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An Alumnus' Reflection

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commentary

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—**Aaron Tomich** (Edited by Brigid C. Casellini)

I'm at a job site in Mexico, standing in front of a hundred local laborers paid to fabricate my company's product into a usable form. It's a multi-million dollar job, it's behind schedule, and I'm the engineer who has been sent to fix it. But the skills required here are not technical. Morale is low, and improving it has little to do with formulas or schematics. The key to success will be communication, to act as a liaison between the work force, my superiors in the US, and our customer in France. This is my first chance to make an impression. So I take a deep breath and prepare to introduce myself—in Spanish ...

When I applied for a grant from the International Research Opportunities Program (IROP) in 1998, I never expected this scene in Mexico would unfold six years later, nor did I anticipate how closely my IROP experience would relate to it. IROP projects combine the technical experience of undergraduate research with the opportunity to perform that research abroad. My IROP experience took me to the Universidad de Salamanca, in Spain, to study the properties of a state of matter called a supercritical fluid. On the technical front, most of my time was spent in a chemistry lab. On the cultural front, Salamanca is a top destination for foreign students studying Spanish. In fact, I shared an apartment with roommates from Norway, Holland, Sweden, and Japan. While I was in Spain as a chemical engineer, my roommates were there to study Spanish. Unlike them, I had minimal classroom experience with the language. By necessity I picked up what I could. In the end it is that language component of the experience which has been most beneficial in my professional career. But let me begin with the technical.

Aaron Tomich, '00, standing in front of a deep sea oil pipeline being fabricated on the shores of the North Sea. Tomich's current employer manufactures a super insulation system utilized on sub-sea pipelines around the world.

In 2004 I took a job with an exciting start-up company which produces a super insulation material called *aerogel*. The key to manufacturing aerogel lies in supercritical fluids, the same materials I studied in Spain. As my company is new and constantly changing, my job has changed with it. My first year consisted of developing a form of our insulation to be utilized on deep sea pipelines, and then helping sell that system to the oil companies.

About a year into this job our company received its first major sale. My role quickly changed from being the guy helping design a few prototypes to being the guy helping produce thousands. Like most new ventures we encountered challenges, and I soon found myself at a struggling job site in the city of San Luis Potosi, Mexico. Beginning with my first conversation with a Mexican local (to ask directions to my hotel), I was reminded of my cultural experience in Spain.

One of my most memorable IROP experiences in Spain was getting a haircut. The barber was a short, old Spanish man with a deep, raspy voice. He spoke no English, and my Spanish was not very good. Describing how I wanted my hair cut was a challenge. I think I eventually told him to cut it *casi a la piel,* which means "almost to the skin." This is one of those little, daily details of life one takes for granted until he finds himself in a foreign country. Of course I got by. No problem. My hair just ended up a little shorter than I had intended. But at the time I sure wished I spoke better Spanish. Before leaving the US for Spain, I had spent the majority of my preparation time for IROP focused on the research. I knew the chemistry well but once I got to Spain I realized I had overlooked my cultural preparation.

Fast forward six years to that job site in Mexico. My superiors had basically said "Don't come back until the job is done." I welcomed the challenge. I was confident in my technical ability. But what about the non-technical? How would I communicate with the workers? And what about after work? Where would I go jogging? Or buy groceries? Certainly having been through all that once before helped me hit the ground running in Mexico. I already knew how to ask for a haircut.

Although most of the management at the work site spoke English, most of the workers did not. Within the first days I realized the success of our program would hinge on the workers. I soon stopped using management for translation and began speaking directly with the workers in Spanish. Half way through the program we implemented a night shift. There was no English spoken at all during the night shift.

By the end of the program I had made several good friends. It was particularly rewarding to meet their families. My closest friend has two young sons. The older son told me that in his classroom at school they have *una tortuga con dos cabezas* (a turtle with two heads!). With this experience I came to know two of the best ways to learn a foreign language: start working the night shift and have a conversation with a 6-year-old.

As it turned out I spent the better part of nine months in Mexico that year (2005). Ultimately we put the job on track and our company successfully delivered its first major contract. The key to that success was building relationships with the workforce. Having someone on-site who made an attempt to learn their language, who could see the job through their eyes, and who communicated that viewpoint back to the French and American project managers, was invaluable to those workers. I can't imagine achieving such success without some knowledge of the language going in.

But the irony is I would have been sent to Mexico whether or not I knew a word of Spanish. In many ways my team made the same mistake I did way back in preparation for my IROP experience in Spain: plenty of focus on the technical and not enough on the cultural. Lesson learned. Again.

Author Bio

Aaron Tomich *from Millbury, Massachusetts, graduated from the University of New Hampshire in 2000 with a degree in chemical engineering. He worked as a project engineer at Albany International in Rochester, NH, for four years before taking a job at Aspen Aerogels in Northborough, MA, where he now works as an application development engineer. He was one of the first students to participate in the International Research Opportunities Program (IROP) at UNH when he completed his research in Spain in 1999. Following this IROP project he presented his research results and was recognized by the American Institute of Chemical Engineers for the best undergraduate research presentation in the New England region.*

Mentor Bio

Professor ***P.T. Vasudevan*** *has taught in the chemical engineering department at the University of New Hampshire for nineteen years, during which time he has mentored numerous graduate and undergraduate students. Dr.Vasudevan has won a number of awards including the Tau Beta Pi Outstanding Teacher Award, the CEPS Teaching Excellence Award, the Jean Brierley Teaching Excellence Award, the Excellence in International Engagement Award, and most recently the American Society for Engineering Education New England Section Outstanding Teaching Award. For the past twenty-three years he has worked in the area of catalysis and biocatalysis. His current research is on bioenergy.*