

Dr. Ralph R. Gomez

Dr. Ralph R. Gomez's *testimonio* takes us on his journey to becoming a mathematician through a path that many would consider to be non-traditional. Dr. Gomez embraced education as a way to avoid following in the footsteps of his older brother and along the way he discovered a passion for mathematics. Through family deaths and facing impostor syndrome, Dr. Gomez's *testimonio* exemplifies how the power of words, no matter how short the phrases shared, can have an impact in motivating someone to achieve their goals.

Am I Capable of Earning a PhD in Math?

Earning a PhD. As part of my decision on whether or not to earn a PhD in mathematics, I felt that it was important to go to a different institution so I could see how other places did mathematics. I wanted to study Einstein geometry under Professor Charles P. Boyer. Charles Boyer was one of the leaders in that area, having discovered a new technique of constructing special types of Einstein geometries. Einstein geometry is a type of geometry that obeys an equation discovered by Albert Einstein in his modern theory of gravitation-general relativity.

After numerous thorough discussions with friends, I decided to accept University of New Mexico's offer to enroll in their PhD program. Part of the attraction in attending UNM involved a generous stipend sponsored by the New Mexico Alliance for Graduate Education and Professoriate (NMAGEP). This was a fantastic program that not only

supported me with an additional stipend, but also provided numerous conferences and workshops for graduate students from underrepresented groups that focused on navigating the challenging road to becoming a professor. Looking back, this program was instrumental in helping me to think about what it meant to be a professor.

After postponing my fall enrollment at UNM, I arrived there in January of 2003. It was refreshing to be studying mathematics once again, and I was growing increasingly optimistic about my future career trajectory. But this optimism was cast into the shadows. In the early fall of 2003, it was determined my father had stage four colon cancer. By the time the malignant mass was found, it was too late for any procedure or radiation to prolong his life. He passed away in September of 2003. Days before he died, quitting the PhD program was weighing heavily on my mind. If I withdrew from the program, I could return home and help out my mother. My sister planned on moving back to Lemoore from Palm Springs with her family. I felt like I was abandoning my family if I remained committed to the PhD program. The afternoon before my father passed away, I was sitting next to him, telling him my final goodbyes. By this time he was extremely frail and life seemed to be visibly evaporating from him. But somehow my father was able to conjure a sentence: "Don't let this mess up your schooling." In that single sentence, the decision for me to complete the PhD was solidified. I simply had to finish now.

PhD. With my father's support and my sister's willingness to uproot her life to take care of my mother, I stayed in UNM's PhD program. Around this time, my advisor Professor Charles Boyer gave me a graduate fellowship

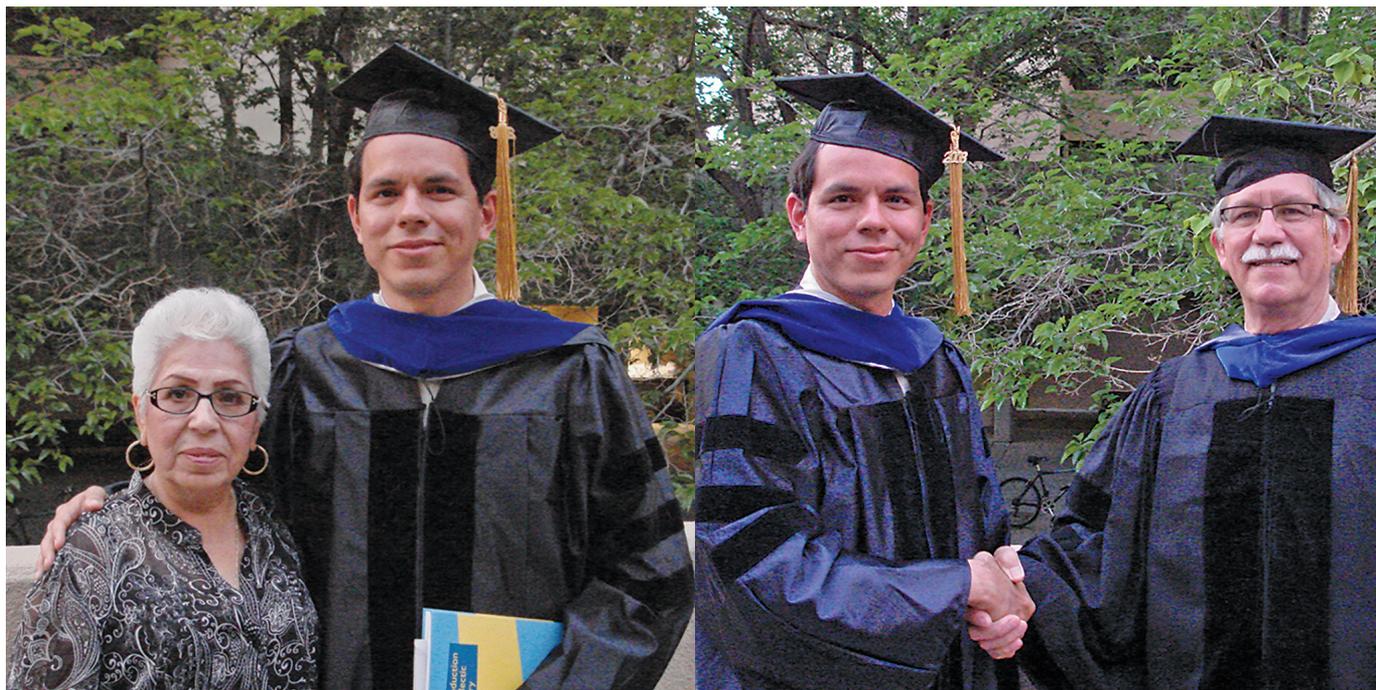


Figure 4. (L) My mother and me after my PhD ceremony, 2008. (R) My advisor Charles P. Boyer and me after he hooded me, 2008.

DOI: <https://dx.doi.org/10.1090/noti2526>

from his research grant which allowed me not to teach and focus on courses and the beginnings of research. To have a professional and successful mathematician believe in me and encourage me the way he did, instilled a great wave of enthusiasm and excitement in me as I moved forward with my total immersion in mathematics. I earned my PhD in five-and-a-half years (with distinction) and a new life was ahead!

The Professorial World

After I earned my PhD, I accepted a two-year visiting position at Swarthmore College in 2008. This was an absolutely incredible position with a reduced teaching load, and I was thoroughly excited to be there. But gradually I had the uncomfortable feeling that I did not belong at such an illustrious institution. Not seeing much faculty diversity at the college, particularly in the Natural Sciences and Engineering division, made me feel more like an outsider. It became clear to me just how different my pathway was in becoming a mathematician and that perhaps I was ultimately doomed to failure since my pathway was not more traditional. Impostor syndrome took a strong hold of me. To further complicate matters, my brother Johnny was on his way back to prison yet again to serve a one-year sentence. What other faculty member in their first year in a visiting position had to worry about a sibling heading back to prison? To my mind, this was just one of many other examples of why I did not belong.

Near the end of my two-year position, Swarthmore College was able to offer me an extension on my visiting position. This was very generous especially since this was around the time of the Great Recession. The college was actually pleased with my work and invited me to stay on for a few more years. This invitation was a clear signal that the college viewed me as thriving at Swarthmore. But there were three factors that led me to decline this offer at the end of my two-year visit. First, the desire to return to my family in California particularly because of growing worry about how my mother was handling my brother's return to prison. Second, the personal belief that I was not Swarthmore material and thus did not belong. Finally, the need to secure a tenure-track job instead of staying in a visiting position. Not feeling like I belonged at Swarthmore was the main factor that ultimately convinced me I should move on. Thus, after my two-year visiting position I left Swarthmore college and took a tenure-track position in California. Before I left I met with Stephen B. Maurer (the chair of the mathematics and statistics department at Swarthmore at the time) to tell him the main reason why I was leaving. He sent me an email after our meeting which completely shifted my view about myself. With Stephen B. Maurer's permission, here is the email he sent to me:

I'd like to address the worry that you were brave enough to broach with me today: are you really good

enough for Swarthmore? It's really the same issue as when we admit students who have no history in their families of fancy colleges, or any colleges, or any history of expectations as demanding as ours or of positions of substantial responsibility in society. Swarthmore's belief is: people with the right underlying talent don't have to be brought up to the top gradually through several generations. They can leapfrog to comfort in an environment of high expectations in a few years. If we are right about this—and surely we are right in some cases—then Swarthmore, and not more laid back places, is really the place to make these people shine. This goes for the students from humble backgrounds that you inspire here, and it goes for you.

I never responded to Maurer's email because I did not know how to respond. It shook me to the core. I thought very hard about this email over the next several months as I adjusted to my new tenure-track position in southern California. I eventually came to the startling conclusion that Maurer was absolutely right! Moreover, I realized I was selling myself short. It is as if I finally let myself accept the idea that I did a successful job at Swarthmore. Within the first semester at my new position, I told Maurer that I was heading back on the job market. It turned out Swarthmore was able to offer me a chance to return but this time as a tenure-track assistant professor!

In 2012, I returned to Swarthmore as a tenure-track assistant professor and achieved tenure in 2017. My mother passed away in 2018 and so I am very thankful she lived long enough to see me achieve tenure. She was always one to express how immensely proud she was of me. Returning to Swarthmore College is without a doubt one of the best decisions I have ever made in my entire life. With the help of an extremely supportive department and surrounded by inspiring students, I finally feel that I belong at Swarthmore.

Advice

Because my pathway to being a mathematician was not along a traditional path, I assumed that my role as a professor would therefore be less valuable and ineffective. This point of view was highly corrosive. It took a lot of conversations with colleagues, friends, and family to realize this view of myself was completely inaccurate. Something that I would like to impart upon the aspiring mathematician is this:

There are countless paths to having a deep and meaningful relationship with mathematics.

However, like any journey along an arduous path it is immensely helpful to have useful resources. I cannot stress this enough, dear reader. Build a network of people you can reach out to for help, advice, or direction. Seek out feedback, viewpoints, and opinions from others in your

support system. You may be surprised how open people can be in giving you effective guidance. A favorite teacher, professor, friend, and family members are just a few examples of people you can add to your network of support. Even more support can be found for example through the Math Alliance (mathalliance.org), which has a vast database of professors who are ready and willing to mentor students interested in the mathematical and statistical sciences. With a solid support system at your disposal you will be able to be inspired and encouraged to carry on even in the darkest hour. And carry on you must for one day it may very well be *you* who takes up the role as a mentor!



Dr. Ralph R. Gomez

Credits

Figure 4 is courtesy of Dr. Ralph R. Gomez. Illustration of Dr. Ralph R. Gomez was created by Ana Valle.

Dr. Stephan Ramon Garcia

As a child of Cuban and Japanese immigrants, Dr. Stephan Garcia's *testimonio* resonates with anyone searching for a sense of belonging. He grew up with one side of his family fleeing war while the other side was running away from an oppressive government. His mathematical talents were evident from a very young age, but, like many, he lacked good mentorship and focus. Despite this, and thanks to what he attributes to good luck, Dr. Garcia is now an incredibly accomplished mathematician.

Graduate Education

I was accepted by every graduate program to which I applied, although that is hardly an accomplishment since I applied only to a handful of schools in California. I had some satisfaction in rejecting Stanford's offer; they had rejected me as an undergraduate. In retrospect, I might have benefited from their smaller program. However, at the time the mathematics PhD program at Berkeley was tied for number one in the nation, so I did not seriously contemplate leaving for slightly lower-ranked Stanford. After all, Berkeley was familiar and Stanford seemed so distant.

There were ten of us assigned to two adjoining offices in the windowless corridors of Evans Hall. Of these, I think

only two or three of us completed the program; at least five quit or were kicked out. There were a few other Latinx graduate students in the department, but they all seemed to have been the top students in their countries and many had experience in the International Mathematical Olympiad.

Because I already had a circle of friends in the Bay Area, I did not hang out in the math department. Consequently, I did not learn useful tips from other graduate students or from postdocs and professors. Since I did not understand the titles or abstracts, I did not attend colloquia or seminars. I failed to integrate myself into the social side of mathematics. I simply had no idea how mathematicians socialized or learned. The department at Berkeley was large, and it was possible to disappear completely, which I did. Nobody told me what I needed to be doing, and I got lost.

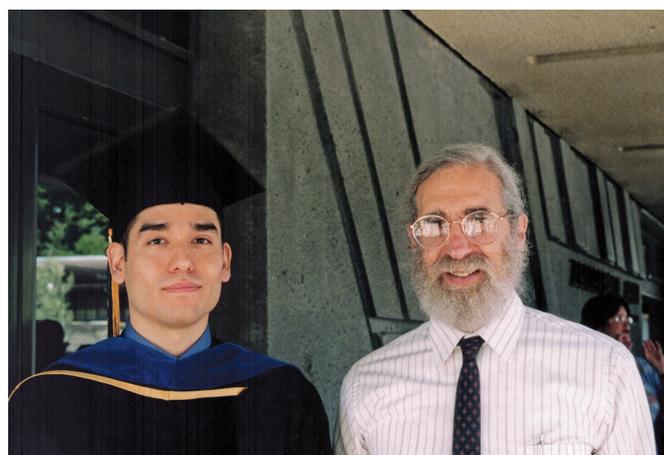


Figure 5. With my thesis advisor, Donald Sarason, at my graduation from the PhD program (2003).

Because I had an NSF Fellowship, I did not need to teach. However, I asked if I could teach one course per semester. It seemed like a good idea to have teaching experience since, I imagined, teaching was an important part of being a professor. I went on to win several teaching awards at UC Berkeley, which opened a few doors.

The transition from taking classes to doing research was left largely unexplained. Since I liked analysis and had just taken complex analysis with Donald Sarason, I asked him to be my advisor. He agreed without hesitation. Because of my lackluster performance in the program and my sparse attendance at department events, I suspect that many other potential advisors would have politely excused themselves.

Sarason, then nearing seventy years old, was kind and patient, but unusually quiet. His advisor, Paul Halmos, said "[he] is a quiet man; he never uses eight words when seven will do." Perhaps a more astute career move would have been to attach myself to an up-and-coming star, swimming in grant money and fresh off an International Congress of Mathematicians (ICM) lecture or major prize. However, the preening roosters and showoffs were attracted to such