

Latino Community Stage:
My Path and Frontiers towards Theoretical Physics

Alan Salcedo Gomez

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Exploration:

During my childhood and teenage in Juarez, Mexico, I did not show particular talents or inclinations. I tried doing different things without a purpose. In elementary school, I only participated in one academic contest which I lost without grace. In middle school, I joined a mariachi ensemble with my friends. I participated in debates. In some of them, I was selected to represent the city at the state level competitions. In others, I lost during the first stage. I also ran as president for our student association and I lost the elections. At this point, it may sound like I was an active and responsible middle school student, but I was only active because I was looking for reasonable excuses to get out of the classroom. Due to these many activities, my family once thought that I would become a musician, a politician, a lawyer, even a doctor. Nonetheless, I had no idea what I wanted to study and ended up becoming something no one could guess (try it yourself before reading): a theoretical physicist! This choice only became apparent until my last years of high school.

Joy:

My parents made me enroll at an institution which was known for their high academic standards. After getting used to this new environment, I started doing the same than in middle school. I enrolled in as many competitions as

possible with no other purpose than getting benefits. Then, in sophomore year, I participated in a regional Physics contest where I had to solve slightly twisted problems. To my surprise, I could see many of their tricks easily. I enjoyed the feeling of using equations to describe real phenomena. This was my first experience doing so. When the contest finished, I was taken back to school and I told my classmates the content of the exam. At that moment, I realized that I had found one of my passions: I was happily describing how I solved those problems and finding out my mistakes with grace. I did not care about the benefits or the results anymore. I had simply loved the experience. As you may have discovered, you cannot love doing something and doing it badly. A few months later, I received confirmation of the first-place prize, indicating I had surpassed even the more advanced competitors from my institution.

Altruism:

As you probably know (and if you don't, your parents do), Juarez was known for many years as one of the most violent cities in the world. My generation lived its teenage during the Mexican Drug War in the middle of its military conflict. As a result, I was involved in initiatives of the youth to mitigate the effects of those events on other young people. Together with three friends, I created a student organization for youth empowerment called ACT (yes, like your college entrance exam) to make high school students active in their communities. For our work, we shared the state youth prize on Social Engagement in 2014 and were invited to become founding members of the Youth Council of the U.S. Consulate in Juarez. It was the start of my academic endeavors and I also did a lot of work for in the community where I learned the meaning of resilience. This important work in my life, later became the topic of a student camp that we

(the youth council) designed for three-hundred and fifty middle school students.

Hardship:

Like most students in Latin America, I enrolled at a college located close to my family. Living in a city next to the U.S. border made attending the University of Texas at El Paso (UTEP) possible, provided my family had money for tuition. Here, my hardship began. In the United States, I was an international student without federal financial aid, with limited access to scholarships and internships. I lived with my family in Mexico. They supported me financially during my first semester at college and were forced to sell a house due to our insufficient income. During my time in college, I saw how many of my friends from the U.S. had scholarships and several internships offers and lived close to campus in one of the safest cities in the country. I was jealous. I commuted daily from my home to UTEP, spending more than three hours a day. During my walks, sometimes I told myself about the difficulty of my endeavor: I had never met a Physicist from Juarez, how could I even become one when I had all odds against me? But I eventually told myself the opposite: I had to establish a precedent so other students from Juarez do not have to feel my frustration. This thought became my purpose and my daily motivation. The support of my parents became my strength.

Resilience:

All my scholarships applications were rejected in my first semester at college, but my luck changed a bit later. My instructor of introductory mechanics, and chairman of the Physics department, quickly recognized my abilities. After a small talk, he found me a job as an undergraduate Teaching Assistant. Finally, the stress of financial instability was relieved. Now I had one more task: to accomplish my goals despite hardship and recover from every setback (that is the meaning resilience).

That year, I got a fellowship offer to perform research in Nuclear Theory at UTEP during the summer and I presented my work a couple of times at conferences and symposia. The next year, I was again rejected from two out of three research fellowships. Luckily, the only offer came from the MIT which assigned me to work at its Center for Theoretical Physics with a successful Nuclear Theorist who was once a student of a historic physicist and Nobel Laureate. After this internship, my life changed. I realized that I had to make changes on my life to pursue an academic life of that kind. Many other life objectives had to be put on hold. For example, I could not commit to relationships and I had to spend most of my day at school to balance research with coursework, leaving little time for entertainment.

Harvest:

During the entirety of my undergraduate studies, I made a long failure CV but succeeded more than I expected. I performed research at MIT, Oak Ridge National Laboratory, and UTEP. I went to summer schools and workshops at Michigan State University, Los Alamos National Laboratory, Yale, and Utrecht University. I presented posters at eight professional conferences and symposia, hence I traveled. I completed an honors thesis in Condensed Matter Theory which resulted in a talk at a conference with experts in the field, as well as a publication post-graduation in a well-recognized journal. I received departmental awards for academic and research excellence in both Physics and Mathematics and I was selected banner bearer of the College of Science at my commencement in December 2019. Now, I had accepted a Distinguished University Fellowship offer from the Ohio State University to begin my PhD studies -most likely- in Nuclear Theory.

Takeaway:

In Exploration, I wanted to tell you to try out different paths before committing to one, even if you are not sure if you like them. In Joy, I am saying that the correct major to choose is that where you will do the things that you truly enjoy. In Hardship, I told my own experience, but you will find hardship too. You can let the hardship eat your mind or you can find a purpose to it. Overcoming it for others is always a good reason. People from Juarez can find my professional timeline here: alansalcedo.com/timeline. In Resilience, I am telling you that things will not always work as expected and you will have to make sacrifices. That is fine, but please recover fast. At the end of everything, you will just harvest.