Know Your Wisconsin Mathematician

Interview with Professor Andrew Matchett, by Benjamin V.C. Collins

Where did you grow up?
I grew up on the south side of Chicago in the neighborhood known as Hyde Park and attended public schools there for grades 1 through 12.

Was there a time in your life when you discovered that mathematics was what you wanted to do?
I developed a love for mathematics in high school.

Where did you go to undergraduate school?
My undergraduate school was the University of Chicago.

And what about graduate school?
My graduate work was at University of Illinois at Urbana-Champaign. My thesis advisor, Steve Ullom, was all that an advisor should be, and I was fortunate that he took me as a student. My thesis was in algebraic K-theory.

What was the influence of your family on your education?
My mother was a mathematician. She earned a Ph.D. under Emil Artin in algebraic number theory at Indiana University in 1946. Growing up, I knew that I did not want to be a mathematician, because I assumed that math was for girls. When I was in third or fourth grade, I devised a proof that the sum of two odd numbers is always even. I knew that the sum of two or more even numbers was even. I reasoned that every odd number was some even number plus one. Then I saw it. The sum of two odd numbers would be the sum of two even numbers plus one plus one, and one plus one is even. I did not write anything down and at that age did not even have the idea to use letters to represent numbers. Several weeks after I devised this proof, I shared it with my mother, because I thought she might like it. She did, and fairly gushed about how nice it was. I was taken aback at her enthusiasm and resolved not to share any further little mathematical insights with her. I did not want her to get her hopes up that I was going to be a mathematician like her.

Are there any teachers who had influenced you to become a mathematician?
My first real math teacher was a tall, lean, charismatic African American man by the name of Milton Bins. This was in Hyde Park High School, a racially integrated public high school in Chicago. I was lucky to have Mr. Bins for two full years. He obviously loved teaching math and did so enthusiastically. The courses I had with him were Algebra and Intermediate Algebra & Trigonometry. By the end of that second course, I knew that mathematics would always be a part of my life. In my junior year I was in the math club. The teacher in charge of the club, Hilda Mason, told us one day that the area underneath the curve y=1/x was related to some kind of logarithm. We could even estimate log(t) by counting tiny squares under that curve. I could not believe it and wondered when I would ever learn enough mathematics to understand such strange things. The next year I took AP Calculus. We used the classic book by Thomas. In the middle of the course we came to the chapter on the natural logarithm. Thomas defined ln(t) as an integral and then deduced elegantly the properties that showed that it was truly a logarithm function. I was star-struck at how beautiful that was. The power of the method was breath-taking to me. From that experience, I have always preferred late transcendentals to early when teaching calculus.

One day Mr. Bins asked me how calculus was going. I said how much I liked it and how it seemed to draw so many things together. Mr. Bins understood exactly and said, “Wait until you take Galois theory. That really draws things together.” I inherited from my mother an idea of what a good proof should look like. However, Mr. Bins was the teacher who showed me by example what a joy it is to teach mathematics. He is the person who made me want to be a mathematician.

How did you end up at UW-La Crosse?
In 1982 I was looking for a job and got several offers. I accepted the one from UW-La Crosse. The mathematics department there was a vibrant place supportive of teaching and research, and La Crosse, with a fine public school system, looked like a good place for my wife and me to raise our three children.

What courses do you like to teach?
I have always liked teaching calculus, linear algebra, and the upper level analysis and algebra courses. When I arrived at UW-L, I cultivated an interest in statistics and have taught elementary statistics, nonparametric statistics, and mathematical statistics. I like all of these courses very much.

Over the years, did you find that teaching of mathematics changed?
Mathematics teaching has gradually changed in the past 30 years, but not as much as it sometimes looked like it would. In the 1980's there was a big push to re-center the curriculum around discrete mathematics. That never happened, though many schools did modify or augment their discrete math courses. Then there was calculus reform, which promised to do away with heavy encyclopedic calculus textbooks. That did not happen. The calculus textbook we use at UW-L has over 1000 pages, not counting the appendices. Where there has been real change is in the amount of undergraduate research at colleges and universities. At the annual Wisconsin Section Spring Meeting, we regularly now have large student paper sessions. Such a level of student participation was unheard of in the 1980's.

What do you think is the future of mathematics education?
The use of mathematical software in calculus courses is here to stay. It does not free us from hand calculations, but by teaching our students some programming skills, we make that software into an additional portal into mathematics for them. I think there will be some gradual evolution of the calculus courses to incorporate more and more of this in the future. Also we will be seeing more interdisciplinary courses, like mathematical biology and applied statistics.

How were you involved with the MAA over the years?
I have been on the Executive Committee of the Wisconsin Section of the MAA for all but two of the last 29 years. I was elected Secretary-Treasurer at the annual spring meeting in 1985, and, showing an unusual lack of imagination, served six more consecutive three-year terms in that capacity. I was Chair-Elect, Chair, and Past Chair of the Section in 2007-2010, and was elected Governor in 2011. My term as governor ends in June, 2014. I have greatly enjoyed being involved with the MAA, because of the opportunity it gave me to know and work with such a wide array of really great people. Every mathematician who teaches college level mathematics should be a member of the MAA!

What do you think is the best part of being a mathematician?
Learning and teaching go together. Whenever I learn a new theorem or proof, I imagine how I would explain it to someone. We are in the business of creating mathematical knowledge. The joyful nature of this splendid enterprise is the best part of being a mathematician.

What is the worst part of teaching mathematics?
The worst part of teaching is grading papers.

How would you describe what you did when you were talking to somebody outside of mathematics?
It is hard to explain what a mathematician does, but I always say that we are as much artist as scientist.

What of your work do you like the best? What are you most proud of?
In the Wisconsin Section, one of the accomplishments I am very happy about is Project NExT Wisconsin. This was launched in 1998 with a grant from the MAA, which in turn had money to give us thanks to a grant from Exxon-Mobile Corporation. I cannot take much credit for this, but, as Secretary-Treasurer, I did support the program in an administrative way. It has been a great pleasure to work with all the young energetic mathematicians who have served so creatively and skillfully as directors of Project NExT Wisconsin over the years.

What is your advice to college students and new teachers?
My advice to college students is that learning math or statistics requires unremitting effort. We often have to fight for understanding, but it is worth it. It is the teacher's job to encourage this hard work and to be attentive to it. Part of a teacher's job is to give his or her students the gift of attention in return for the student's honest effort.

What do you like to do besides mathematics?
Other interests of mine are cross country skiing, backpacking, canoeing, and downhill skiing. I have skied in the annual American Birkebeiner Ski Race for about twelve years.

Do you have any other comments?
I have a son and daughter-in-law who are mathematicians. They are Philip Matchett Wood and Melanie Matchett Wood. They are both on the faculty in the Mathematics Department at University of Wisconsin (Madison). [Ed. note: Melanie Matchett Wood was the subject of the Spring 2013 Know Your Wisconsin Mathematician interview.]

Who is a Wisconsin Mathematician that you would like to know? Send suggestions for the next KYWM to Ben Collins, collinbe@uwplatt.edu .