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Finding a Life's Direction

Wondering how transformative the experience of higher education can be? Just ask recent Baylor graduate Juan Yaquian. By Lisa Asher, Photos by Joe Griffin

During one of the busiest times in his life—in the midst of finals, upcoming graduation, an impending summer internship that will be beyond demanding, and graduate school in the fall—Juan Yaquian had to contend with a broken finger.

It's not that big of a deal, he said, grinning sheepishly. It happened when he was lifting weights. One of the weights slipped from the bar, Juan explained, and though he felt a stab of pain, he kept lifting. It was only when he saw his fingernail hanging from the tip of the fourth finger on his right hand that he stopped.

"Good thing I'm left-handed," he said with a shrug.

Okay, so dragging around an awkward finger splint for six weeks wasn't part of what he calls his "strategic life plan." Juan, who graduated from Baylor in May with a degree in electrical and computer engineering, knows that there will be little blips along the way.

But he also knows exactly where he's going—the College of Engineering at the University of California, Berkeley, which was named "America's Best Graduate School 2010" by *U.S. News & World Report*. He knows what he'll be studying—circuit boards with wireless communication application. And he knows what he'll do with that research—develop a cancer detection method that is inexpensive, safe, and, most importantly, accessible to everyone, no matter their income.

These are bold plans, especially from someone who's been through more than his fair share of trials in just twenty-three years. But all you have to do is sit across from this intense, slightly built, soft-spoken young man, and you'll believe every word he says.

"Remember the name Juan Yaquian," said Dr. Robert Marks, Baylor Distinguished Professor of electrical and computer engineering. "He's going to accomplish great things."

Gated Community

"Juan has been and is a disciplined young person," said Elizabeth Vardaman, with more than a hint of understatement. As the associate dean of special academic projects in the College of Arts and Sciences, Vardaman worked with Juan to find and apply for scholarships. With her guidance, during his five years at Baylor he won six major scholarships—including the prestigious Barry M. Goldwater Scholarship and the National Science Foundation (NSF) Graduate Fellowship—and he was a finalist for both the Truman and the Rhodes scholarships.

Vardaman attributed Juan's success to a work ethic derived from hardships. "He has known—partly because of the challenges he and his family faced when he was growing up—that his future would be determined in large part by how intensely he committed himself to his academic work in college," she said.

Juan will talk about his past struggles, but he seemed a little reticent to explore that area of his life, preferring, instead, to focus on the positive. So let's start with someone Juan calls his hero: Microsoft co-founder Bill Gates.

No, they've never met, but Gates is a major reason why Juan was able to come to Baylor.

Founded in 1999, the Gates Millennium Scholars (GMS) Program, funded by the Bill and Melinda Gates Foundation, provides full undergraduate scholarships to minority high school students with significant financial need. In addition, according to the GMS website, the program will fund graduate schooling in the areas of computer science, education, engineering, library science, mathematics, public health, or science.

Even though the GMS Program is highly competitive, Juan's teachers at Temple High School encouraged him to apply. The application process, said Juan, was rigorous. "I've applied for some pretty big scholarships and fellowships," he said, "but I'd say that was probably the most difficult to apply for because I was so young. They wanted so much detail about everything you'd done. They wanted ten different essays."

As Juan talked about the other people he knows who are also Gates Scholars—including one friend at Yale Medical School and another at MIT—he still marvels at his own selection. "I'm the one who snuck in," he said with a laugh. "I just decided that I would work hard and do everything I could do to make sure that no one ever figured that out."

Plan of Action

With the money from the GMS Program firmly in hand, Juan could have gone to college anywhere he wanted—literally. So, why Baylor? "I didn't even think about it; there wasn't even a second choice," he said. "I wanted to make sure I grew spiritually and academically, and that I would be able to excel and go to a great [graduate] institution."



People still ask him why he didn't start out at MIT or UC Berkeley, he said. "But I would never have gotten the experience I've gotten here because an entire department is supporting me and telling me that if I need any help, they're there for me and they'll do what they can to guide me and provide advice for me," Juan said. "I don't think I would have gotten that at any other institution where an entire department is rooting for me."

There was another reason, too—location, location, location. "I wanted to be the son my mom always needed me to be, so I wanted to stay close to my mother," said Juan, who, characteristically, had already mapped out that thirty-minute trip down Interstate 35 from Waco to Temple.



Right from the beginning, Juan said, he felt at home at Baylor, where he lived in Martin Hall his freshman year. There, he met a variety of students, not just engineering majors, and that allowed him to broaden his horizons and make unexpected friends.

But his first semester was not without its challenges. On his first college exam, he made a B. The class was Engineering Design I, and as the instructor, Brian Thomas, admitted, it's considered the easiest engineering class in the program. "I asked him about it once, and he said he had not properly prepared," said Thomas, who is a lecturer in electrical and computer engineering. "He said the experience was highly motivating for him, and he hasn't looked back since."

From then on, Juan focused on his studies and took in as much extra information as he could by reading research journals and papers. "When other students were playing computer games or pick-up basketball," Vardaman said, "Juan was in his room reading articles in his field or doing extra work beyond his homework." His purpose, he said, was to figure out his life's direction. "I opened my mind to all the problems that are out there and asked, 'How can I use my skills to do something that people haven't been doing?'"

Research Subject

He found the answer during his junior year. "My area of interest would be circuit design—circuit boards with wireless communication application," he said. "It deals with RF design, which is radio frequency design, analog circuit design, and mix signal design."

And *that's* his description in layman's terms. When asked to put it even more simply, Juan talked about how X-ray and MRI technology, while effective in cancer detection, can also be both costly and can expose the body to dangerous levels of radiation. What if, he started thinking, there was a way to use cheaper and safer microwave imaging to find cancerous tumors?

To explore his new idea, Juan knew that he needed to acquire new skills, so he looked to the top two engineering schools in the country—UC Berkeley and MIT—for additional training. "I was trying to get experiences that would help me because I didn't just want to get internships to get money," he said. "Once I decided my junior year what I wanted to do, I started to strategically plan out everything I wanted to do for my life."

During the summer after his junior year, Juan attended the Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB), an eight-week program that provides hands-on research opportunities to engineering students. His intent, said Juan, was to gain hardware experience by designing circuits, testing them, and then implementing them in a real-world way.

SUPERB also emphasizes skills that students will need to both get into graduate school and succeed once there, including how to build a network, what the top universities expect, and how to optimize your internship experiences. And while that was helpful, Juan said, it was also stressful. "There, the main focus is becoming the most competitive person you can be," he said.

After completing the Berkeley program, Juan was definitely ready for a break. But instead, he traveled directly to Honduras to participate in Baylor's Engineers with a Mission, a small group of engineering students who work on specific projects in often-remote locations. And while helping to install a micro-hydro electric generator was no easy task, it actually provided Juan with a rest—of sorts.

"There, it was a totally different mindset," he said. "It's a reality check there. Everything doesn't have to be about making yourself the most competitive person. It just reminded me to never lose sight of the fact that there is more to life than being focused."

Rising Above

But Juan wasn't the only one who learned some lessons on that trip. As the faculty sponsor of the Engineers with a Mission program, engineering lecturer Thomas became more acquainted with Juan while in Honduras. "One night he shared his personal story with me, and I sat in awe as I heard it," he said. "I learned that he grew up in a difficult situation, and yet turned out to be such an amazing young man."

The story that Juan told was one of abandonment and poverty. When Juan was nine, his father, Manrique, walked out one day—and never returned.

The family, including Juan's older brother and younger sister, lived in Corpus Christi at the time. Their mother, Rose Mary, held two jobs—during the day, she worked with special education students at a school, and at night she worked the graveyard shift at the juvenile detention center.

One story that Juan told, said Thomas, was particularly poignant. "During an extended period when his family was unable to afford electricity at the house," Thomas recounted, "Juan would study in the family car using the dome light to read."

To ease the financial burden and to also provide some male guidance, Rose Mary's brother took Juan back to San Antonio to live with him and his wife. Three years later, after he had completed middle school, Juan returned to live with his mother and siblings, who had moved to Temple in the intervening time.

Because she was working two jobs and attending the University of Mary Hardin-Baylor at night, Rose Mary was rarely home. It was the perfect opportunity for Juan to do whatever he wanted. That included hanging out with what he called "the wrong crowd," many of whom, he said, are now in jail. In addition, Juan said, he blamed his mother for his father's leaving and refused to see her as an authority figure.

Despite his problems, he continued to make excellent grades. Both his mother and his teachers were telling him he could do anything he wanted, he said. The trouble was, he didn't know what that was.

Near the end of his junior year in high school, something clicked. He turned away from his "wrong crowd" friends, started attending church more, and became even more serious about his studies.

Juan attributes the change to becoming more mature and giving himself to God. It would have been easy to stay on that wrong path, he said, but somehow, Christ wouldn't let him go.

Juan's turnaround also made him look at his mother in a whole new light. Instead of feeling like Rose Mary was also abandoning him, Juan saw that she worked two jobs and went to school to be a role model to the family—not to get away from them. He realized that her dream of becoming a teacher and her drive to accomplish that goal were to show her children that dreams can come true—if you work hard enough.

After his change of heart, Juan and his mother would work on her math and science homework together, and it was then, he said, that he realized how much he enjoyed that kind of work and how naturally it came to him. He also became determined, even at that young age, to develop a life plan and follow it through.

That determination was what brought him to Baylor and, eventually, to Honduras. And in a roundabout way, Honduras brought Juan back full circle to where he started. Manrique, Juan's father, had come from a remote rural village in Guatemala, much like the Honduran village where the Baylor group was staying.

"I think this gave Juan a sense of his own roots that he had never experienced before," said Thomas. "He was able to see the lifestyle that these people—his people—endured daily."

Indeed, Juan became more determined to look at problems on not just an American scale, but internationally. "Honduras reminded me that there are lots of people who need help in the world," he said. "People should have access to help, whether they're wealthy or not."

The experience, said Thomas, also seemed to bring Juan out of his shell and more into the world. "In a sense," Thomas said, "he looked up out of his books—his safe place—and saw that people could be safe, too."

Honing his Skills

There were differences in Juan after he returned from Honduras—he became a little less intense, a little less inwardly focused, and more determined than ever to see his life plan through. The summer after the Honduran trip, Juan did an internship at MIT, where he got a different experience than he had found at Berkeley by working on software and programming.

Back at Baylor, he was elected president of the Baylor chapter of the Institute of Electrical and Electronic Engineers. During his tenure, said faculty advisor Robert Marks, Juan "presided with a quiet, albeit directed, style." He also helped spearhead Baylor's first mini-symposium on wireless and microwave circuits and systems, which featured experts from the Naval Research Laboratory, Texas Instruments, and other universities.

Juan also began applying for more scholarships and grants. During one period, said Elizabeth Vardaman, he applied for five highly competitive internships—and was chosen for all five.

With college funding provided by the Gates Foundation right up through the PhD level, why would Juan tackle the time-consuming and often laborious application forms, essays, and other paperwork required for these scholarships? It's a question he said his friends frequently ask him.

It's not the money these scholarship awards would bring, he answers, but the application process itself. "Applying for these scholarships forced me to look at what I could do with the skills I have," he said, noting that many of the applications required research proposals, which are a staple of graduate school. And while he ultimately didn't get the Rhodes and Truman scholarships, he said that both applications required him to explore international problems from a cross-disciplinary point of view—something he will need to do after graduate school.

Future Perfect

Yes, he's already thinking about life after graduate school. After completing UC Berkeley's four- to five-year PhD program—which he'll begin this August—Juan will only be twenty-eight. What will he do then?

Well, for one thing, he will be much further along in his research than most scientists his age. That is thanks to a Graduate Research Fellowship from the National Science Foundation, which comes with a \$30,000 annual stipend for three years, plus education and travel costs. The fellowship will allow Juan to concentrate on his specific research without having to compete for those all-important—and often hard to find—funding dollars.

Depending on how his research has proceeded, Juan said he will join a national research institution, like Los Alamos or the Lincoln Laboratory at MIT. "Or I might just start my own company with people I've met at Berkeley and people who have a similar passion," he said. "Maybe someone in my own company will work on this project and one day be able to use technology that will detect cancer and will be easy for people to access."

And maybe one day he'll give out his own "Yaquian Millennium Scholarships"? "Exactly," he said with a laugh, "I'd love to reach a point where I can give back and help others reach their career goals in the way I've been supported."

His friends at Baylor know that Juan will achieve great things—and help others to do so as well. "He will give back as fully as he has received," said Vardaman, "and if it takes every hour of every day to make a significant contribution to helping build a better world, well, so be it."

Brian Thomas said, "I imagine he will be an engineering professor and researcher working on some of the world's most difficult and important problems. I hope he remembers me when he 'arrives!'"

But for now Juan is focused on this summer, the last one before he begins his doctoral studies. If you think he's going to rest and relax, you don't know him very well. Two days after graduating from Baylor, he left for Honduras to once again work with Thomas and the students from Engineers with a Mission—broken finger and all.

"I was a little surprised that he wanted to return after graduation, especially in light of the prestigious summer internship he has waiting for him and then the PhD program at Berkeley," Thomas said. "I am delighted that he wanted to come back, however. His engineering is excellent, his attitude is unshakable, and his Spanish is pretty good, too!"

The prestigious internship Thomas mentioned is with Qualcomm Incorporated, a San Diego-based company that's the leader in the wireless communication industry. Juan will have two days between getting back from Honduras and reporting for duty in California. Of course, that's an extended vacation compared to the single day he'll have to pack up and fly to San Francisco when he'll begin graduate school.

But Juan knows that if the pressure is getting to him, he can always call home. "I never felt pressure [from my family] to do well," he said. "When I call my mom, she's not going to ask me how my grades are. She's never, ever asked me that. She'll say, 'What do you want me to cook the next time you come back?'"

Looking back on where he came from and what he's accomplished at Baylor, Juan is satisfied. "I have grown intellectually, spiritually, and socially and gained more focus on what I want to do with my life," he said. "That's exactly what I got from Baylor."

The future, he said, is "a little scary, but I'm confident that I'll always do well. Now I don't feel like I've snuck in. I do belong, and I just need to work. And with hard work, I think I'll be able to do well."

Lisa Asher is associate editor of the Baylor Line.