

MATH EM@TICS

“May the 4th be with you”

Department of Mathematics | Ithaca College

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This issue is dedicated to our graduating math majors and minors. Many of them have written for this newsletter memories of their studies at IC and plans for the future. We also recognize Professor Stan Seltzer, who is retiring this month after a career of teaching, scholarship, and service at Ithaca College. We asked Stan to write a reflection on his time at IC for this issue.

Congratulations, all! We are grateful for the time we have had together and the imprints you have left on us and our department over your time here, from 3 to 35 years.

A Note from the Chair

May is always a bittersweet month. We celebrate the end of another amazing year, but also say goodbye to our graduating math majors and minors. This year is especially difficult since we cannot even say goodbye in person, but we nonetheless celebrate your successes and wish you nothing but the best as you move on to the next stage of your lives. You are for-

ever a part of the IC Math family and we want you to stay in touch. Drop us a note from time to time.

For our returning students, we look forward to welcoming you back to the Williams Hall and to our offices in the fall.

Have a wonderful summer!

Dave Brown, chairperson

An Incomplete History of the Math Department: 1985–2020

Stan Seltzer

As I think is well known, I became a member of the IC community in 1984 when Nancy began teaching as a member of the art history program. (They became a department a few years later.) That was back in the day when the president still lived in Fountain Place and had a series of Christmas parties. They were always packed, and — aside from Nancy — I didn't know a soul there. I attended graduation as a civilian in the spring — the speaker was Roy Park — although by then I had been hired by the math-computer science department.

At the time, IC — and colleges elsewhere — were desperate to hire anyone who could teach some computer science, and my doing some retraining was an important part of our strategy to deal with the two-body problem. The department had exactly one person with a Ph.D. in computer science (and he left three or four years later), two mathematicians who were teaching computer science full time, and at

least three or four others who, like me, had Ph.D.'s in math and were expected to teach half math and half computer science. For the first decade, the math half consisted almost entirely of service courses: College Algebra, Precalculus, and lots of Math for Decision Making and Statistics, two of three courses students in the business school were required to take. Among the students who took Math for Decision Making from me are two current members of the board of trustees.

As for computer science, it was courses for the major all the way for quite a while. Over the course of my first five semesters I taught CS I, CS II, Assembly Language Programming, Programming Languages, and Operating Systems. One student took all five! If you think he deserves a medal, he probably has one, but not for that: last I heard, he was commander of a navy squadron. I also like to joke that

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Hats off to our Graduates

Kurt Burdick is a Physics major and Mathematics minor from Maine, NY. Some of his favorite memories in the Mathematics department at IC include discussing real world data analytics in Professor Pfaff's courses, and the class encompassing life discussions during Calc IV. Kurt will start work as an Associate Software Engineer a month after graduation, with plans to get a master's degree at Syracuse University starting next year

Keigan Case is a Math and Philosophy major from Adams, Massachusetts. He looks back fondly on the writing process for his thesis paper on taxicab geometry, which he worked on with his advisor, Dave Brown. It was a project that required a lot of time and dedication. Keigan remembers specifically the feeling of completing and submitting the paper, which was both a huge weight off his shoulders and reluctant goodbye to a meaningful project that he enjoyed working on. After graduation, he is planning to take some time to explore career opportunities or go to grad school to study sustainable city planning.

Benjamin Cordova is a Computer Science major and Math minor from Lehigh PA. One of the most valuable things a Math minor has given him isn't actually new mathematical skills. To Ben, the community engagement events with local middle/high schools provided an opportunity to excite young minds about the world of math. After most of these events he had multiple students say "I want to study math in college now!" Looking back, that is more valuable to him than any theorem or equation.

Ioan Dascalu is a Physics major and Mathematics minor from Watkins Glen, NY. His favorite memories of the math department are solving problems found on post it boards and solving fun questions with professors in office hours. For instance, the "impossible" triangle question, where by changing how a triangle is composed the area of the triangle changes. Ioan hopes to see more math brain teasers posted on those boards in the future!

Christina Faram was a December 2019 graduate that majored in Mathematics and minored in Education. Math is important to her but the people she met and the memories she made along the way is her biggest take away throughout the years. She could typically be found in her second home, the math lounge. A place filled with proofs and problems that brought her stress, but also a place that holds

lots of memories. There was never a dull moment in the lounge as math majors seem to have an uniquely amazing personality to them. During the most stressful times, they always remembered to take it easy. Whether it be the most random conversations and dance battles to routine coffee & food breaks, the memories from it all is what will make her a better teacher. Since graduation she has been working as a NYS certified teacher's assistant where she ensures students can have the same opportunity to learn but still have fun as she did. Starting this summer, she will be pursuing a Masters of Arts in Teaching where she hopes to continue to learn how unusual techniques and memories can help her future students learn.

Heetisha Inderjeet is a December early graduate who was a Math major and a Legal Studies minor. She was also an international student from a small island off the coast of Madagascar called Mauritius. One of her best memories as part of the math department was participating in the National Math Festival during her first year at IC. In preparation for their presentation at the conference in DC, she and the other participants had fun making geometric shapes with balloons and enjoying some free pizza! Now that she is a graduate, she is taking some time off to catch up with all the sleepless nights she spent with friends in the math lounge doing homework or just hanging out, before moving on to the next chapter of her life.

Robert Melikyan will be graduating with a B.S. in Physics and minors in Math and Computer Science. Robert would like to personally thank Ithaca College for the opportunities and experiences. These experiences ranging from the mathematical ego check formally known as the Putnam Exam, to his introduction in computational astrodynamical research with NASA's OSIRIS-REx mission. In the coming year Robert will be preparing for graduate school exams and applications while finishing his first scientific publication. Robert wishes success to his fellow seniors.

Molly Noel is a Mathematics major with Economics and Computer Science minors from Essex Junction, VT. One of her favorite memories of doing math at IC was competing in the COMAP mathematical modeling competition her sophomore year. She had a great time working on the project and eating pizza with her group members. The competition also hap-

pened during the Winter Olympics, so curling was usually playing on the projector screen in the classroom where they were working. Molly is super excited to be starting the mathematics PhD program at RPI next year!

Winona Platt is a Biology major with a Math minor from New Egypt, NJ. Winona's favorite memory from being a math minor was Megan Martinez's "Math Experimentation" class, which she took her first year at Ithaca College. It was her first experience with programming and presenting original research. She will remember Mean, Median sequences for her entire life. She plans on taking a gap year and then pursuing a Ph.D. in Biostatistics and Fishery Sciences.

Connor Robinson is a Math major with Computer Science and Education Studies minors from right here in Ithaca, New York. Connor has been accepted to University of Buffalo to pursue a Ph.D. in mathematics and has deferred his start date until the Fall of 2021. Connor enjoyed his time in the math department and especially loved the days where he could spend hours in the math lounge with his colleagues, working through problems and socializing in between courses in the department. Connor was also lucky enough to have multiple opportunities to do independent projects with professors in the department, and values those unique opportunities greatly.

Benjamin Welsh is a Computer Science major with minors in Graphic Design and Mathematics. While Benjamin only completed the tail end of his math minor at Ithaca, he thoroughly enjoyed all of the math classes he took here. His favorite memories from the math department are of the discussions that took place in modern geometry with Teresa Moore. Following college, he is pursuing a career in game or graphics programming.

Austin Whitney is a senior Mathematics major at

Ithaca College with minors in Education, Coaching, and Business Analytics from Mexico, NY. One of his fondest memories happened during his Introduction to Analysis course where he was reassured IC was a place to be pushed academically and a place to form lasting relationships with students, faculty, and staff through his friendship with Professor and Department Chair, David Brown and his fellow classmates. Austin will be getting his Master's in Applied Data Science from Syracuse University and would like to thank David Brown and Capstone Advisor Stan Seltzer for their commitment to his success.

Jaclyn Yoselevich is a senior Legal Studies major, with minors in Mathematics, Jewish Studies, Communications Studies, and the Ithaca College Honors Program. One of her favorite memories of mathematics at Ithaca College was when she brought statistics into her trial work while portraying an attorney with the Ithaca College Mock Trial team. Thanks to both her family's background of mathematics and her studies at Ithaca College, she discovered that the "expert report" of a witness in the case used the wrong mathematics methods in coming to the conclusions, helping the team pull a victory against Princeton's Mock Trial team at the Regionals Tournament. Next year, Jaclyn plans to continue her education at Albany Law School.

Joshua Hayden, Math-Economics and Computer Science majors, Journalism minor

Alexander Massoud, Physics major, Math and English minors

Tea Mdevadze, Computer Science major, Math minor

Andrew Polcari, Physics major, Math minor

Alex Python, Computer Science major, Math minor

Alexander Tuong, Physics 3/2 Engineering major, Math minor

Wyatt Vigilante, Physics major, Math and Computer Science minors

Extra Credit:

"The only constant in life is change"

I have \$4.65 in quarters and dimes. If the dimes were quarters and the quarters were dimes, then I would have \$1.20 more. How many quarters do I have?

Problem submitted by Dave Brown. Send complete answers to Prof. Visscher at dvisscher@ithaca.edu. Correct solutions will be awarded either a dime or a quarter.

An Incomplete History of the Math Department: 1985–2020, *continued*

one of the current AVPs was a C student. (He did quite well in C Programming.) Somewhere along the line I taught Theory of Computation, a course I had never taken — not even a four-week summer course, which was the extent of my formal background for the other upper-level CS courses.

The last real CS course I taught was CS I in Spring 1996. There were two interesting things about that class. By then, the computer science faculty had decided to change the language from Scheme (a Lisp dialect) to Java (I think). I had never taught CS I with Scheme before, and Scheme is nothing like Pascal, the language everybody used when I got started. The second is that there was a mild scheduling hiccup: the fourth hour conflicted with about 20 minutes of my calculus fourth hour. (CS fourth hours were scheduled at crazy times.) So I can claim to have taught two courses at the same time. The rules for TAs were not as strict then as now, so a TA would proctor my calculus quiz and I would run off to the computer lab. Just to make sure it wasn't too easy, the calc class met in CNS, the CS class in Williams.

The qualifier “real” on CS courses is that I taught Discrete II, which had a CS number, the following fall. Still, it's worth recalling that math and CS were both housed in a single department, although there was very little interaction between the computer science faculty, all of whom actually had backgrounds in computer science, and the math faculty. By then, things were relatively peaceful, which had not always been the case. The math-CS department went out of existence in Fall 2005 with Jim Conklin as chair. I returned from sabbatical as chair the following year.

Here's a curiosity. When I returned from my first sabbatical, I was smack in the middle in terms of seniority: 14 people had been in the department longer, 14 fewer. Seven years later, I returned from sabbatical and was still the median member (after the downsizing of the mid-90s, we were down to 21). Same thing in Fall 2006 at which time there were 15 continuing math faculty. The pattern finally broke in 2013.

You may have noticed that I am the only member of my “class,” but the department hired at least two other people in 1985. One was hired to teach both math and CS, and I don't recall the circumstances behind his departure. The other “dropped out” to become a stay-at-home father and freelance mathematician. That was Jeff Weeks; he was subsequently

awarded a MacArthur.

As for downsizing in the early 90s, it was not a pleasant time. The first tenure-eligible faculty member on campus who was not rehired was a member of the department, and delivering the news to him — I seem to have neglected to mention that I was chair at the time — is the most painful thing I had to do (and the only one I'll mention here). To complicate things just a little more, he was an Iowa alum, and I knew his advisor. (And his advisor knew me.)

Untenured faculty were understandably very anxious — just as now — and once things settled down one of my happier moments was being able to send a memo assuring them that their positions were secure. I know Teresa was one recipient, and I suspect Jim and Osman were as well. (I'm sure I have a copy in my file cabinet, which is currently inaccessible; that was before you stored everything on your hard drive or the cloud.)

Somewhat remarkably, while this was taking place, the department was also preparing to move to Williams, which was renovated after the sciences moved to CNS. Before the move, we were on the fourth floor of Muller with economics and history. There were not enough offices, and all untenured faculty members shared offices. My office mate was a woman who taught computer science, and we had the office at the Campus Center end of the building with a nice view until Emerson was constructed. From time to time I would take the fire escape to the third floor where Nancy had her office (shared, of course).

Williams Hall was not the first option presented to us. On my second day as chair, I was called to the dean's office and shown a blueprint of Dillingham basement. If this sounds to you like a dean trying to muscle up a rookie department chair, it sure did to me. But the space there was so inadequate that it was a pretty easy matter to explain why it just wouldn't work. We moved to Williams in Fall 1994. I kept that blueprint of Dillingham — with the word “NOT” over the middle — for quite a while, but I think it has been discarded. But if anyone would like a brick from the old Williams Hall, I have one in my office I'd be willing to part with.

Segue: On the Leno vs. Letterman debate, I was always on the Letterman side, and one of my Soph Seminar (which morphed into World of Mathematics) talks was a top ten list of things that every mathematics student should know. Some were “serious,” others frivolous (the number of seconds in six weeks

is 10!; the harmonic mean of 3 and 4 is $24/7$).

There is no top ten list of my favorite classes, but a few that would be strong candidates for inclusion are the four-Alex Linear Algebra class (about 15 students, four named Alex) and the two Case of Beer Linear Algebra class (two students named Case, one named Beer). Occupying two spots would be the Calculus II/Analysis parley: there were five students who were in both. Two who met in Calc II their first semester at IC are married to each other. As for the Analysis class, I would generally arrive at the office around 9:00 and it was not at all unusual for three, four, or all five of them to be there, as Arlene can attest. (Then, as now, Analysis class was at 10:00.) Another twosome was Calc I/Calc II (Fall 1994/Spring 1995). There were a number of repeat offenders there, too; but there are a couple of other aspects of those classes making that memorable. Fall 1994 was our first semester in Williams Hall, so that was something we were looking forward to. It was also shortly after our activity book was published, and I had students doing activities virtually all of the time. So much so that at some point in the spring when I started to lecture, one of the students said, “Oh, you’re going to teach today.”

There is a bit of recency bias here, and I would be remiss not to include the first five semesters of computer science. While only one student completed the pentathlon, several were in two or three. CS students tended to bond in the computer labs — there was no such thing as a laptop then; the department owned one “portable” computer that was better described as luggable — so there was a real sense of camaraderie. One student of that era (a three-timer) is the mother of a student who took two courses from me; that was the first of my two-generation sets. Son in the second case also took two courses, dad only one.

With the passage of time, it is easy to forget how things used to be, but things certainly have changed. Teaching load, a topic of conversation right now, is one. When I arrived, “everybody” taught a 24-credit load: four three-credit courses a semester. The quotes acknowledge that the teaching load in math-CS was 22. I think the rationale was that we taught a combination of three- and four-credit courses as well as the fact that we staffed the Eternal Light Room. However, I don’t discount the fact that we had savvy leadership and the largest department on campus. Then, somehow, when the H&S teaching load went down to 21, we managed to teach 20.

The decreased teaching load was an overdue response to increased scholarly expectations. The IC Calculus Group was — sort of — big stuff because we

were essentially the first non-science group to receive external funding. I believe our “big grant” was in the \$50K range (worth close to \$100K today), and another group in the department was successful with a grant to equip a classroom with Sun workstations that could support Mathematica.

Getting back to the Eternal Light Room, one thing I had forgotten is that Eternal Light Room hours were — as the name suggests — in the evening (akin to the Student Help Room, but staffed by faculty as the Tutorial Room is). Prior to the move, there was no space during class hours for such a thing; having space where we could provide daytime walk-in help was one of the big benefits of the move to Williams. I am also reminded that for a time, the CS faculty had its own Eternal Byte Room.

Although the department has always paid considerable attention to the curriculum, many of the courses we offer have been on the books “forever.” But there have been changes. Aside from Basic Stat. Reasoning, all the statistics courses have been revised or newly created. Way back, we offered standard College Algebra and Precalculus courses; at some point these were redeveloped as Power Algebra and Dynamic Functions. (The thought of those titles still makes me wince.) These gave way to College Algebra and Trigonometry. As part of “tightening up” our curriculum, we combined Concepts (the title of the proofs course), Linear Algebra, and Differential Equations into a two-semester sequence Linear Algebra, Modeling, and Reasoning 1 and 2. (Confession: I had to look that title up.) Similarly, there were many upper-level courses that were taken off the books in favor of the “Topics in” courses. Since fewer were being offered, these became four-credit courses.

The menu of degree options has also been reduced. This is more recent with the BS coming on the books in 2017. Prior to that we had, in addition to the Math BA and the Math BA with Teaching Option, a collection of hyphenated majors: Math-Computer Science (with and without Teaching Option), Math-Economics, and Math-Physics.

Probably the most significant change is the support for undergraduate research. Part of this is reflected in the curriculum — Experimentation, Junior Seminar, and Research Experience — but I think it goes deeper than that. Of course, fostering undergraduate research extends beyond the department, but we were early adopters and — dare I say — leaders. We routinely have two or three students go to REUs each summer, but it was not always this way. I recently saw one of our first students to go to an REU. She had

been my advisee (also Nancy's; for a time it appeared that she was going to grad school in architecture), and I was amused to learn that she met her husband at that REU. It also makes me chuckle to recall that she had an internship at Comedy Central.

Since this is not chronological, it's not so obvious when to stop, but — abrupt though it may be — this seems to be as good place as any.

—*Stan Seltzer*

P.S. The day I write this, May 2, is in some ways a significant date: I have now been an employee of Ithaca College for exactly half my life. It has taken a while to get here, but it will only be a few months before I hit this milestone again in the opposite direction.