

Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago
Volume XLVII No. 3 November/December 2017

How to Bake Pi: Making Abstract Mathematics Palatable

December Speaker

Eugenia Cheng



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.

Friday, December 15, 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

Reserve by Noon, Monday December 11 2017

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

ATTENTION:

This meeting will include a beef dinner as well as chicken and vegetarian options. There are a limited amount of beef dinners available so be sure to make a reservation in advance if you want to guarantee yourself the beef dinner.



Why does mathematics inspire love in some people and fear in others? Why do some people think mathematics is important for everyone while others think it is a collection of gibberish touching little of the world beyond the brains of some rare geniuses? Why do some think it is a creative art akin to poetry and music, while others think it is a boring tool for producing answers? In this talk I will present mathematics as a way of thinking, and not just about numbers. I will use a variety of unexpectedly connected examples including music, juggling and baking, as in the title of my recent book. My aim is to show that maths can be made fun, intriguing and relevant for people of all ages, by means of hand-on activities, examples that everyone can relate to, and peculiar anecdotes. I will present surprisingly high level mathematics including some advanced abstract algebra usually only seen by maths undergraduates or PhD students, yet show how to make it accessible even to children. My message is relevant to those who wish to spread their love of maths, as well as those who wish to overcome their fear of it. There will be a distinct emphasis on edible examples.

Eugenia Cheng is a mathematician and concert pianist. She is Scientist In Residence at the School of the Art Institute of Chicago and won tenure at the University of Sheffield, UK. She has previously taught at the universities of Cambridge, Chicago and Nice and holds a PhD in pure mathematics from the University of Cambridge. Alongside her research in Category Theory and undergraduate teaching her aim is to rid the world of "maths phobia". Eugenia was an early pioneer of maths on YouTube and her videos have been viewed over 10 million times to date. Her first popular maths book "How to Bake Pi" was featured on the Late Show with Stephen Colbert, and "Beyond Infinity" was shortlisted for the Royal Society Science Book Prize 2017. She also writes the Everyday Math column for the Wall Street Journal, and recently completed her first mathematical art commission, for Hotel EMC2 in Chicago. She is the founder of the Liederstube, an intimate oasis for art song based in Chicago. Her next book, "Thinking Better: The Art of Logic in an Illogical World" is due out in 2018.

Points From The Interior

By MATTHEW MORAN

It's November, which means that you know what is right around the corner...The NCTM Regional Conference in Chicago (11/29/17 - 12/1/17)! If you haven't registered yet, please do so ASAP at <http://www.nctm.org/chicagoreg/>. Please consider volunteering at the conference, and register ASAP at <http://www.nctm.org/Conferences-and-Professional-Development/Regional-Conferences-and-Expositions/Chicago/Chicago-Volunteer-Form/>.

Speaking of conferences, registration for the MMC Conference of Workshops on February 10, 2018 at Benet Academy is now open! Please register here: <https://conference.mmcchicago.org/>.

If you take a look at the NCTM Regional Conference book, you'll notice there are a few opportunities to see noted scholar, University of Illinois Professor, and recent MMC workshop leader and Friday Dinner speaker, Rochelle Gutierrez. I only single Dr. Gutierrez out because she was recently the target of harassment due to some fake news articles that misrepresented her work. As I don't want to contribute to more traffic on these sites, I'll refrain from sharing the links.

Articles like the ones about Dr. Gutierrez's work are designed to generate traffic, inflammatory comments, and further manipulate and polarize our population. Ironically, Dr. Gutierrez's harassers, who so confidently denigrated her work, are sorely lacking in the critical lens that she has worked for decades to promote in mathematics education. This isn't so surprising, as the article was not really about her work, but more about manipulation and division. What is so frustrating about the situation is that it worked. People that might agree with her ideas were reacting rashly because they didn't dig deeper into what her work is actually about.

Rochelle Gutierrez is my friend, and I was her student at the University of Illinois. I have worked with her as a mentor to some of her preservice teachers, and she has done more observations in my classroom than any principal I ever had.

My support for Rochelle is more than just respecting her as a professional, and appreciating that she is asking hard questions and helping teachers and teacher educators think about issues of race, class, history, and power in the context of education (which she definitely is). More strongly, however, I have grown and learned tremendously as a result of her work.

Through many classes, seminars, workshops, hours of conversation, and as a result of her influence and encouragement, I understand that mathematics is not neutral. I have learned to embrace Nepantla. I have a better understanding of institutional racism, and its history in education. I've also done my share of creative insubordination. The list of things I've learned from Rochelle goes on. Her work has helped make me the person that I am today. In fact, I tried to drop out of the College of Education at Illinois nearly twenty years ago, but Rochelle talked me out of it.

If you want to support Dr. Gutierrez, I strongly encourage you to familiarize yourself with her work, and go see her speak at the NCTM Regional. If you are already familiar with her work, then keep taking from it and putting it into action in your work. Like I have heard Rochelle say many times, "We act ourselves into new ways of thinking, not the reverse."

I'm looking forward to seeing everyone at the December meeting!

October Meeting Summary

BY ROSE STERR

Rico Gutstein, math education professor in the UIC College of Education, was our October dinner meeting speaker. He is the author of *Reading and Writing the World with Mathematics: Toward a Pedagogy for Social Justice* (2006). He co-edited *Rethinking Mathematics: Teaching Social Justice by the Numbers* (2013) with Bob Peterson. In both books, Gutstein writes on how one can incorporate social justice issues in a math curriculum. He credits the Brazilian educator, Paulo Freire, with his emphasis on critical thinking. Gutstein contends that the primary purpose of a math educator in the classroom is to impart the use of critical mathematics, learning and using math to understand one's reality.

Reading the World (from Freire): "...means to develop the knowledge of the power relationships affecting your life, to comprehend the history and interconnected, contradictory complex of forces shaping (not determining) your individual and collective agency in transforming your world. It means to connect the dots and grasp the seasoning, not just the salt."

Gutstein's challenge to us as teachers is to know your students, build relationships with your students, learn to teach "critical mathematics" by understanding the reality of our times...politically, culturally, socially. In his book, Gutstein emphasizes integrating the 3 C's in one's teaching of social justice in the math classroom: community knowledge, classical knowledge, and critical knowledge. Gutstein was part of the design team which founded the Social Justice HS ("SOJO") in the South Lawndale community on Chicago's Westside. Due to a successful hunger strike, SOJO opened in 2005. Gutstein taught a class called "Math for Social Justice" to 12th graders and would show students valuable lessons incorporating mathematics, but relatable to their reality.

He used this equation to drive home concepts like interest and amortization:

$$150 - 291 = 92$$

150: you buy a house and take on a \$150,000 mortgage [2000 median income in Little Village was \$32,320]

291: \$291,000 is what you've paid in so far on a 30 year mortgage

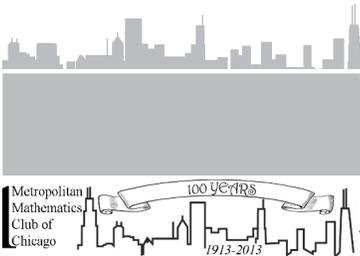
92: \$92,000 is what you still owe on the house

Needless to say these numbers created much discussion among the class and some solid, realistic mathematics came out of the lessons that transpired. SOJO pulls from several neighborhoods on the westside and in one student's evaluation of this unit (which I found on the website: www.rethinkingschools.org) you can tell that not only did they learn mathematics but they discovered some realities about becoming an adult, economics, racism, and a variety of other social justice issues:

When we did the 30 percent of the median household income for both communities we figured that we can't afford the houses that we are living in. Our family members kill themselves in factories trying to make ends meet. This unit taught us that we (brown and black students) have the same struggle. People always ask what similarities do we all have, and this unit tells us why we are the same.

Gutstein ended with a quote which challenges us to use mathematics to explain issues pertinent to our times "With mathematics, things can become more clear, especially when dealing with situations that are based on quantity or the amount of something or somebody. Once we understand these things, we take it out to the world. We use our knowledge to let others know what we know."

To find out more about the signs of our times and how education can impact making our society a better place, particularly for our youth, go to <http://www.teachersforjustice.org/>.



NCTM/ICTM Affiliate Report

By PATRICIA TRAFTON

A big thank you to all of you who gave of your time as a speaker and/or volunteer with the NCTM Regional Conference in Chicago this Fall! The conference was a success because of your generosity of time and talent!

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On Thursday, Nov 30 during the Chicago Regional, the Illinois Council of Teachers of Mathematics (ICTM) hosted the ICTM Awards where they honored the 2017 ICTM Award Winners and 2017 ICTM Scholarship Recipients! Three of the four award winners are MMC members. Congratulations to (1) John O'Malley IV received the Illinois Promising New Teacher of Mathematics Award, (2) Don Porzio received the Lee Yunker Mathematics Leadership Award, and (3) John Benson received the Distinguished Lifetime Achievement Award. Congratulations, John, Don, and John!

This Fall NCTM launched MyNCTM, an online space that “provides teachers, leaders, teacher educators, and researchers with opportunities and support to share, collaborate, and mentor and learn from one another.... Not only will it be easier to find and sort quality NCTM resources that support your work, but you will also be able to personalize the resource by adding your own comments and notes, see the comments of others, and store and organize it all online in one central location. In addition, you can upload your own favorite materials to share with others, get peer feedback, find materials recommended by others, and work collaboratively. For more information, please see the NCTM President’s Message of Oct. 26, 2017 on nctm.org.

In 2015 the NCTM Board of Directors decided to acquire The Math Forum after it was approached by Math Forum staff and informed that its relationship with Drexel University would be severed. The Board recognized the potential of The Math Forum and hoped that bringing the two together would translate into increased NCTM membership and an expansion of a vibrant community. Unfortunately, NCTM membership has continued to decline, and now NCTM can no longer justify two locations and an expense that far exceeds the revenue it generates....At its July meeting, the NCTM Board of Directors decided that effective January 1, 2018, that all full-time NCTM employees would be located in the Reston, Virginia office. Math Forum staff elected not to continue their employment with NCTM, and thus will no longer be part of NCTM effective Jan. 1, 2018. For more information and to read the rest of the article, see <http://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Matt-Larson/NCTM-and-The-Math-Forum/>.

METROPOLITAN MATHEMATICS CLUB OF CHICAGO

AN AFFILIATE OF ICTM & NCTM

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MMC CONFERENCE OF WORKSHOPS

A CONFERENCE IN WORKSHOP FORMAT, GIVEN BY TEACHERS FOR TEACHERS

SATURDAY, FEBRUARY 10, 2018, 8:30 AM – 12:45 PM

OPTIONAL FREE AFTER-LUNCH SESSION

1:45 PM – 3:00 PM

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FOR TEACHERS OF ALL GRADES K-16

LOW COST: \$32 MEMBERS; \$38 NON-MEMBERS; \$20 STUDENTS
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MMC Membership and Change of Address Form

Upcoming Events

Fri., Dec. 15	Eugenia Cheng	How to Bake Pi: Making Abstract Mathematics Palatable
Fri., Jan. 19	Paul J. Karafiol	Let Us Teach Wondering
Sat., Feb 10	MMC Conference Of Workshops -	Benet Academy Lisle, IL
Fri., Mar. 16	Esther Song	Math and Identity: How Our History Shapes Us
Fri., May 11	Zalman Usiskin	Mathematics and Diamonds: The Many Facets of Mathematics

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Send upcoming event items to jharding@d120.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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