PATHS

A PROJECT OF RECOLLECTION
by mathematicians
here we all are

you

me
how did we get here? when were we pulled into math’s orbit?
and are our paths always so smooth?
or are we sometimes less sure of the path ahead?
these are some of our stories
When I was at Georgia Piedmont Technical College and Georgia Perimeter College, I worked part-time as a math and science tutor as well as a nail technician.

Working at the spa financially afforded me the tuition. The job exhausted me. Meanwhile tutoring boosted my mood and energy. It was evident that I was excited to take days off from work to join math tournaments.

I enjoyed the moment I won the first place in the calculus competition at the Gainesville Mathematics Tournament.

So, I knew I would do my best in tutoring math...

At Georgia Institute of Technology, I continued to work as a private math tutor. I also became a grader and a teaching assistant for the math department. I felt excitement and joy in helping students. I discovered my passion in teaching this subject.

However, I did not want to become a high school math teacher due to culture shock I experienced. Thus I took the P/1 actuarial exam to explore more options in the industry. Unfortunately, I failed to secure an internship in actuary science. I felt like it was a setback in my career, and I wondered what to do to be able to support myself after graduation...

Time was running out...

I considered going for graduate school after evaluating my strength and weakness and getting support from my parents and my girlfriend. I then sought advice from my academic mentor who guided me through the turning point decision of my career, pursuing a PhD degree in mathematics.

—as told by Thomas Huong Tran
I grew up in Beijing, China where education is very structured, and we were told to perform well.

Since elementary school, I knew I always liked mathematics and was able to do well in class, but I was very hesitant in joining those "elite classes" where you spend many after school hours working on higher level math problems to compete in national mathematics tournaments to get yourself a jumpstart in academics.

But I was fortunate enough to have met Ms. Liang, who was our math teacher for 5th and 6th grades. She never pushed me to do anything I was not passionate about, but at the same time saw the potential in me. She would encourage me to keep pursuing what I like, and never let my passion become a burden.

She made me realize that even though I am not a gold medalist, I can still become a mathematician, and give my best.

— as told by Dena Zhu Ho
My parents were refugees from Czechoslovakia (mother) and Germany (father) who arrived in the United States in 1938 to flee the Nazis. In the picture, we are vacationing in Acadia National Park in Maine; I guess I was about six years old.

When I was ten, my father gave me the four volumes of James R. Newman’s “The World of Mathematics” and that started my love of mathematics.

The chapter on Buffon’s needle problem fascinated me. The idea that one could use random events (whether the dropped needle intersects a crack between floorboards) to compute something fixed (in this case $\pi$) fascinated me. I spent a lot of time flipping needles on the floor and recording the results.

I was not a math prodigy by any means. In fact, I kind of gave it up when I was 12 to do girls and sports, and didn’t return to it seriously until I was an undergraduate. — as told by Mike Reed
In 11th grade, my wonderful math teacher introduced us to the history of the cubic and quartic formulas and the insolvability of the quintic, along with the colorful cast of characters who were part of that story.

Our textbook had a series of exercises showing how to derive the cubic formula, and my good friend Maggie and I got together on a Saturday night to work through the proof. To this day, the formula (with our names listed right alongside Tartaglia and Cardano) is on the frozen-in-time bulletin board in my bedroom at my parents' house.

We eventually worked out the quartic as well, which required a strip of paper about 15 feet long after plugging all the original coefficients back in. That was my first taste of math research, and there was no going back for me after that point.

—as told by Adam Levine
Early in my math education, Algebra I probably, I observed that integers like 4, 9, 16, ... have simple square roots and I began to wonder about other numbers. Pursuing this, I asked my father what the square root of 2 was, and he replied 1.414.

Being a skeptical sort I went and multiplied it out (by hand, of course, in the mid-fifties a calculator was an expensive piece of scientific equipment), and naturally it didn’t come out quite even. I complained to him, and he told me that the square root of 2 was an infinite, non-repeating, decimal fraction.

I thought he was crazy, and I remember thinking, “How am I going to make it in life with advice like this?” Talk about discounting parental expertise!

The photo shows me, my two older brothers, and my father. Of course I was much younger in the picture — my math then was more like asking my mother “How much is 2+2? 4+4? 8+8?” until I quickly passed beyond what she was willing to give the attention needed to answer. (As may be seen from the photo, at that age I was an extrovert!) — as told by Dave Schaeffer
I had never dreamed about becoming a mathematician when I was little. I mean I was pretty good at math, but I had the stereotypes of mathematicians being really old men who constantly walk into trees.*

I didn’t think they were very cool people.

*In primary school, I heard a story about the Chinese mathematician Jing-R run Chen, that Chen was so concentrated thinking about math problems one day and he walked into a tree.

When I entered college, I remembered the small measurement errors in labs would drive me nuts, but mathematics has a much more elegant way of dealing with those by using epsilons and deltas. I liked the feeling of preciseness and certainty in math, as I was trying to adjust to living in the US, far away from home on the other side of the earth, by myself.

I also met other young women who like math. Together, we read stories about female mathematicians. I thought I would like to become a mathematician too, because math is beautiful, these people are pretty fun, and I can be myself and don’t have to walk into a tree.

—as told by Shanshan
As a child of parents of Indian diaspora of the 70's, I'd spend holidays with the families of my father's friends from graduate school, that now lived in the US. We'd go to Pittsburgh, Cleveland, Baltimore, or Columbus to congregate.

I remember at these get togethers the other kids would be really good at math (at that age arithmetic) and I sucked at it. This did not seem to bother me. I'd talk about the local baseball team and submarine style pitchers or how I wanted to be a garbage man (the trucks and sound seemed cool). Somehow at some point I did become "good" at math.

— as told by Sayan Mukherjee
I grew up in the southeast of Romania in a midsize town by the Danube river.

My parents were both trained as engineers, but they have found it challenging to continue their technical work during the country's long-winded transition to democracy. Their stories of growing up through some of the worst periods of communism in Romania have always kept me grounded to the privileged life I get to live.

My parents gave me math exercises to work on starting from kindergarten. I thought studying mathematics was the natural thing to do, and I loved the challenge. And there was no shortage of challenges, with plenty of math contests throughout the school years.

I am most grateful for my family being so supportive of me going far away to study mathematics, despite knowing that it would mean seeing me once a year for the foreseeable future.

— as told by Veronica Ciocanet
I grew up in Northwest England, and my family came from a small coal-mining village. This is the same part of the world as Nick Park, creator of Wallace and Grommit, and Chicken Run—growing up, I spoke with the same accent as the stars of his cartoons.

My father was an engineer, and his career choices were very simple—the coal mine or the railways—and he chose wisely to stay above ground.

My father and mother both left school at 16, and my father encouraged me to study engineering. I rebelled by choosing to study mathematics and he was generous enough to indulge me. He was particularly fond of telling me that at some point in my life the fun would need to stop and I would have to get a job.

I like to think that he is still waiting.

—as told by Robert Calderbank
I did not like arithmetic as a child; I was mostly fascinated by all kinds of science.

However, the summer between my 7th and 8th grades, I found my uncle’s college algebra and calculus books at my grandmother’s house (which was just through the woods from ours).

I tried to read the calculus book first, and was fascinated by calculus problems, such as “find the largest cylinder that can be inscribed in a sphere,” and the desire to know how anyone could know such things motivated me to study the algebra book and then the calculus book.

I remember it as a glorious time, when, practically every day, I learned something new, or had a new idea. I worked all the problems in the algebra book and then the calculus book, but stuck on calculus for a long time because I didn’t know that there was anything after calculus.

(Finally, in my senior year in high school, I met a math professor at a nearby college, and he set me straight.)

— as told by Robert Bryant

My 8th grade school picture, a time when I was so alive with the excitement of learning calculus.
I remember sitting in the car, waiting for my older brother and sister to get out of school. My mother was balancing her checkbook, resting it on the steering wheel. She was using a fountain pen with blue ink.

She showed me that once she had lined up some numbers, there was a consequence: it was determined what numbers needed to come next.

Numbers could talk to each other? I knew I wanted to learn their secret language!

—as told by Lillian Pierre
A LETTER

When I graduated from Warwick University, I was not at all sure what I was going to do next. I thought of teaching high school and on my visit to teacher training college the interviewer read me the recommendation letter from my Warwick student supervisor, Stuart Stonehewer.

He wrote that he thought I had the talent to be a research mathematician and that he would be disappointed if I did not give it a shot.

Without his letter, I doubt I would be here today.

Mr. Calderbank has the talent to be a research mathematician, and I will be disappointed if he does not give it a shot.

— as told by Robert Calderbank
In 2008 there was a financial crisis.
I was in my final year of graduate school,
and pregnant with my first child.
I was conscious that at a time of financial trauma
for so many people, I should not take it for granted
that everything might go for me how
I’d prefer to envision it: a postdoc, life as
an academic, etc.

But I felt very calm.
I remember thinking,
there is always going to be
some job a mathematician can
help with in some way.

I felt my education could carry me
in many directions and bring me
to a safe landing.

— as told by Lillian Pierce
more paths will come