

Bertrand Russell Visits the Math Department (1896)

Bill Dunham

The Mathematics Department of Bryn Mawr College has a rich history. Its founding chair was Charlotte Angas Scott, the first woman to earn a mathematics Ph.D. in Britain. It was home to Anna Pell Wheeler, a University of Chicago Ph.D. and one of the original trustees of the American Mathematical Society. And it welcomed the great Emmy Noether after she fled Nazi Germany in the 1930s.

Perhaps less well known is that Bertrand Russell|philosopher, mathematician, social critic, atheist, Fellow of the Royal Society, and Nobel Laureate|had strong connections to the department. Here we discuss his November, 1896, visit when he gave a series of geometrical lectures on campus. This was his first appearance at any U.S. college or university.

Bertrand and Alys Russell³

In being invited to speak, Bertrand had a distinct advantage: his wife, Alys Pearsall Smith, was a member of the Class of 1890 and|better yet|the cousin of BMC president, Carey Thomas. In a letter to Carey of February, 1896, Alys raised the subject: "If thee really can find him [Bertrand] a few, even one or two hearers, for six lectures :: he would love to give these lectures at Bryn Mawr." Although Russell became world famous in the 20th century, he was at this time still an obscure scholar, so Carey Thomas asked Professor Scott to check him out during her summer trip home to England. Scott met with Russell, discussed topics for his Bryn Mawr lectures, and endorsed an invitation with the observation that "He seems to be getting the more and the more interested with lectures,

M. Carey Thomas⁴

Then, having tamped down parental criticism, Carey got blasted by David Scull, a College trustee so conservative that he was known to remove books from the library because their contents were un t for young women's eyes. An irate Scull wrote to Carey about a passage he'd seen in a Philadelphia newspaper: "Only the other day, a woman came here from England and lectured before a lot of college girls saying that women should not be hampered by motherhood. Such teaching is harmful to the greatest degree." The paper did not explicitly mention Bryn Mawr, but Scull thought that people would gure it out and predicted an enrollment debacle in the coming year. Although his prediction never materialized, he made Carey Thomas's life even more miserable.

As a result of this situation when an innocent invitation to address the Math Department somehow morphed into a restorm of controversy Carey Thomas never again invited Bertrand Russell to campus. Decades later, she recalled "the great agitation" that his 1896 visit had caused.

Nonetheless, Russell did return on two occasions. One was in 1914 at the private invitation of Professor Lucy Donnelly, a revered professor of English and dear friend. The second, and more extensive, visit came in 1943 44,

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No Longer an Enigma: New Elective Sparks Interest

Veronica Benson-Moore '17 and Westley Mildenhall '17

"I think people who take
the class are puzzle-solvers" says
Penny

Close Knit

Ruby Mills '17

If you recently walked by the entrance to Collier Science Library on a Friday evening, you may have been confused by the combination of heartfelt groaning and boisterous laughter that spilled out from the room across the hall. Every week, the students of Math 502 (Graduate Real Analysis II) met with Professor Djordje Milčević for an "optional" problem session. By the end of the semester, this meeting became jokingly referred to as "the first problem session" by those students who congregated again on Saturday afternoons and Monday mornings to continue the discussion. Taking part in both the groaning and the laughter, I was one of those students.

The Bryn Mawr Math Department allows undergraduate students to enroll in graduate-level courses. There are several reasons why students choose to take advantage of this opportunity. Some participate in the AB/MA program, and need such courses for their master's degree. Others want to prepare for graduate school elsewhere, and to show potential programs that they have what it takes to master advanced material. And then there are people like me: I choose to challenge myself with an advanced course out of a peculiar sense of fun.

Graduate Real Analysis II fulfilled my expectations of a challenge. Working alongside graduate students inspired me to push myself to gain a deeper understanding of the material. A benefit I didn't expect was the rapport that developed among members of the class, including the professor. I asked one of the graduate students, Isaac Craig, about his experience in the course.

"I love how close knit the department is," Isaac responded. "You quickly realize that your study friends are your real friends." The students in Math 502 became study friends out of necessity, but real friendship emerged from the ways we encouraged each other. "As students, we all seem to belong to some network of support. You always know someone's struggling with you. It's a family."

The bonds we built were forged in broken chalk, cryptic textbook passages torn out hair, and occasional moments of mathematical clarity. What strikes me as I prepare to leave Bryn Mawr, is how this class was just a magnified example of what the math department and Bryn Mawr are more generally: a little pain, a lot of work, and a strong community.

Senior Plans

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Math Appreciation Week

The celebration formally known as “Math Awareness Week” has been renamed. “Awareness” weeks are for undesirable things: October, for example, is Breast Cancer Awareness Month, and Eating Disorder Awareness Week happens in February.

This year the math department celebrated Math Appreciation Week with a number of fun events including the two pictured below: The Pringle Ringle Wrangle, and The Great Samannah’s Mathe-“magical” Afternoon of Wonders.

Success!

Aja Ould '17 Wrangles a Ringle

Math Photographer Jill Li '18 (left)
and Great Samannah I, Hannah
Schwartz

Great Samannah II, Samantha Pezzimenti

Euclid, Euler, and Emmy: A Fall 2016 Conversation with Bill Dunham

Tina Kloufetos '17 and Sam Kacir '17

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My permanentjob

EY and REU: Summer Opportunities for Math Majors

Rose Kaplan-Kelly '17

In November 2016, the BMC Math Department hosted a panel discussion to inform students about internship opportunities and research experiences for undergraduates (REUs). Yichen Wang '17, Lia Yoo '18, Xinning Yu '16, Westley Mildenhall '17, and I spoke about our participation in research and internships during Summer 2016, and gave advice to fellow students looking for similar options. Yichen was a research assistant in biostatistics at The Wharton School at University of Pennsylvania, Westley had participated in the Mathematics TEU (Teaching Experiences for Undergraduates) Program at Brown University, and Lia was a project management summer intern at Vision Driven Consulting in Philadelphia. After the panel, Xinning kindly agreed to talk more about her experience at Ernst & Young, which, along with my time at an REU, highlight the diverse opportunities Bryn Mawr math majors have for summer work.

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program because, despite temporary setbacks, it was exhilarating to create new mathematics.

Whether it was proof writing or presentations,

collaboration or critical reading, I regularly used what I had learned as a Bryn Mawr math major in my summer research. While she too used the quantitative skills she learned at Bryn Mawr, Xinning

added that she also relied on techniques and knowledge learned outside the math department.

From working as a financial consultant to participating in knot theory research, the math major at Bryn Mawr provides its students with useful tools for research and business applications. Bryn Mawr math majors can choose from numerous exciting and challenging summer opportunities.

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Women in Data Science

Prianka Ball '17, Yilun Tang '17, Kewei Qu '17, and Yunxuan Cai '17

On February 3, 2017, 400 data scientists gathered at Stanford University in Palo Alto, California, for the 2nd annual Global Women in Data Science (WiDS) Conference. Meanwhile, participants in more than 75 locations worldwide joined the conference through live stream. Bryn Mawr College and SAP Next-Gen co-hosted the Philadelphia gathering, at which local speakers augmented the live stream experience. Local speakers included Assistant Professor of Mathematics Erica Graham from Bryn Mawr.

According to the conference website, "WiDS inspires and educates data scientists worldwide, regardless of gender, and supports women in the field." ¹⁵ An impressive slate of speakers offered encouragement and advice to those in attendance.

Diane Greene, Senior Vice President at Google Cloud, shared her experience of doing what excited her, and not worrying about where it would lead. After getting her master's degree in computer science at the University of California, Berkeley, she worked as a software engineer, and started VMware with her husband and graduate students. Greene talked about how she got into racing and sailing, from which she learned to constantly optimize decisions. She also discussed how data science uses optimization: machine learning for financial services is optimization for money, while analytics in health is optimization for a better world. She used the example of Airbus, which utilizes satellites data, to argue that machine learning has become better than people ever predicted. At the end of her talk, she encouraged people to try new things because they are more likely to succeed if they

Third Annual Philadelphia Undergraduate Mathematics Conference

Xiaoyang Chen '18 and Vitowe Mkandawire '17

Many Bryn Mawr mathematics students attended the Philadelphia Undergraduate Mathematics Conference, co-organized by Bryn Mawr College, La Salle University, and Temple University, and held this year on March 25th at La Salle University. Highlights of the conference included a plenary lecture by Donald Outing, Vice President for Equity and Community at Lehigh University (former Academy Professor in the Department of Mathematical Sciences of the United States Military Academy at West Point), a minicourse on mathematics in the game of SET by Liz McMahon and Gary Gordon, two math professors at Lafayette College, undergraduate mathematical presentations, a poster session, and a professional development session moderated by BMC's Professor Djordje Milčević. Two BMC math majors presented talks (Kewei Qu '17 on rewrite systems and Julia Lin '17 on the "Taxman" game), and Prianka Ball '17 gave a poster presentation on wind farms.

Photos from 2017 Philadelphia Undergraduate Mathematics Conference

Prianka Ball '17 gives poster presentation on wind farms.

Abigail Lee '19, Ruoyun Lei '17, and Maria Minaya '18 at the minicourse on SET

Photo Gallery

Pi(e) Day!

Penny Dunham's Homemade
Contribution

Dr. Frank Romascavage with his
Thesis Advisor Djordje Mili evi

Ziva Myer, Ph.D., and her
Thesis Advisor Lisa Traynor

Graduate Students (Mostly)

Holiday Party in the Teaching Theater

Time to Celebrate!

Awards and Honors

In 1997, the last

Awards and Honors

Ruoyun (Leila) Lei '17, an A.B./M.A. student in mathematics, and Westley Mildenhall '17, a math major and Gender14 0 Td (and)Tj /T1_1 1 Tf ()Tj/T1_3 1 T25. nd

More Awards and Honors

Kewei Qu '17, a double major in computer science and mathematics, and Yichen Wang '17, a math major and Economics minor, received the Anna Pell Wheeler Prize in Mathematics.

Yichen receiving award from Provost Osirim at the 2017 Convocation Ceremony¹⁸

Kara Breeden '18, a double major in computer science and mathematics, made the 2017 Centennial Conference Winter Academic Honor Roll in recognition of her academic performance and her performance on the basketball court.

Math major Emily Shinault '18 was awarded the Thomas Raeburn White Scholarship established by Amos and Dorothy Peaslee in honor of Thomas Raeburn White, Trustee of the College from 1907-1959. This scholarship provides funding for summer language instruction, her 71nd Dorothy (1899)

More Awards and Honors

Math major and economics minor Tianyi He '17 and e7(m94r)]TJ /T1_1 1 Tf ()Tj /T1_3 1 Tf 3.001 0 Td 4and

The News in Brief

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Professor Paul Melvin was a visiting scholar at the Institute of Advanced Study in Princeton during his sabbatical in the Fall 2016 semester.

Professor Lisa Traynor and Orsola Capovilla-Searle '15 (now a math graduate student at Duke University) recently published a paper titled "Nonorientable Lagrangian cobordisms between Legendrian knots" in the *BC* *h* *δ* *bl*

Research Associate Walter Stromquist is a co-author of the paper "Catch-Up: A Rule that Makes Service Sports More Competitive". The article proposes an alternative rule for "service sports" (tennis, volleyball, handball, etc.). In most such sports, whoever wins a point serves to the next one. According to the "catch-up" rule, whoever loses a point serves to the next one. One surprising result in the paper is that (under very general assumptions) the change in rule does not affect the probability that the first server wins a match.²⁰

Math major Jill Li '18 created and maintains the Bryn Mawr College Mathematics Department Facebook page.²¹

Math Ph.D. student Danielle Smiley attended harmonic analysis workshops at the Mathematical Sciences Research Institute in January 2017.

Helen Moore, a nationally distinguished applied mathematician and Associate Director in Quantitative Clinical Pharmacology at Bristol-Myers Squibb, gave a keynote Math Appreciation Week talk titled "Mathematical Optimization of Combination Therapy", in which she presented real-world uses of control theory and systems of differential equations to optimize combinations of therapies and identify potential drug targets and toxicity.

Bryn Mawr math major alumnae Aparajita (Opu) Bhattacharyya '12, Abigail (Abby) Kay '92 and M.A. '94, Michelle Lawson '92, Samantha Lopez '13, and Janita Patwardhan '14 returned to the Bryn Mawr Math Department for a career panel discussion during Math Appreciation Week. Opu is currently a M.B.A. candidate at The Wharton School at University of Pennsylvania, Abby is a physician and assistant professor at Thomas Jefferson University Hospital, Michelle is a sustainability and change management leader in Pennsylvania, Samantha is a mathematics and entrepreneurship teacher at Boys' Latin of Philadelphia Charter School, while Janita is a graduate student in applied math at University of Maryland, Baltimore County.

The "Great Samannahs" (also known as math Ph.D. students Samantha Pezzimenti and Hannah Schwartz) presented a spectacular array of mathematical magic tricks at an event for Math Appreciation Week.

Math Ph.D. students Danielle Smiley and Samantha Pezzimenti attended the EPaDel conference in Kutztown. Sam gave a talk entitled "Knot Polynomials and the Information they Encode".

Math Ph.D. students Samantha Pezzimenti and Hannah Schwartz gave talks at the Graduate Student Geometry and Topology Conference at Michigan State University.

Julia Lin '17 won the Senior Hoop Race at May Day. This is the second year in a row that a math major has won the Hoop Race.

Kara Breeden '18, Co-President of the Student Athletic Advisory Committee, is organizing a speakers' series combining sports and academics in different departments (e.g. history, mathematics, and sociology) for the 2017-2018 academic year.

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²⁰ www.maastrichtuniversity.nl/news/new-rule-makes-sports-more-competitive-and-fun-watch

²¹ www.facebook.com/bmcmathematics/

Credits

Editor-in-Chief: Amy N. Myers, Senior Lecturer and Program Coordinator for the Math Department

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The Editor-in-Chief on Fall Break