

# LOSING THE PRECIOUS FEW

How America Fails  
to Educate Its Minorities  
in Science and Engineering



RICHARD A. TAPIA

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Recovering the past, creating the future

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*The further a society drifts from the truth,  
the more it will hate those that speak it.*

—George Orwell



*To Jean. My journey would not have been possible  
without your undying love and endless support.*





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It is an honor to have the renowned scientist and science leader Rita R. Colwell contribute the Foreword to this book.

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## Foreword

With society deeply polarized and the social contract in disarray, a voice of reason is needed and will be appreciated. Richard Tapia, a giant of a spokesperson for the underrepresented minorities—in his words “the precious few”—provides both chapter and verse in the life of those precious few, with his own life a prime example.

Richard probes and describes day to day life of both the exemplary and the underrepresented in a forthright way of life as it is and as it should be. Mincing no words, he relates his own rising from humble beginnings to be both nationally and globally recognized as a talented mathematician and provides wise guidance for the *Precious Few*. The advice is with the wisdom of one who has walked the walk. His definitions are clear, concise and helpful in understanding and providing advice on how to develop and follow a path to success in one’s life and career. Many may not agree with his definition of the underrepresented minority, but the clarity of definition, especially in warning that importing foreign STEM recruits to high technology jobs and faculty positions provides false role models, particularly for inner city students is ill advised and counterproductive, leading to failure in bringing native born underrepresented minorities into leadership roles and

career success. His love and teaching and work with his students are inspirational.

There is much wisdom, hard earned experience and prophecy in this book and many takes of success for “the precious few”.

Long a friend and admirer of Richard Tapia and his many contributions and leadership, I especially recommend studying and replicating how he has served as mentor, advisor and leader, striving for equity and diversity for all in a highly technological world. His dedication, tenacity and triumphs are signature for this prophet.

Rita R. Colwell

## Introduction. “Made in America”

Who Am I?

Frankly, if you do not know me, you may be wondering why you should care about this book. In a nutshell, I have succeeded. Against all odds, and well beyond what anyone, including me, but excluding my wife and mother, ever would have dreamed. My parents came from Mexico to Los Angeles as impoverished children in search of education. Times were hard. They had to support themselves and were not able to obtain the education that they sought. However, their educational dreams were fulfilled through their children; of the five of us, four have undergraduate degrees and three of us have graduate degrees, albeit two of us are lawyers.

I am a product of these Mexican parents and the city of Los Angeles in the 1960s. On New Year’s Day of 2017, the *Houston Chronicle* featured what they called the “36 most fascinating individuals in Houston.” There I was, a mathematician, standing proudly next to Simone Biles, the most decorated gymnast in America. I never expected such visibility. In addition, with the title of University Professor, Richard A. Tapia, I hold the highest academic position at Rice University, one of only six, and the only Hispanic in the university’s entire history. Two national professional conferences—the Blackwell-Tapia Mathematics Conference and



the Richard Tapia Celebration of Diversity in Computing Conference—are named in my honor. I have received seven honorary doctorates and have given nine commencement addresses. I have won a host of the nation’s major awards in STEM and twice have stood in front of American presidents to receive awards. President Bill Clinton presented me the inaugural Presidential Award for Mentoring in 1996. In 2011, President Barack Obama honored me with the National Medal of Science, the highest award given by the US government to an American scientist or engineer. In 1992, I was elected to the National Academy of Engineering; in 2014, I won the Vannevar Bush Award from the National Science Board; and in 2017, the American Association for the Advancement of Science awarded me the Public Engagement in Science Award. I was the first Latino born and raised in the United States to receive these distinctions.

You might say I have lived the American Dream, but I would add, because of adversity and economic background, it is a dream without the distinction of being as “American as apple pie.” Throughout my life, I’ve had to deal with many challenges and more than my share of tribulation. Did the pot of gold at the end of the rainbow allow me to ignore the pain? No, it did not. I wish that I had been accorded a more pleasant path to my destination.

I call my life story, “Made in America,” because even though I have a Mexican heritage that I am proud of, I was born and molded in the United States and feel American through and through. I often ask myself, *Who am I?* Well, I am many things: a mathematician, a Mexican American and a Californian. I am the husband of a former dancer who for more than forty years has endured multiple sclerosis and as a consequence suffers from dementia; for close to thirty years, she has been confined to a wheelchair. I am the father of three children, one of whom was killed at age 21 by a

drunk driver. I am a car enthusiast, especially classic Chevys and pre-war Fords. I embrace the word Tejano (Texan), popularized by the late Selena (Selena Quintanilla, regarded as the Queen of Tejano music), and closely identify with Tejanos. After all, I have lived in Texas for half a century. However, as I said, I was born and raised in California; so I can never be accepted as a “true” Texan. I also identify as a Chicano, because I came of age and participated in the Chicano civil rights movement of the 1960s.

I prefer to be seen as a professional who happens to be a minority, not a professional minority. I have had a successful research career, focusing on mathematical optimization theory. I consider my three most recent papers, written in my late seventies, to be the three best of my entire career. That is the way we minorities are: we often start late (I got my Ph.D. at age thirty) and get better with age, like the proverbial bottle of wine . . . or a pair of good cowboy boots.

Very early in my career, in the 1970s, I began to reach out and support Mexican-American students who were struggling to make it in this foreign world of science, technology, engineering and mathematics, what we call STEM. They needed someone to show them that they could do it, that if I could do it, so could they. Over these fifty or so years, I have devoted my professional life, not only to mathematics, but also to encouraging and supporting other underrepresented minorities to pursue the exciting life of STEM. Indeed, since I successfully navigated these turbulent waters, I can help and must help. With pride, I say that I have encouraged hundreds of minority undergraduates to persevere through graduation, and hundreds of minorities to receive their Ph.D.s.

My story begins, appropriately enough, by introducing you to my parents: my mother Magda and my father Amado. In my early days, my mother essentially raised us, because my father usually left the house to go to work before we got

up and returned late in the evening. Although I talk mostly about my mother, my father influenced me in powerful ways that I carry with me to this day. He was a caring and supportive person; everyone was fond of him. I would say that he was a humanist in the sense that he believed in doing good for the sake of benefitting the broad community and not because it was a teaching of the church. I definitely learned that belief from him. I have the drive and determination of my mother and the caring of my father.

My mother, María Magdalena Ángulo, was always called Magda; she very much thought it was silly that essentially all the women in Latin America were named María. So, it seemed no one—not even I—knew that her first name was María until rather recently, when my sister Becky told me that our mother had confided this to her some years back. My mother always taught us to be proud and to engage the power of positive thinking: *Sí se puede*. She instilled in us the importance of good work habits and a healthy strive for excellence. Magda was the proudest and hardest working person that I have ever known. She taught us to be proud of our Mexican heritage and she believed that education could take us to the pot of gold at the end of the rainbow. The older I get, the more I realize that a subtle but very important thing she taught us, was to evaluate success by global standards. It was not enough to be good relative to the family or the neighborhood, or to the Los Angeles world of Mexican Americans. We had to try to be the best in the largest world possible. Global excellence has been a recurring theme in my life.

Magda emigrated from the remote mining town of Batopilas, in the mountains of Chihuahua, Mexico, to Los Angeles at the age of twelve. Being quite intelligent, a plan was conceived that would take her to the United States in search of education. However, the distant uncle that she was to live with did not believe in education for women. He said

that she would have to go to work. As a consequence, my mother was not able to attend middle school or high school, let alone realize her dream of college. However, she always projected elegance and handled herself in a classy and direct manner. She was not formally educated, but was extremely well read. She could talk at length to my colleagues, her children, her grandchildren and any of our friends. In 2003, at a conference I co-chaired in Puerto Rico, my colleague from the University of California, Berkeley, mathematician Jaime Sethian, told me he had just had a long and wonderful breakfast with a charming and intelligent woman who just happened to be my mother. My mother, for her part, reported that Jaime was interesting and intelligent. She was not the least bit intimidated by this renowned mathematician.

My twin brother Bobby and I spoke mostly Spanish until we started the first grade. The transition from Spanish at home to English at school did not go smoothly. Therefore, Magda decided that we should speak only English instead of Spanish at home. She reasoned that we would have to develop fluency in English in order to be successful; but she also wanted us to maintain as much Spanish as we could. Both my mother and father worked as English-Spanish interpreters at various times in their lives. In her late sixties, Magda went to community college and earned a degree in Spanish/English translation.

Some in the community viewed my mother's aggressive assimilation as arrogance and that she thought we were better than they were. While I will admit that my mother was somewhat of an elitist—even though she did not have a formal education—her message to us was that we were as capable and as good as anyone, not worse and not better. But her being “uppity,” as some in the community called her, positively influenced the achievement of success in my professional life.

My father, Amado Bernal Tapia, was born in the city of Tepic in the state of Nayarit in Mexico in 1910. Some years before the revolution of 1910, my father's Tía María and her husband Tío Ca had emigrated from Tepic to Los Angeles. My father's two older brothers Maximilion and Matías soon joined them. My grandfather died when my father Amado was a child, and my grandmother and my father fled the revolution and settled in Bisbee, Arizona for a while, later to join the relatives in Los Angeles. My grandmother would die a few years later, and thus my father, like my mother, spent his teenage years without parents. Amado went to Dayton Heights Elementary school in Los Angeles, which later became my first elementary school as well. He graduated from Belmont High School in East Los Angeles in 1928, and somehow endeared himself to a Japanese family named Suzuki. He worked in their Oakwood Avenue Nursery in Los Angeles.

Magda and Amado met at a social event in 1935. They married in 1937 when she was 22 and he was 27. My twin brother Bobby and I were born a year later. The year 1941 brought the birth of my sister Anna María. Two months after Anita's birth, on December 7th, the Japanese bombed Pearl Harbor and the United States entered World War II. In early 1942, the Suzuki family called my father to inform him that the US government was relocating them to Colorado. They were concerned about the maintenance and health of Oakwood Avenue Nursery. My father and the Suzuki family agreed that he and his two brothers, Matías and Maximilion, would take over the nursery and pay them fairly for the business while also leasing the land. So, in 1942 the Suzuki family went to an internment camp and my family moved from Santa Monica to 410 North Madison. The extended Tapia family also moved close by. During the war years, Bobby and I started elementary school, and my younger sister Rebecca (Becky) was born in 1945. That same year, the state of Cali-

fornia decided to extend Highway 101; the extension would pass through the Oakwood Avenue Nursery and our home. According to the process of eminent domain, my father had to find us another place to live and for him to work.

After the Suzuki family's release from the camp, they bought a large tract of land in Torrance, California, and re-established their nursery. The Tapia brothers leased land from them and moved the Oakwood Avenue Nursery to Torrance. Amado and Maximilion also purchased two plots of land from the Suzukis to establish homes next to the nursery and next to each other, at 930 West 223<sup>rd</sup> Street and 942 West 223<sup>rd</sup> Street. Amado and Maximilion both made the decision to physically move their houses from Los Angeles to Torrance instead of building new ones. Matías decided to remain in Los Angeles and dropped out of the Oakwood Avenue nursery picture altogether.

In those days, Torrance was quite remote and had limited access to sewers and utilities. Our house sat on cement blocks with only a temporary water line. Electricity came from an electric extension cord. Both ran from the neighboring Suzuki property. It had no sewer and no natural gas for the water heater and the stove. I remember that my mother would use a hot plate to cook for our family of six and would heat water for our baths in a tub placed over a wooden fire in the backyard. She would carry the hot water into the house in pots. This situation existed for about six months, during which time Magda just kept on doing what was needed; she was a strong, dedicated and determined woman.

The Torrance nursery survived only a few years before the brothers decided to close it. At that time my father was like a fish out of water, floundering around for several years looking for ways to support us. In 1950, he was offered a job managing La Fleur, a small retail nursery in Southgate, California. In time, Amado was able to buy La Fleur Nursery,

and he worked it with my mother's help until his death in 1983.

In 1963, my parents moved to Downey and rose in middle-class life; this upward push was thanks to Magda. She accomplished her family's ascent as my father earned a modest income. She lived her form of the American Dream, truly a remarkable journey. My parents were the perfect example of what immigration is supposed to look like; they were hard working, good people who came here for better lives and they found them, and along the way they certainly gave as much to this country as they received from it. In my eyes, they were the epitome of this quote by Bobby Kennedy: "Our attitude towards immigration reflects our faith in the American ideal. We have always believed it possible for men and women who start at the bottom to rise as far as their talent and energy allow."

My twin brother Bobby and I were born on March 25, 1938, in Santa Monica Hospital. Starting nine months before birth, we were together pretty much 24 hours a day, seven days a week until leaving high school. This made us bold and precocious in taking on projects that no one person would ever dream of taking on alone. It served us well; however, our close relationship also stopped us from seeking broader social interaction, and this hurt us socially in high school.

In 1943, Bobby and I started kindergarten at Dayton Heights Elementary in the Los Angeles Unified School District. Magda dressed us in short pants with starched white shirts (the cleanest shirts in the school) and polished high-top white shoes. We were well groomed, but our dress style was out of date and we looked different from our male classmates. We were already uncomfortable from our lack of English proficiency, but this made us feel even more out of place. Our teacher's name was Marjorie, and she seemed to be quite fond of Bobby and me. The experience was a pleasant one;

we mostly listened to stories and played games with the other kids. Mrs. Anson's first grade class, however, was a different story. Bobby, my cousin Cuquita and I would not join in group singing or participate in any activities that required speaking. We were extremely shy and much more comfortable speaking Spanish than English, but the language of the class was 100% English. Finally, Mrs. Anson called in Magda to ask if Bobby, the quietest of the three of us, had any speech problems. Of course, Magda was quite bothered. She said no, and decided that we would start speaking English at home. This was a very good decision.

Our fourth-grade teacher was Mrs. Bentwood. She was the best teacher in the world. Realizing that Bobby and I were shy, she tried hard to bring us out. Whenever in reading or social studies we would encounter a Spanish word, she would ask either me or Bobby to pronounce it correctly in front of the class. I remember being asked to pronounce "Lake Titicaca" for the class; when I did, Mrs. Bentwood said, "Oh my, how beautiful." When we would do math, she would excuse me from the new material explaining that I already knew it (and I did). She would have me tutor the students who were behind instead. She appointed Bobby ball monitor, and he would distribute the various athletic equipment to classmates. Mrs. Brentwood was a great teacher and a fine person. She made me feel good about who I was, perhaps for the first and last time in my K-12 education.

Bobby and I went to Narbonne High School, an extremely low-achieving campus. It was arguably the lowest in the Los Angeles school district, according to the Iowa Assessments given nationally, and for my part, I do remember that on the Iowa test we were ranked the lowest in the district. In a strange sense, some students took pride in that negative accomplishment; it seemed to fit with who we were as a school. Our various math classes were decent, but most of



the other classes were disasters. I was always the best math student in the school, consistently scoring the highest on all standardized tests. While I did not study much, I did graduate with honors. I was a big fish in a very small and very shallow pond.

In the eleventh grade, the American Mathematical Society decided to promote mathematics appreciation among local Los Angeles high schools by administering a mathematics test to each school. The schools with highest participation rates would be acknowledged. During an assembly, our principal encouraged participation by saying that the individual with the best score at Narbonne would be acknowledged and given an award in an assembly in front of the entire school. This was exciting. I took first place, and the principal called me to his office and said, "Congratulations, here is your pin." I immediately asked, "But what about the assembly?" He replied, "There will be no assembly." This deeply hurt me. I was looking forward to shining in front of the entire school so much. To this day, I am confused as to why there was no assembly. I entertained the thought that it was because I was a rare Mexican American in a white school.

Narbonne High School left me with a lack of quality education and no appreciation for my culture. As I reflect back, I believe that the weak link in my education was high school. We read nothing and we wrote nothing, and as a result, I did not develop a love for reading or a facility for writing. These shortcomings were not addressed in my college education either.

Even though I was by far the best mathematics student at Narbonne and had graduated with honors, no teacher or counselor ever suggested to me that I should go to college. Moreover, no one in my extended family had ever gone to college. So, after graduating from Narbonne in January 1956, I went to work full-time in a muffler factory. I worked in the hot sun

packing fiberglass into tubular muffler casings next to an individual named Jim from Mississippi, who constantly told me, "Richard, do not make my mistake. You are smart, go to college." By September that year, I could take no more and enrolled in Harbor Junior College in Wilmington, California.

At Harbor Junior College my favorite professor was Stuart Friedman, who taught me the calculus sequence. He approached me one day and asked me what four-year college I planned on attending after junior college. I replied, "One of the California state colleges, like Long Beach State."

"You have talent and potential," he said. "I want you to go to UCLA so you have a better chance of reaching your full potential." I did go to UCLA, and it was one of the best decisions that I have ever made in my life. Harbor did not prepare me for UCLA, but it certainly did a better job than Narbonne.

I was immediately accepted. I had been a math star in high school and in junior college, but I was not a star at UCLA. I survived by working hard for the first time in my life and by not taking too many classes. And I learned a lot of math, even though I was a B student. In my senior year, I enrolled in two statistics classes, both taught by distinguished professors. I received the grade of A in both classes, my first As in math at UCLA. I survived college on a diet of Bs, a few As and one unfair grade of C. I always believed that I could make it at UCLA, although not as a star.

I graduated from UCLA in December 1961, five years and three months after I started junior college. My path to graduate school was not certain or direct. As an undergraduate math student at UCLA, with mostly Bs, I had no illusions of even going to graduate school. Yet, in my senior year, two of my classmates told me that they were applying to the UCLA Mathematics Department for graduate school. I knew that I had done better and had more mathematical talent than

both of them, so I applied so was accepted. But there was a problem. I had married as a sophomore and had a daughter as a junior, and Jean and I supported ourselves by working part-time. We were really broke, so I had to delay my graduate studies.

There were those who predicted that I would not return to graduate school, but I knew that I would. For a year and a half, I worked for Todd Shipyard in San Pedro, California, on a grant from the US Navy's Bureau of Ships. The project consisted of using mathematics to define the surface of a ship. This was both challenging and enjoyable. I learned a lot and worked with interesting people, including two wonderful professors from the University of California, Berkeley and a mathematics consultant from the Rand Corporation. I learned much that you do not learn in a university setting, but most importantly, the Todd Shipyard experience reinforced my view that in order to take a leading role in interesting projects, I needed a Ph.D. Hence, Jean, our daughter Circee and I packed up and moved back to West Los Angeles and UCLA in pursuit of just that purpose.

In graduate school, I wandered around in the wilderness with no plans or sense of direction. Remarkably, I survived—thanks in part to the survival skills that my mother had instilled in me. I handled graduate classwork by working harder than I had as an undergraduate and taking a minimal number of classes, as I had as an undergraduate. I was not a star in class, but I was good enough. I received all As. I met John Evans, then an M.D. and the best math student in my cohort, and he led a group of us to success in the qualifying exams.

For two years of graduate school, I had no financial support from the department, therefore Jean and I worked part-time, staggering our hours so one of us was always with our young daughter Circee. I worked as a supplemental (student) employee for IBM in Westwood Village near UCLA. On

weekends, I worked for my father at La Fleur Nursery in Southgate, California (many miles from West Los Angeles), as a sales person. Jean worked as a PBX operator at Saint John's Hospital in Santa Monica and taught social dancing at Arthur Murray Dance Studios.

My boss at IBM was a very charismatic and smooth senior executive. He had a Ph.D. in math from UCLA. Putting great importance on the choice of advisor—and rightly so—he directed me towards choosing his former advisor, an individual who had been an excellent mathematician in his day. However, unbeknownst to me, he was an alcoholic; he gave me no guidance on choosing, researching or writing a thesis. I was left alone to choose a problem, do all the research and write as best I could. My advisor did not even know what my problem was about.

At one point, I told him that I was making little research progress on the thesis because I was working too many hours outside of the university. In response, he went to the director of the Office of Naval Research-sponsored UCLA Institute for Numerical Analysis and was able to obtain a research assistantship for me.

I then quickly finished my thesis, which turned out to be a respectable contribution to the math literature. You need quality time to do good math research, but not necessarily to take classes. I often marvel at how I was able to do so much on my own, which brought out in me a level of research and professional independence that has served me well throughout my life. Professor David Sánchez, a member of my doctoral committee, entered into the later stages of the process and guided me in writing up my thesis.

Of the nearly 300 graduate students in the UCLA Mathematics Department, I was the only Latino born and raised in the United States. That did not make me *that* uncomfortable because there also had been few Latinos attending my

high school. When I started graduate school, there was one African American student. Naturally we became friends. In my undergraduate classes, I had rarely seen an African American or Latino student. This was a great awakening for me concerning the critical underrepresentation problem that we had in the United States. This awakening would seriously influence my future direction.

Upon my graduation as a Ph.D., Professor Sánchez asked me what I was going to do. I replied that I did not know, but I would probably take an industrial job. He said that I should try academia. I had never thought of that, although it did sound exciting. Sánchez and Lowell J. Paige, the chair of the UCLA Mathematics Department, called Barkley Rosser, the Director of the Army Mathematics Research Center (AMRC) at the University of Wisconsin-Madison, and convinced him to offer me a post-doctoral position for the academic years 1968-1970. When I received the offer, I told Jean, by now my wife of nine years, to get ready to pack for a move to Wisconsin.

It was the sixties; we were rebelling against structure. Along with many others, I decided not to participate in the graduation ceremony honoring my doctorate. This was a gigantic mistake. It hurt my mother, my father and most notably my wife, who certainly played a major supportive role in my educational accomplishment. She reminded me about this from her for years. However, as partial vindication I offer the following. In 2006, nearly forty years after my doctorate, I was invited to give the UCLA Division of Physical Sciences commencement address. When I finished, the UCLA chancellor appeared on stage and hooded me. To this day, I do not know how this all happened, but it was much appreciated. A special seating section was reserved for my family.

The AMRC was housed in Sterling Hall in the center of the University of Wisconsin campus. It was one of the finest

applied mathematics research centers in the world. I was fortunate to be there among the world's best. Although sponsored by the Army, the research was not Army-mission directed. Spending two years there was the best decision I have ever made in terms of my professional career. I was no longer a student; I had an opportunity to work with world-class mathematicians and they treated me like a colleague. When I went on the job market after being at the AMRC for two years, I had multiple excellent offers from Tier 1 research universities across the country. I accepted a position at Rice University in Houston, Texas. I have to wonder how many of us underrepresented minority mathematicians would rise to the top of our fields if we were given opportunities like those I was given at the AMRC.

It was 1970 when I arrived at Rice University. I was the first underrepresented minority faculty member there. The maids (as they were called then), the janitors and the groundskeepers were almost exclusively Mexican. They were so proud to see one of their own at the faculty level that many Fridays at noon, some of the maids in my building would bring me a food plate consisting of tacos, enchiladas or tamales. They could not speak English, so they were overjoyed that there was a faculty member that they could identify with, someone that actually spoke Spanish.

My bond with these women was strong; they were my people. They could have been family from Mexico. One day, several maids came to my office because there was something important they wanted to tell me and it had been bothering them for a while. I listened as they told me that their top boss, the director of buildings and grounds, was stealing from Rice. Many nights he would load up his truck with tools and supplies and drive off with them. I next learned that this director was extremely well connected to the Rice community. He was married to the daughter of one of Rice's best known and

biggest benefactors. This sounded unbelievable. I asked the maids if they could have their immediate supervisor come and talk to me about that accusation. Mr. Cruz came and repeated the identical story. While I was trying to figure out what to do next, I was told by the maids that Mr. Cruz had been fired by the director of buildings and grounds. It seemed that he had learned that Cruz talked to me. It was clear now that I had to inform Rice President Norman Hackerman.

Hackerman was forceful and direct. Talking to him seemed like standing in front of an approaching Mack truck. He was a brilliant and well-recognized chemist and at the time he was the chair of the National Science Board. My story did not fall well with President Hackerman. He sternly told me that my story could not be true, that the director of buildings and grounds was a well-respected member of the Rice community and that I was “an enemy of the university.” I so clearly remember those words.

I left the president’s office feeling I had not accomplished anything. But about a week later, I was called back to the president’s office. He told me that the building and grounds boss had been fired, Mr. Cruz was reinstated with back pay and that he was going to nominate me to the National Science Board. He did nominate me, but I was not elected because I was still a junior professor; members of the National Science Board were distinguished scientists and administrators. (I was elected some 25 years later.) I realized that this was Hackerman’s way of saying he respected my leadership style, and he and I had a respectful, if not cordial, relationship for the rest of his tenure as president of Rice, and for the rest of his life. When I was appointed university professor by the Rice University Board of Trustees in 2005, past President Hackerman, at the age of 93, drove from Austin to Houston for the celebration. I was speaking to the celebratory audience as he entered the room. Seeing him, I immediately broke

and said, “Please welcome President Hackerman. He and I used to have disagreements,” to which he replied from the doorway, “Disagreements, hell, we used to have downright fights.”

I have continued my direct approach with Rice presidents to this very day; some take it better than others. George Rupp, who succeeded Hackerman as president, used to ask me, “Well, Richard, what did I do wrong today?” every time that our paths crossed.

From my early days in 1970 as an assistant professor at Rice, I just wanted to be a good professor in terms of research, teaching and service to the department and the university. However, I soon saw that as an underrepresented minority (URM), I could be very effective in mentoring and working with both undergraduate and graduate URM STEM students. Moreover, there was a great need, and there was no one else who could assume that responsibility. I immediately faced a critical decision that would challenge and plague me throughout my entire career. It involved the delicate balance between professional activities, mainly research that would be rewarded, and outreach activity that would not be rewarded, but was so completely necessary. We young URM faculty had heard many alarming stories about minorities not being promoted for various reasons. It became clear to me that I should get tenure before I started doing significant outreach, so that is what I did.

Nothing tests an individual’s survival skills better than figuring out the path to promotion with tenure and then following through with it. I was really quite good at university survival. I received a promotion to associate professor with tenure in 1972, essentially in record time. As I reflect back, I probably advanced too early, but I made it, and it moved me even further towards the front of the bus. At times, I felt that I was driving the bus. Our chair suggested that I had such



good visibility in the Rice community because I was an URM, and I had such good teaching evaluations because I had long hair. He may have been right on the former point, but not on the latter. I was now in a secure enough position to embrace giving back in terms of addressing underrepresentation. I could help because I had been there and I understood. And now I had tenure.

Throughout my career I have been an active and visible leader at Rice. In 1972, I sponsored the founding of the Rice Association of Mexican-American Students (RAMAS) (See book cover photo.). I was an active member of the undergraduate admission committee for six years. I was the chair of the Mathematical Sciences Department for five years, and I founded the President's Lecture Series of Diverse Scholars (PLSDS). I directed the National Science Foundation-sponsored Alliance for Graduate Education and the Professorate (AGEP) for more than ten years. I founded the Tapia Center for Excellence and Equity in Education. I was a good citizen, a good teacher and a good researcher. I gave Rice excellent national visibility in many areas. Recently, the current Rice president said to me that Rice had been good to me and had treated me well. I replied that I agreed with him, but with my broad and diverse background, Rice has been very lucky to have me on its faculty, and I believe that I have given more to Rice than I have received.

This visibility, coupled with my research activity and well-recognized mentoring and direction of women and underrepresented minority students, in turn led to prestigious awards, including selection to the National Academy of Engineering (first Latino ever) in 1992, an appointment by President Bill Clinton to the National Science Board in 1996 and presented with the National Medal of Science (only Latino ever) awarded by President Barack Obama in 2011. This followed the creation of the David Blackwell–Richard Tapia

Mathematics Conference in 2000 and the Richard Tapia Celebration of Diversity in Computing Conference in 2002. By now I had become a well-recognized national STEM leader with far more than my share of prestigious awards.

Because I grew up in California, I just knew that one day I would end up as faculty at UC, Berkeley or Stanford. In 1976, Stanford invited me to visit as a prospective faculty member. The dean at the time had given the Department of Operations Research (OR) a visiting position for me. At that time, Stanford OR was arguably the best in the country. Moreover, since my research area is continuous optimization, I belonged in the OR Department and not in the Stanford Mathematics Department. When I started to teach, the chair of the OR Department came to me and advised me not to take it personally if I did not get good teaching evaluations. The students did not like OR classes. In fact, the OR Department in a recent survey had ranked ninth out of eleven departments in the division of engineering in terms of teaching. Contrary to this warning, I received perfect teaching evaluations for both of my classes. My ratings alone took the OR Department from ninth out of eleven to third. I became a faculty advisor to all Hispanic student groups at Stanford, including those in medicine and law. The students loved me, and the Hispanic students followed me around like the Pied Piper. I was really good for Stanford. However, in traditional research, I was not on par with the best at Stanford. My teaching and mentoring alone would have made Stanford a better place for students, but at the end of the year, the OR Department made me an offer of associate professor without tenure. That same year, I had been promoted to full professor at Rice, and I had already enjoyed tenure for more than four years. I had to reject the Stanford offer.

As the years pass, I continue to feel I made the right decision and Stanford made the wrong one. The OR Depart-

ment was concerned that I was not the star researcher they wanted. Years later, I was the first Latino elected to the National Academy of Engineering and the first (and only, so far) Latino to be awarded the National Medal of Science. Stanford would have celebrated those accomplishments along with me. They made a mistake with their back-of-the-bus offer to me.

Over the years, my delicate balance between outreach and professional activity played out well, and I have received considerable recognition in both arenas. Of all my distinctions, I am very humbled by Carlos Castillo-Chávez taking the bold lead in founding the Blackwell-Tapia Conference in honor of David Blackwell and me. Likewise, I thank Valerie Taylor and Bryant York for conceiving the Richard Tapia Celebration of Diversity in Computing Conference in my honor. Bryant York wrote me a beautiful letter on naming the conference for me because he believed that I would uniquely be the best person to bring the African American and Latino computing communities together. Both conferences have developed lives of their own, and are solid contributions to the scientific communities.