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Calculating Intersections:
The Crossroads of Mathematics and Literature in the Lives of Mother and Daughter

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Synopsis

This article tells the stories of how we, Della (mom, mathematician) and Hannah (daughter, writing instructor and bookseller), arrived in our professional settings through the lens of mother and daughter. For us, the intersections of literature and mathematics inspired many of our pivotal moments.

Introduction

"In all the world that day there was nothing finer than Mr. Griggs’ work.”

Newbery Medal winner Cynthia Rylant chose these fourteen words to conclude her 1989 children’s picture book Mr. Griggs’ Work [13]. The book celebrates the life of Mr. Griggs, a postal worker who loves his job.

We would like to thank the thoughtful comments from the reviewer.
Della Dumbaugh and Hannah Fenster

thinks about it all the time, and finds himself heartbroken when an illness takes him out of his beloved post office for even a single day. When he recovers, he returns to work with unparalleled joy, squeezes “the dickens” out of a young boy in line that day, and admires his scales, postage meters, and punchers. With Mr. Griggs back in his post office, the world is set right again.

The authors of this article, Della (mom) and Hannah (daughter) discovered Rylant’s book on one of their weekly library excursions in the late 1990s. The book became a staple in their household, not only for the precious children’s story but also for the broader message that resonated with Della as she pursued her vocation as a mathematics professor. Della loved (loves!) her work and Rylant’s story identified the power and value of a profession that fits like a second skin. Hannah, Della’s daughter, grew up reading about Mr. Griggs, and is beginning to consider seriously what might be the equivalent of “Mr. Griggs’ work” for her. She is now an Instructor of Writing at Goucher College and a passionate independent bookseller.

This article tells the stories of how we arrived in these professional settings through the lens of mother and daughter. For us, the intersections of literature and mathematics sparked many of our pivotal moments.

Since she met Mr. Griggs more than two decades ago, Della has ended every mathematics course with this story and the natural segue it provides to encourage her students to find a profession they love. What started off as a seemingly innocuous tradition has become something of a legend by now. Even more, it serves as an example of the unexpected ways motherhood and mathematics can come together to yield beautiful outcomes for mothers, children, students, and colleagues.

Mother: Della

Hannah was born on a snowy Sunday morning in February, 1993. As planned, my husband had alerted my best friend and University of Virginia graduate school colleague, Patti, of Hannah’s arrival. Patti and I had worked alongside one another for an entire year preparing for our general exams. We had labored each week in seminar together. We had discussed the effectiveness of various teaching approaches. On that morning, those mathematical exchanges effortlessly expanded to include the entirely new subject matter of Hannah.
That Sunday night two other graduate school friends, Paula and Deirdre, came to visit in the hospital. I gave Paula my statistics book and notes so she could teach my Tuesday class for me. All of the statistics classes had a test that Thursday night from 7-8 p.m., and I had hired another graduate student to cover my class during the test and the mandatory “grading party” that followed from 8 p.m. until around 1 a.m. There was no maternity or parental leave, so I planned to return to the classroom the following Tuesday. I wasn’t quite sure how I was actually going to accomplish my return to the classroom, but I felt satisfied that I had crafted a plan for this time. Plan. That word began to take on an altogether new meaning now that a baby was part of it.

When my husband and I brought Hannah home from the hospital two days later, we could hear the phone (note: landline, attached to the wall) ringing when we opened the door. Naturally, I thought it was a friend or family member calling to wish us well. I couldn’t wait to answer it to celebrate my precious daughter’s birth. It was not a friend or relative, however; it was the UVA faculty member who oversaw the twenty-one statistics classes taught by graduate students. I did not need to put the phone to my ear, I could hear him screaming into the receiver about my irresponsibility for having a child during the middle of the semester when I had assigned teaching duties. In particular, he insisted that I attend the statistics test and grading party two days later. When I tried to explain that I did not think I could manage that physically, he only screamed louder.

I did not know what to make of this disturbing phone call. Was this normal? Was this the expectation for every woman who had a baby in the middle of the semester? Hannah was only fifty hours old and I felt my mathematical future was already hanging in the balance. I could only think to call our beloved department secretary, Connie, for advice. Connie served as the emotional backbone of the department with her loving conversations and birthday treats. Normally the gentlest member of the department, as I unraveled the details of my phone conversation with the statistics professor, Connie was anything but gentle. She interrupted me and firmly insisted, “I will take care of this. Don’t think about it another minute.” Within an hour, the chairman of the department called to apologize and to assure me that it was perfectly acceptable to send another graduate student in my place for the Thursday evening festivities. He also told me that the statistics professor would apologize for his insensitivity. The latter never happened.
I did return to teaching the following Tuesday. I introduced ten-day-old Hannah to my enthusiastic students and then handed her to her dad who took care of her for the next 75 minutes. Without realizing it, this began a routine we would maintain for the rest of the semester. That same day I interviewed for a dissertation fellowship, which ultimately earned me a research assistantship for my final 1993-1994 year of graduate school.

Even in those early days of life as both mother and professor, I found I liked having both a daughter and a job that involved teaching and research. I could already see how they complemented one another. I loved the seemingly ordinary moments of raising a child that centered around feeding, bathing, and caring for another human being. I also loved our own emerging traditions, particularly reading and singing before every naptime and bedtime. All the while, I still loved the classroom. Teaching my college students calculus, linear algebra, or abstract algebra had lost none of its appeal, and in fact, became an even more joyful part of my life. The vitality of the classroom, the feel of the chalk in my hand, and the familiar discussions of the derivative as the slope of the tangent line grounded me. The requisite stillness required for research suddenly acquired a certain preciousness. Then and now, these aspects of my life combined together to make me a richer person as a whole.

Within a couple of months, Hannah developed something of a routine, and I built my work schedule around hers. There wasn’t a playbook for these early days (there still isn’t); Mama, Ph.D. [6] and Professor Mommy [5] were years away from publication, but Hannah and I found our way forward. These experiences would later give shape to my commitment to and support of young women faculty.

Although I didn’t realize it at the time, these early months set in motion a lifetime of habits and traditions for all of us—for Hannah, for her two brothers who would come later, and for me. I learned to make a beeline from the nursery to my desk, for example, to find my work focus quickly and to set aside dishes and other household tasks for the times of day when my brain was less nimble. It would be many years before I would recognize the benefit of what we affectionately called “Hannah’s schedule.” It was my collaborator at the Erwin Schrödinger International Institute for Mathematics and Physics in Vienna who identified this quality for me in 2005 when he remarked, “I have never seen someone find their focus so quickly. You arrive in the morning, prepare your tea, and are ready to work 90 seconds later.”
Indeed, this strategy helped me finish research projects (although having a collaborator is a definite boon in this area, too) but it meant that I did not do a lot of lingering in the common area.

Reading and singing with Hannah and her brothers at naptime and bedtime provided a much-needed sanctuary for me. No matter what the demands of the day, it was simply impossible not to savor these meaningful moments snuggled close to a small child taking in the (fictional) realities of Lottie & Herbie (in Lottie’s New Friend [10]) or Lydia Grace (in The Gardener [4]) or Mr. Griggs. These stories, which emphasized time-honored truths about friendship, love, and meaningful work, became our own as we wove them into the conversations and experiences of our lives. Contemporary author Celeste Ng recently affirmed this long-held view when she discussed the formidable messages of picture books in her September 24, 2017 interview in the New York Times Book Review [14]. She said that she finds it a “relief to turn to children’s literature” as she reads with her six-year-old son every night. She described “thoughtful, beautiful” picture books as a “balm for the soul” that give her “hope for the future.”

I went on the job market shortly before Hannah’s first birthday and could only manage the demanding and erratic interview schedule at the Joint Mathematics Meetings in Cincinnati with my mother in tow to take care of Hannah. Tenure-track positions were in short supply that year, so I interviewed for several one- or three-year term hires. I was quite excited about an offer for a one-year position at the University of Richmond since I knew they planned to advertise a tenure-track hire the following year. Even though the chair of the hiring committee took it upon himself to inform me there was a “big difference between a term hire and a tenure-track hire” and that I “should not even consider applying” for the long-term position, I accepted the job. I landed the tenure-track job the following year.

Years later this same colleague and my chair discouraged me when I inquired about coming up for full professor. “Too early,” they each replied. I asked the Dean instead. The Dean’s reply? “Why not? You have a slam dunk case.” And so I did.\footnote{I felt affirmed a few years later when Kristen Ghodsee and Rachel Connelly published their Professor Mommy [5]. In their Chapter 9 on “Coming up for Full Professor: Your Last Promotion,” they sum up the experience of waiting for your colleagues to encourage you to come up for full professor. In two words: “Forget it” (page 173).}
In the end, I have enjoyed a storied 24-year career at the University of Richmond, in part because of the institution’s many opportunities to continue learning and my department’s early support of my life as a mother and an academic. But I do not want to suggest that it was easy. Or that I had the support of my department at every turn. In the end, though, many opportunities that began at home or at the University of Richmond helped shape me into both a better professor and a better mother.

Some of the most obvious intersections of academics and family came from the interesting people we met and the exciting places we traveled. My teaching and research careers brought many people into our lives that we would not have met otherwise. Friends from near and far joined our dinnertime conversations and, in some cases, became part of our extended family. One student joined our family for weekly Andy Griffith reruns (and later wrote about these memorable times together in his letter supporting my promotion to full professor). Another student ventured to Nantucket with us on an extraordinary family vacation. A large collection of students taught us that non-native English speakers make good teammates for the word game Taboo and that the buzzer in this game needs no translation. My work with the Carleton Summer Math Program for Women introduced us to Deanna Haunsperger and Steve Kennedy and their children Sam and Maggie. Their home was—and still is—one of the few places on earth I felt comfortable taking a family of three children for an overnight visit.

My research program took me to various corners of the world and, in turn, those experiences became a part of me that I took home to my family, students, and colleagues. Excursions to Oberwolfach, San Francisco, Pisa, Cambridge, Zurich, and Vienna, among others, enhanced both my professional career and my personal life. In Oberwolfach, for example, I had more than five full days to devote to research without a single meal to prepare or carpool to drive. I stayed up late, awakened early, and filled my Moleskine with formidable thoughts I would revisit later. I returned to my family and students refreshed even though I had, ostensibly, worked the whole time.

Without a doubt, the most unexpected and delightful surprise of my career was the stunning role the city of Vienna, Austria, would play in my research, my teaching, and my family. Research trips to Vienna ultimately led to the creation of a travel course for my students at the University of Richmond and to a sabbatical there when my children were 12, 8, and 5.
I have written about these adventures in [3]; Hannah offers her perspective on them below. Rachel Connelly chronicles the delights of professional travel in the life of her family in *Professor Mommy* [5].

There were more subtle intersections of my professional and personal lives. I had often invested late night and/or early morning hours in my work, especially when my children were young and opportunities for quiet reflection were at a premium. It turns out this home work ethic was not lost on Hannah. When I won a Statewide Teaching Award, Hannah would only attend the award ceremony, not the lunch afterwards, since the latter would interfere with her 5th grade Science Fair presentation. My tenure and promotion process formed a significant part of Hannah’s childhood. In the summer of her 10th year, Hannah spent two nights hole punching 750 student evaluations for my supplementary binder, sneaking peaks at handwritten comments by students. Many years later, these family conversations about the professoriate helped her forge relationships with her college professors since she understood the language of their world. Looking more broadly, I recall the time when we saved enough money to buy Hannah a car. I insisted she join me for the financial transaction. When the car dealer put us in a back room waiting for over an hour, we walked out. When the manager ran after us, Hannah heard me ask if he would have treated a man differently. His stumped response made my world very real for Hannah. As she put it, “I’ve heard you talk about these types of situations, Mom, but now I’ve seen them.”

In the early years of our shared history, as Hannah made her way through pre-school, kindergarten, and elementary school, I made my way through the tenure process in a mathematics department filled mostly with men. It turns out that while I was ostensibly selecting books for Hannah from my own childhood, I was actually choosing books with strong young women protagonists. In Carolyn Haywood’s *Betsy and the Boys* [7], for example, Betsy joined the formerly all-boys football team, and in Maud Hart Lovelace’s *Betsy-Tacy* [9], Betsy took the bus on her own downtown to the new Carnegie library. These independent (“irrepressible” as the publisher referred to one of the Betsy’s) young women bolstered both of us in our respective journeys. My own mother had done the same for me—and my three sisters—in her own way at our home in Kentucky in the 1970s. When I was about 13, one of my mother’s new pieces of cross stitch appeared in the hallway without fanfare or discussion. It read, “Whatever women do they must do twice as well as men to be thought half as good. Luckily, this is not difficult.”
Perhaps not surprisingly, then, encouragement emerges as a prevailing link between Hannah and me throughout the quarter century of life we have shared together. While we recorded scores of daily responsibilities and activities in little rectangles on a calendar that hung on our kitchen wall, we did not chronicle the in between moments that held them all together. There, almost without looking, my daughter’s life and my professional journey grew alongside and in support of one another.

**Daughter: Hannah**

In 2001, when I was 8, Mom left for a week to attend what I understood at the time to be (and later confirmed was, in fact) one of the most prestigious math institutes in the world. I also knew that it was in Oberwolfach, a word I could hardly pronounce, and it would be the longest she had been gone in a long time, since my littlest brother Casey had just been born. The night before she left, she pressed a small, fabric angel ornament into my palm.

“This is to remind you that I will always be with you," she said. After pointing out that the angel had the same color hair as hers, I carried that angel around for the entirety of her absence.

I spent more of the week than usual flopped on my bed with books, an activity I usually shared with Mom, since the friendliness of *Betsy-Tacy* [9] and *The Cobble Street Cousins* [12] alleviated the pangs of missing her. I also kept a journal with detailed narratives of day-to-day routines (“we vacuumed today”) so Mom would not feel behind when she returned. In retrospect, I realize these two “coping mechanisms,” so to speak, were closely related. The sheer number of stories Mom and I read meant my young mind never questioned that I could record and write my own.

When she came back from Oberwolfach, Mom’s stories, were — shall we say — less mundane. Aware of her audience, Mom allowed the ones about the talks and dinner discussions (all highly transformative for her) fade into those that appealed to an eight-year-old, those about the other side of quotidian academia. At school, I spilled my secrets to my friends instead of sharing gossip about the school dance. There was an entire closet at the Mathematical Research Institute — for chocolate! The Institute was in the most beautiful mountains, with plenty of windows to take in the views. Mathematicians drank a lot of wine. Mathematicians liked to hike, for long periods of time, but they were very busy with their meetings.
My eight-year-old best friend, who would go on to earn her Ph.D. in chemistry from Yale, listened attentively. We knew, even then, that experiences matter, but so do the stories you tell about them.

What I now realize is that from these early moments of story-telling for our benefit, Mom was deeply aware of the “side opportunities” that her math-related experiences could create for my brothers and me, and for the friends we held dear. This awareness allowed me to think of her experiences as ours — a gift that has, in many ways, formed the foundation for my early adult life.

As Mom has written above, the influences of mathematics extended far beyond office walls and into many corners of the world, privileges I had the fortune of experiencing by extension. In 2005 we moved to Vienna, for Mom to spend her sabbatical working with her collaborator at the Erwin Schrödinger Institute. I was twelve. I prepared dutifully: videos to learn how to request ice cream in German; stationery to write to my best friend; coats and mittens for the freezing winter. But nothing could have prepared me for the feeling of the first moments in our new apartment. We were really there! Six months stretched out in front of me like decades. Mom, seeing my startled face, stopped unpacking and said, “Let’s take a walk.” Bundled in our new outerwear, we headed down the stairs hand in hand and across the street, onto the footbridge over the Danube Canal. Unbeknownst to me, this was the first of seemingly infinite times I would walk this way, the beginning of my daily solo journey to school by foot, subway, and train. One of the most significant, if unintended, consequences of this new Viennese life would become my newfound adeptness at navigation, in both the physical and cultural senses.

I found unbounded joy in the freedom of movement offered by a culture that — supported by a reliable public transportation system — trusted children to travel alone. Powered by the thrill of independence, I taught myself to order einmal Semmel mit Schinken und Senf (one roll with ham and mustard) as an after-school snack and ein Stück Pizza mit Mais, bitte (a slice of pizza with corn, please) at the subway station pizza stand; how to explain to a frowning policeman that I did have a train pass — at home; and how to offer a clipped “Entschuldigen Sie bitte” when squeezing into a tight car. At home, I read and re-read *A Wrinkle in Time* [8]. I am certain I read other books during this time in Vienna, but I can only remember that one.
Meg Murray’s willingness to engage with difference, to not only believe in but to try a tesseract, and to move through fear in an unknown place, made sense to me on a fundamental level.

Three years later, at age 15, this comfort with newness and adventure led me to a new sense of my own identity. In my first “real” travel supported but not led by Mom, I had the unbelievable fortune to attend Interlochen Center for the Arts to study creative writing over the summer. There, I lived in a cabin where the introductory question was not, “What do you like to do?” but “What do you do?” As if it were normal and natural that we pimply, giggly teenage girls would harbor our artistic practices as crucial, solid components of our identities. “I am a writer. I write,” I started to say. After three weeks in the Interlochen environment, I got better at saying it — and doing it. Janée Baugher, who taught poetry, took us to the art gallery, where we spent hours in contemplation of a single piece, learning ekphrasis. This was, she confessed, her own most-used technique. I was in awe that she would share her professional practice with us. If I could write ekphrasis, like Janée, then I was a writer for sure. I called home from the corded phone on the side of the “headquarters” cabin to share the news. Mom reminded me that this was hardly a revelation. I not only was a writer, but had been one. After all, I had published several summer editions of my own newsletter, *Read, Reap, and Relish*, inspired by the young journalists in *The Cobble Street Cousins* [12]. She reminded me that I had long woven literature into my daily life.

That said, when I returned from Interlochen, the “writer” at the core of my identity wobbled a little. Moving from high school to Goucher College required a sorting-through of academic priorities, priorities of interest and investment. I embraced the liberal arts, trying a wide range of classes from Medieval Literature to Linear Algebra. The individuality involved in analyzing stories and poems thrilled me, the way any answer was the right answer with solid evidence. Lessons from literature class carried into dinner discussions with friends. Higher-level math classes held beautiful solutions and proofs, but they didn’t come easily, and I found myself frustrated, not rejuvenated, from the long, lonely hours. I knew I held onto these math courses for their familiar feel. Sometimes, I would come home for a weekend of studying, 11-hour marathon sessions culminating in Mom calling for “one more problem” at 10PM while I felt the same enthusiasm, at that hour, for my bed. The following fall, I took a semester off from math to “see if I missed it” and, well, I didn’t.
Yes, my reluctance to give up mathematics emerged from the strong link between that discipline and home, habit. Math was, and is, like “Mr. Griggs’ work” for Mom — a source of energy, inspiration, and great joy, intertwined with daily life. It was time to find my own version of “Mr. Griggs’ work.” In Katherine Rundell’s middle-grade novel *Rooftoppers* [11], young protagonist Sophie is haunted by a deep curiosity, a longing, for knowledge of her mother. She is not lacking for love or care — her adorable and adoring guardian Charles takes care of that — but she cannot shake her wondering. And so she sets out to find the answer. Charles (who has no choice, because he loves her) follows. It was in the pages of *Rooftoppers*, which I devoured during my year abroad at Oxford University, that I came to understand the way a child’s deep curiosities can actually be independent sources of inspiration and wonder, for the child and for the parent alike. I began to have more confidence in my own path. I began to bring that Interlochen level of confidence — “I am a writer. I study literature.” — to my daily life.

Of course, some aspects of home will follow you like genetics. As I committed myself to the study of literature, I never fully abandoned mathematics. The habits and qualities of mathematicians informed my study, and now inform my teaching, of literature and writing. Now, as an instructor of Academic Writing at my alma mater, I strive to convey math-inspired qualities to my students. I believe just as deeply in the ability to slow down, to notice, to question, and to focus, as I do in the “technical” writing skills like structure and revision.

This semester, my classes read author Elizabeth Strout’s reflection on her favorite poem, “Nostos,” by Louise Glück [2]. Strout gravitates to the final line of the poem: “We look at the world once in childhood. The rest is memory.” Is it true, we wondered, that our childhood foregrounds the rest of our lives in such an absolute way? Determined to re-capture that childlike way of seeing, the students brought observations to class: one noticed a bee walking down the sidewalk like a human, making us all laugh uproariously; another observed the “comforting” timing of a certain street lamp.

I often hear my students say, “I am a math person,” or “I am a writing person.” I cannot help but mourn this dichotomy. Mom showed me how to admire Margaret Matchett and Cynthia Rylant, how to appreciate the elegance of both a proof and a passage. What are proofs and passages, that is, but compositions in two languages? I would not have the skills to teach writing,
or my deep and abiding love for literature, without my mathematician mother’s encouragement to write, to travel with her, to notice details and to focus. For me, the two are inextricably intertwined.

Mother and Daughter: Della and Hannah

In Kate DiCamillo’s *Because of Winn Dixie* [1], Opal and her father, The Preacher, come to understand one another through their dog, Winn Dixie. The dog gives Opal courage to pursue adventures in her new town while he simultaneously helps The Preacher find hope in his otherwise sad past. The very presence of the dog, and the conversations that arise because of that presence, bind the parent and child together. For Opal and The Preacher, it was a dog that did the binding. For us, a combination of mathematics and literature provided a frame for our shared experiences as mother and daughter and, in time, allowed both of us to pursue our interests with more confidence and less wobble.

As we reflected on our individual and collective journeys to write this article, we were reminded of Abraham Verghese’s observation in *Cutting for Stone* [15] that we live life forward but only “understand it backward.” We were simply living life as these events unfolded. The intent, here, is not to present an unrealistically rosy story. Rather, we hope to applaud and encourage our readers’ attention to their own (seemingly) quotidian lives born out of what is not written on the calendar but instead inscribed in our hearts.

For us, the vitality of literature alongside mathematics catalyzed significant parts of our shared journeys. For others? These unique details will emerge over time as daily routines give way to months and then years of collective experiences. It is our abiding hope that our readers will enjoy a vocation with the verve of Mr. Griggs, a host of splendid ways to integrate it with their families, and the childlike ability to notice the intersections.

References


