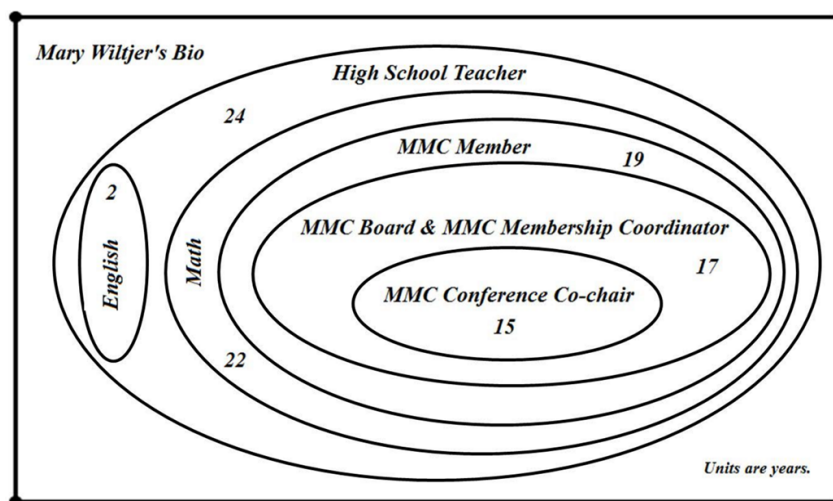


Post-Session Speakers: Esther Song, Sendhil Revuluri, Kathleen Courtney, Sheila Hardin, George Reese, Joe Karlovsky

2017 - MMC Candidate Statements

Please Mail Your Ballot by March 31 Or Bring To The March 3rd Dinner Meeting!

Candidate for President-Elect - There is one vacancy for President-Elect.



Candidates for Director - There are five vacancies for Director (Board Member).

Sue Brown: Sue has taught for 40 years, three-fourths that time at York High School, where she is department chair. She served on author teams for UCSMP Algebra and other UCSMP texts. Along with several other MMC members, she was part of a cohort doctoral program at Illinois State and studied student's understanding of coordinate trigonometry for her dissertation research.

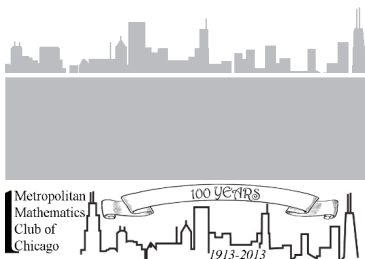
Serg Cvetkovic: Serg has been teaching mathematics in the Chicago Public Schools for 14 years, currently to diverse and English learners at Thomas Kelly High School on Chicago's southwest side. In addition to teaching, Serg also coaches Kelly's math team, which competes in the City of Chicago Mathematics League. His future goals for his students include to get more students from disadvantaged backgrounds pursuing electives in advanced mathematics, participating in Math Circles, and independently exploring mathematics beyond the classroom. In his spare time, Serg enjoys making use of his degree in applied science fiction in order to find better ways to navigate quantum loops and tunnels using a 1982 Buick Regal.

Peter DeCraene: Peter has been teaching Math and Computer Science for almost 30 years, the last 20 at Evanston Township High School. He has served as a Board Member of MMC for the last three years, and is currently the webmaster for the organization and the registrar for the Conference of Workshops. Peter has been a speaker at the Conference and at the ICTM annual meeting and other local workshops; he has earned National Board certification and won the Presidential Award. Peter currently teaches Computer Science Principles, Advanced Algebra with Support, and Pre-Calculus Honors. His students sometimes appreciate his jokes, but not as much as Peter thinks they should.

Sheila Hardin: Sheila has been teaching Math at Oak Park and River Forest High School for the past 22 years and has been a math team coach for the past 20 years. Sheila has served as a Board Member of MMC for the last six years and is currently the Parliamentarian for the board. Sheila believes that it is important to be a part of the MMC board to continue being part of an organization that is dedicated to mathematics and education.

Matthew Moran: Matthew spent 14 years teaching in the Chicago Public Schools before pursuing his current career in software development. He is an active member of the Chicago mathematics enrichment community, and currently serves on the board for the Math Circles of Chicago and the North Suburban Math League. He is also a coach for the Chicago Area All Star Math Team, and is the president-elect of MMC.

Richard Stalmack: Richard is a retired teacher from Illinois Mathematics and Science Academy.



MMC Scholarship Info

By LAURA KAPLAN

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 Matthew Moran, President-Elect
 Patricia Trafton, Past President
 Sheila Hardin, Board Chair
 Lynn Bond, Secretary
 Carol Nenne, Treasurer

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 Tom Bond (2015-2018)
 Plainfield Central H.S., Plainfield
 Peter DeCraene (2014-2017)
 Evanston Township H.S. Evanston
 Carrie Fraher (2015-2018)
 Glenbrook South H.S., Glenview
 Sheila Hardin (2014-2017)
 Oak Park & River Forest H.S., Oak Park
 Jeff Harding (2016-2019)
 Mundelein H.S., Mundelein
 Laura Kaplan (2014-2017)
 Chicago Academy for the Arts, Chicago
 Karen Lopez (2016-2019)
 Larkin H. S., Elgin
 John McConnell (2014-2017)
 Glenbrook South H.S. (retired), Glenview
 Nicolette Norris (2016-2019)
 Chicago Vocational Academy, Chicago
 John O'Malley (2014-2017)
 Glenbrook South H.S., Glenview
 Nancy Powell (2015-2018)
 Illinois Math and Science Academy, Aurora
 Rose Sterr (2016-2019)
 Benet Academy, Lisle
 Patricia Trafton (2015-2018)
 Lincoln M.S., Schiller Park
 Mary Wiltjer (2016-2019)
 Glenbrook South H.S., Glenview

Officials

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 John McConnell
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 Mary Wiltjer
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 Jeff Harding
 Points & Angles Editor John O'Malley
 Publicity and Posters Paul Christmas
 Scholarship Chair Laura Kaplan
 Social Media Chair Laura Kaplan
 Webmaster Peter DeCraene

The Metropolitan Mathematics Club of Chicago is offering a \$2,000 scholarship for a high school senior who will pursue a career in the teaching of mathematics. In addition, up to two Filliman Scholarships may also be awarded for the same amount (funded by a gift from the Filliman estate). The selected students, their parents and their sponsoring teachers will be invited to the May 19th MMC dinner meeting at which time the scholarship recipients will be honored. A selection committee of MMC members appointed by the Board will determine the scholarship awards. To be eligible, an applicant must submit the application, have an official transcript sent, and request a letter of recommendation from a member of MMC such that all of the materials are received by March 10, 2017. The committee will establish its own guidelines for evaluating applications, and will make a recommendation to the Board as to the awarding of the scholarship. No member of the selection committee may nominate nor recommend a candidate. A copy of the application is online and was included in a previous issue of Points & Angles. The guidelines used for selection shall be: Demonstration of overall academic scholarship with an inclusion of at least eight semesters of college preparatory mathematics, a statement of the intention to pursue a career in mathematics teaching, indication of participation in extra-curricular activities, especially those that may have a positive influence on a teaching career, a letter of recommendation from a math teacher who is familiar with the applicant's academic performance and his or her potential as a mathematics teacher, and a short response from the candidate (1-2 paragraphs) to each of the following prompts:

- What qualities do you possess that will help you in a teaching career?
- Describe a teacher who has had an impact on your education.
- Was there a time when you struggled with a concept in a math (or other) class? What did you do?
- What was your favorite math class? Why?
- Describe your favorite math problem. What makes it so great?
- What excites you about mathematics?
- Why do you want to teach mathematics? This response may be longer than the others if necessary.

**** Up to 3 awards are possible based on candidate qualifications. The organization reserves the right to award fewer scholarships if these are not met.**

MMC Board Report

By LYNN BOND

The MMC Board of Directors met on February 7 at Glenbrook South High School.

- The Board expressed appreciation to the Filliman family for again offering two scholarships. The application deadline for these and for the MMC scholarship is March 10.
- The Board also thanked everyone involved in the annual Conference of Workshops on January 28 at Evanston High School. Summer workshops are already being planned.
- Ballots for President-Elect and Board directors for 2017-18 will be mailed soon.
- Dinner meeting dates and speakers for 2017-18 are in the final stages of planning.
- MMC is looking for a new editor for Points and Angles for 2017-18. Contact John O'Malley for more information if interested.

The next Board meeting will be Sunday, May 21 at 2:30 pm at Pat Trafton's house. MMC members are welcome to attend any Board meeting. Please contact Pat Trafton at p.trafton@comcast.net if you plan to attend.

Some MMC Conference Of Workshops Photos



NAME		PREFERRED CONTACT Check one: <input type="checkbox"/> Home <input type="checkbox"/> Work	
HOME ADDRESS			
CITY	STATE	ZIP	
HOME PHONE	HOME E-MAIL		
EMPLOYER			
WORK ADDRESS			
CITY	STATE	ZIP	
WORK PHONE	WORK E-MAIL		
<small>ELECTRONIC-ONLY MEMBERSHIP</small> Check the box below for electronic-only membership. You will receive an email with a direct link to each issue of <i>Points & Angles</i> when it is posted on the web site, often before paper copies are mailed. You will no longer receive <i>Points & Angles</i> by mail.		<small>MEMBERSHIP TYPE</small> Check one: <div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div> <input type="checkbox"/> 1 year (\$35) <input type="checkbox"/> 2 years (\$65) <input type="checkbox"/> 3 years (\$90) </div> <div> <input type="checkbox"/> student*, 1 yr (\$22) <input type="checkbox"/> 1st yr teacher*, 1 yr (\$22) <input type="checkbox"/> retired, 1 yr (\$28) </div> </div>	
<div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div> <input type="checkbox"/> Electronic-Only Membership <small>FORM USE</small> Check one: <div style="display: flex; justify-content: space-between; padding: 0 10px;"> <input type="checkbox"/> New Membership <input type="checkbox"/> Former Member </div> </div> <div> <input type="checkbox"/> Renewal <input type="checkbox"/> Change of Address </div> </div>		<div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div>MEMBERSHIP COST</div> <div>\$</div> </div>	
<small>* The student and 1st-year teacher memberships are only available as electronic-only.</small>		<small>DONATIONS</small> <div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div>SCHOLARSHIP FUND</div> <div>\$</div> </div>	
		<div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div>SPEAKER FUND</div> <div>\$</div> </div>	
		<div style="display: flex; justify-content: space-between; padding: 0 10px;"> <div>TOTAL AMOUNT OF CHECK</div> <div>\$</div> </div>	

Make check payable to MMC

Mail completed form and check to:

MMC
 7339 W. Ibsen St.
 Chicago, IL 60631

MMC Membership and Change of Address Form



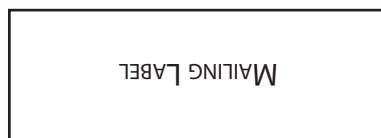
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Upcoming Events

Fri., Mar 3	Nicole Enzinger	Integers: A Space for Mathematical Play
Fri., Mar 10	MMC Scholarship Materials are due today...don't delay!	
Fri., May 19	Hyman Bass	Mathematical Variations on Some Familiar School Themes

Send upcoming event items to jomalley@glenbrook225.org no later than the date of the MMC dinner meeting preceding the issue in which the item should appear. All items are subject to editing.

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



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