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Why I Became a Mathematician: A Personal Account

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I became a mathematician because of my kindergarten teacher.

That claim may surprise you if you know something of my family history. My mother, Mary L. Boas, was a professor of physics at DePaul University in Chicago. My father, Ralph P. Boas, was a professor of mathematics at Northwestern University and a prominent researcher, teacher, writer, editor, and translator; he was active in the affairs of both the American Mathematical Society and the Mathematical Association of America. With such parents, had I not a predetermined future? I think not, for my two siblings showed no inclination to pursue a scientific or an academic career.

Certainly all three of us children were profoundly influenced by our parents' passion for teaching and learning. We absorbed by osmosis the conviction that every craft can be mastered through diligence. For instance, we observed that when our parents took up photography, they went so far as to convert the utility closet into a home darkroom to develop their own film; their gardening activities expanded to include forcing bulbs under lights in the basement, building window boxes, and constructing cold frames in the backyard; they taught themselves how to work with fiberglass in order to maintain a succession of small sailboats. My father took pride in being able to shingle a barn, to fell a tree, and to miter a joint; my mother knew how to sew her own clothes, to make beach-plum jelly, and to wring a chicken's neck.

As the youngest child, I felt overshadowed by my accomplished siblings. Both of them mastered the unicycle and the trampoline; in sailing camp during the summer, they learned the ropes well enough to participate in regional regattas; my sister took up horseback riding and brought home ribbons from competitions; my brother learned both slalom and trick skiing and participated in water-skiing meets. Being younger and smaller, I could not match my siblings in athletic pursuits, so I turned to more cerebral activities—especially chess, in which I was nationally ranked in my age group during high school.

Now there are many attractive intellectual endeavors besides mathematics, so what happened in kindergarten that set the course of my life? Before reaching school age, I picked up knowledge at home in the haphazard way of young children. The house was

full of books, and I was beginning to read when I went off to school. But my kindergarten teacher figuratively slammed the book shut. She had the crazy notion that kindergarten children should be protected from the stress of such onerous first-grade burdens as reading. She had no such strictures about numbers, however, so I redirected my energy. My parents fondly recalled that I would bounce on their bed in the morning demanding arithmetic problems to solve. One of my earliest memories is sitting in a corner painstakingly working out 12×12 by the multiplication algorithm.

The upshot was that I was always a year ahead of my schoolmates in math class. During twelfth grade, having already finished the high-school calculus course, I got special dispensation from the school administration to work through my mother's *Mathematical Methods in the Physical Sciences* as an independent-study course.

But there is more to the story, for at age eighteen I scarcely knew what mathematics really is. Moreover, I had broad interests, as evidenced by the five advanced-placement exams that gave me sophomore standing as I started college. With a push in the right direction, I might have become a specialist in novels of the Regency era (one of my prized possessions is the working copy of *Pride and Prejudice* from which my paternal grandfather taught); a historian of Renaissance Florence (did you know that 1492 is the year of Lorenzo de' Medici's death?); or a researcher in linguistics (my high-school English class studied the rudiments of Chomsky's transformational grammar).

It was a close call, for in my first year at Harvard, mistakenly thinking that I was a hotshot, I enrolled in the legendary Math 55, which at the time used Dieudonné's *Foundations of Real Analysis* as a textbook. Woefully underprepared for the course, I got discouraged with mathematics for a few semesters and turned my attention to physics. I even took a year of Russian, intending to learn enough to read the leading chess periodicals. Then, in my third year, I had the good fortune to enroll in a course in applied mathematics for which Dick Gross was the enthusiastic, encouraging, and stimulating teaching assistant. This experience was my mathematical epiphany. Determined to go further in my fourth year, I signed up for complex analysis from Lars Ahlfors and algebra from David Mumford and John Tate. After sitting at the feet of these gurus for a year, I was a lifelong convert to the religion of mathematics.