

# Engineering talent flows to S. Arizona

By Gabriela Renteria-Poepsel  
Special to the Green Valley News

**TUCSON**—Electrical engineer Christian Maldonado and his wife Giselle Bonilla, a multi-disciplinary engineer and computer programmer, sip lattes at the Starbucks at Swan and Sunrise in Tucson's Northeast foothills.

The backdrop of spiny cacti and craggy mountains is a world apart from the tropical vegetation and crystal seas of their native Puerto Rico. Just a year ago, these new graduates faced a decision that changed their lives: leave the island where they grew up for higher salaries and more professional opportunities or stay close to family and familiarity. Then the couple was contacted in Puerto Rico to interview with Raytheon Missile Systems Co. Today, they work for what is now the largest employer in Southern Arizona.

In moving to Tucson, they joined more than 70 Puerto Rican professionals currently working at Raytheon Missile Systems. Most of Raytheon's Puerto Rican engineers are graduates of the University of Puerto Rico at Mayagüez. Known on the island as "El Colegio," it offers degrees in chemical, civil, computer, electrical, industrial, and mechanical engineering, along with surveying and topography. Each year, 20 to 30 engineers like Maldonado and Bonilla are hired to work at Raytheon facilities around the nation. Roughly half come to the Tucson plant.

Angel Crespo, a campus recruiter and a senior mechanical engineer for the Raytheon plant in Tucson, says that one of the main attractions for them is that a Puerto Rican community has formed in Southern Arizona. "The first thing that any Puerto Rican looks for when leaving the island is other Puerto Ricans."

"I was surprised to see the number of Puerto Ricans here," Maldonado says. "It's always good to find something familiar when you arrive in a strange place."

"The Puerto Rican community (here) helped me overcome



GABRIELA RENTERIA-POEPEL PHOTO

**PUERTO RICAN** engineer Christian Maldonado and his wife Giselle Bonilla, a multi-disciplinary engineer and computer programmer, enjoy lattes at the Starbucks on the southeast corner of Sunrise and Swan in Tucson.

solitude," agrees José Joel Díaz, a Puerto Rican electrical engineer at Raytheon, who came to Tucson in 2005. "We're always celebrating something. That really helps, because you don't have a lot of time by yourself, thinking of being far away from home."

The Tucson Puerto Ricans have "parrandas" or barbecues at least once or twice a month. Besides sharing Thanksgiving and Christmas, every year the group celebrates Noche de San Juan (St. John's Night), a popular Puerto Rico religious event on June 23rd, the shortest night of the year. Noche de San Juan commemorates the birth of their patron saint and welcomes summer. At midnight, locals on the island swim in the ocean backwards for good luck and blessings. In Tucson because there's no ocean for hundreds of miles, they often

do the ritual backstroke in a swimming pool.

Tomás García, a Raytheon Puerto Rican program manager who recruited island engineers for 16 years, credits the company's interest in Puerto Rican engineers to their academic preparation. "The University of Puerto Rico has a five-year curriculum, and the Puerto Rican students have skills and lab work that are not achieved by students in some U.S. universities," he says. "They bring a different perspective. That diversity of thought is important."

Also, García points out, Puerto Ricans are U.S. citizens, a requirement for working at Raytheon.

Walter Silva, acting department chairman of Engineering Science and Materials at the Mayagüez campus, says that American companies come because University of Puerto

Rico graduates more bilingual minority engineering students than any place on the mainland. According to the American Society for Engineering Education, in 2006 the University of Puerto Rico granted 606 bachelor's engineering degrees to Hispanics, far exceeding institutions in California, Texas or Florida.

The high number of graduates with engineering degrees is a source of pride on the island. However, as engineering enrollment increases, so does the "brain drain" of grads who leave for jobs on the mainland. The College of Engineering at Mayagüez estimates that about half of their engineering graduates will leave Puerto Rico for higher salaries on the mainland in coming years.

Every October, the University of Puerto Rico-Mayagüez holds a job fair, attracting com-

panies such as Texas Instruments, Honeywell, Microsoft, IBM, NASA, Lockheed Martin and Raytheon, which has been hiring engineering students in Mayagüez for 30 years. In an air-conditioned auditorium, Raytheon's Angel Crespo recently talked to 16 students about their chances of being hired. This was the fourth time he had traveled to the University of Puerto Rico from Tucson to recruit engineers.

"Enrollment in high-tech degrees like engineering is decreasing in the mainland, but in Puerto Rico the opposite is happening," Crespo said.

Jeff Goldberg, associate dean for academic affairs at the University of Arizona's College of Engineering, agrees that interest in engineering is shrinking in the U.S. "The traditional white male engineer is not enrolling in the same numbers,"

Goldberg said. He says this decrease is due in part to the perception that engineering is hard compared to other majors and that is not as lucrative as law, medicine or business.

"It is not perceived as exciting. It is not perceived as necessarily helping people. And to be honest, that doesn't appeal to a 17-year-old," he added. Goldberg says that students who do enroll in engineering usually had some experience related to the field in high school or have a relative who is an engineer. "Until we reach out to women and people of color, we will not be able to replace the people that will retire in the next 10 years," Goldberg said.

The University of Arizona graduates about 450 engineering students every year, of which about 25 percent are Hispanic, Native American or African-American—Hispanics being the largest group. Goldberg says that although diversity is important, in the end companies like Raytheon ultimately hire based on the quality of the students. "I believe they hire only the extremely talented." Goldberg says that about 60 to 80 students are hired by Raytheon at the University of Arizona per year.

Starting a five-year engineering program at the University of Arizona to compete with universities like the one at Mayagüez would not be economically feasible, Goldberg says, especially since the UA's College of Engineering often has to compete for resources with other departments within the university. Budget cuts and the current inability of the University of Arizona to compete with other universities in salaries offered to faculty have not helped the department either.

According to Goldberg, the University of Arizona is experiencing its own brain drain. "It happens all the time," says Goldberg. In the past two years, some departments in the College of Engineering have lost five to six faculty members out of 15.

Goldberg would like to see the University of Arizona make engineering a critical priority. "ASU has done that," he says. "But here the strategy seems to be 'everybody shares,' so we are not as focused." Goldberg notes that engineers drive the economic engine in southern Arizona, where the major employers are Raytheon and Davis-Monthan Air Force Base.

To deal with its own brain drain, Puerto Rico's UPR-Mayagüez government is trying to create incentives to attract multinational companies to the island, which could prompt more students to stay, says Ramon Vasquez Espinosa, dean of engineering at UPR-Mayagüez. Vasquez Espinosa says that companies like Honeywell are already opening offices in the island and hiring their graduates. In February, UPR-Mayagüez was donated \$300,000 by Lockheed Martin Corporation, forming a research partnership to recruit Puerto Rican engineering and science graduates for projects focusing on explosives detection and new forms of radar data.

Most American engineering companies in Puerto Rico, however, focus on production. According to the Puerto Rico government's Industrial Development Company, about 50 percent of all pacemakers and defibrillators made in the U.S. are made in Puerto Rico, along with 16 of the 20 top selling pharmaceutical companies from the U.S. mainland.

New Tucsonan Raytheon engineer Christian Maldonado says that he left Puerto Rico because he wanted to work in an environment of high technology. But the flight of Puerto Rican engineers to the mainland is not surprising when comparing the \$40,000 salary they can expect on the island to \$60,000 on the mainland.

Maldonado and his wife Giselle Bonilla admit that it has been difficult being away from family and friends, but say they are doing what is necessary to start their new life as a couple. For now, they plan to stay in Tucson for at least five years.

"We will not be back in Puerto Rico until things are getting better or we decide to become professors and go back to teach," Maldonado said. "It's very possible that we will have our lives here."

## About This Series

A team of University of Arizona's international journalism students recently visited Puerto Rico for an exhaustive report on the U.S. commonwealth. The project was led by veteran reporter and associate professor Alan Weisman, who takes a team of UA

journalism students each year to a different part of Latin America. Weisman is also an author, whose latest book is "The World Without Us," published by St. Martin's Press/Thomas Dunne Books. The series raises interesting questions about the U.S.

relationship with Puerto Rico now and in the future. Could the United States accept a Spanish-speaking state? What would happen if Puerto Rico became independent? Student reporters participating in the series were Lorena Barraza, Laura Belous, Laura

Dent, Juan Carlos Leblanc Albarrán, Riley Merline, Gabby Renteria-Poepsel, Dave Trautman and Kylie Walzak. The Green Valley News has decided to publish most of the series in print and online, publisher Pam Mox said, because the project was well reported and written. In ad-

dition, the newspaper wants to support the UA journalism department's effort and to encourage young journalists, Mox said.

To comment on the stories, e-mail [letters@gvnews.com](mailto:letters@gvnews.com). See previous articles in the series at [www.gvnews.com](http://www.gvnews.com).



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