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Global Engineering Education: What Difference Does It Make?

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ABSTRACT
As recently retired Executive Director of the International Engineering Program (IEP) at the University of Rhode Island, the author has studied several IEP alumni to determine what difference their international education has made for the progression of their engineering careers. Each earned both engineering and language degrees (BS/BA) and each spent an entire undergraduate year abroad. What skills did they acquire? How have their bilingualism and their study and work experiences abroad impacted their lives and careers, when viewed from their current status as practicing professionals?

INTRODUCTION
John Grandin, recently retired professor of German and founder and executive director of the International Engineering Program (IEP) at the University of Rhode Island, has published a book about fifteen representative alumni of this distinctive program.[1] The volume comprises a series of case studies of IEP graduates who came to URI as engineering students, but who opted to complete the unique program enabling them to earn a language degree along side their engineering curriculum and spend an entire year abroad, studying at a partner university and completing a six-month professional internship. Grandin's goal is to track the progress of these fifteen alumni, to see what they have achieved as young engineers in the workplace, and to understand what role their international education has played in their lives and careers. Grandin takes the position that these are all gifted individuals who would have been successful with or without the IEP. His goal in the study is to determine what difference the IEP has made, what skills they acquired specifically through the IEP and how these skills have impacted their careers. Grandin seeks to better define the outcomes of the IEP experience and to bring this knowledge to bear as the University of Rhode Island and other institutions seek to improve their global preparation of the next generations of engineers.

SUMMARY OF CASES
Jesse Schneider, who studied mechanical engineering and German and graduated from URI in 1994, is a proud alumnus of the IEP and a good example of the cases studied for this volume. Jesse has put his global skills to good use, both professionally and personally. Fluent in German, Jesse was able to play a key role in the forward-looking fuel cell technology research with a German-led team at DaimlerChrysler in Detroit and Stuttgart. After that company's break-up, Jesse moved to Germany to join a company focused on the same technology, and has since moved to a research team at BMW headquarters in Munich. While refining his German at a Goethe Institute in Germany, Jesse met Laura, his Italian wife of several years and mother of their daughter. In the meantime, Jesse has also become fluent in Italian, and enjoys the time spent with Laura's parents in Italy. Jesse is indeed very much at home in his international environment.

But not all IEP graduates end up abroad. Mike and Christina Smith, for example, live and work out of their home in Jamestown, Rhode Island, located on an island in scenic Narragansett Bay, where they are also raising their two daughters. This does not mean, however, that they are not using their skills developed for the global workplace. Mike, as a principle electrical engineer for BAE Systems, works with several global research and development teams who conduct their work through computer and teleconferencing networks. Based upon his cross-cultural communication expertise acquired as an IEP student, Mike often finds himself in a leadership position, able to pull people together from different cultures and different disciplines to achieve the necessary goals. Chris puts her global skills more directly to work as the strategic planner for business development for a German-owned supplier to the world's plumbing supply sector. She played a direct role as cross-cultural and language mediator when her company took over an existing American plant, helping the two cultures to understand each other and eventually succeed. She continues to use her German and her knowledge of the two cultures on an almost daily basis.

There are others in the study, who at first glance do not appear to be using their acquired global skills, but

[1] Going the Extra Mile: University of Rhode Island Engineers in the Global Workplace, Rockland Press, 2011, 184 pages. For information: Grandin@uri.edu

nevertheless feel greatly indebted to the IEP. Sareh Rajaee, for example, studied biomedical engineering and German, went on to medical school, holds an MD from Brown University as well as a Masters in Public Health from Harvard, and is now completing training as a vascular surgeon at Yale University. Sareh uses her global skills in communication with the multicultural staff and patient base in the medical world. She stresses her indebtedness to the IEP for reasons of extreme importance to her, which we in academia rarely list among the benefits of our international programs. Sareh points out that the rigor of the IEP gave her the confidence and courage to begin to formulate the challenging goals she has met in the meantime. She argues that her year abroad in a realm far outside of her comfort zone equipped her with day-to-day problem solving skills and the courage to believe in herself and even to raise her own expectations of herself. She states passionately that she would not be where she is today had she not opted for the IEP.

THE CASE OF ERIC SARGENT

Eric Sargent stands out among this group of IEP graduates, since he not only completed the IEP in German and mechanical engineering at the undergraduate level, but then went on to the dual degree graduate program, simultaneously earning his MS from URI and the masters-level *Diplom* from the Technische Universität Braunschweig in Germany. Given this ambitious preparation for his career as a global automotive engineer, and the lessons learned from his life's path, his entire case study from Grandin's book will be presented here.

As a Senior Vehicle Engineer at BMW North America, Eric Sargent has what many young engineers would consider to be a dream job. Eric readily agrees while also pointing out that the job is not easy and getting there required an extraordinary effort. In this chapter we will look at Eric's life as a student and young engineer and explore how he reached his current position and what role the IEP played in his development.

Eric is a 2003 graduate of the IEP, having completed degrees in German and Mechanical Engineering. Following his undergraduate years, Eric entered the IEP Dual Degree Masters Program, and simultaneously earned the MS in mechanical engineering from URI and the masters-level *Diplom* from the Technical University of Braunschweig in Germany. In 2006 he was selected to join one of Germany's top automotive suppliers, ZF Friedrichshafen AG, by way of their fifteen-month International Post-Graduate Trainee Program. After the traineeship, he worked for three years with ZF in Friedrichshafen, Germany and Northville, Michigan before securing a position at BMW of North America in 2010.

Eric works today as a bilingual, global engineer for BMW and is called upon for his technical expertise, his language skills, and his ability to function as a cross-cultural liaison. The BMW engineering team in Woodcliff Lake, New Jersey deals with all engineering issues emerging from the North American market in cooperation with the technical headquarters in Munich. What problems are Americans having with their BMW, MINI or Rolls-Royce vehicles? What needs are left unfulfilled by the current product? How can the BMW models be improved from the U.S. perspective? What are the possible technical solutions for issues at hand?

Solving problems with German headquarters might seem like a very straight-forward task, requiring communication of very tangible matters by standard means, but it is far more complicated than simply reporting, for example, that a certain switch is defective or that the navigation system is not working up to a defined level of accuracy. In reality, this team of engineers treads daily on culturally complicated turf, often needing to remind the German lead engineers that their idea of driving is not necessarily equivalent to that of U.S drivers, or that market priorities in the U.S. are not necessarily what they are in Germany. A seemingly trivial example is the concept of the cup holder, which is crucial for Americans who have a far more relaxed driving style than do Germans and often sip coffee while behind the wheel. That such an amenity should be all-important is not readily apparent to the German engineers, for whom drinking coffee while driving is close to incomprehensible. It is issues such as this that made Eric so attractive for BMW of North America. There are, after all, very few American born engineers who speak German and have worked directly with German automotive engineers in Germany.

Eric tells us that while a fair amount of his work could be done by someone with less technical training than he has, his job could not be done by someone without fluency in the two languages and an understanding of the differences between the way Germans and Americans behave and function in their daily lives and without his understanding of the German engineering culture. At times he puts on his German hat to explain the Munich perspective to his American colleagues in New Jersey; at other times he wears his American hat, but uses his German cultural and linguistic knowledge, to help the Germans understand the background and importance of the U.S. needs. In addition to his extensive technical background and training, Eric is and must be a skilled cross-cultural communicator, dealing daily with both technical and linguistic/cultural matters.

Eric is an obvious success story who is frank about his indebtedness to the IEP, without which he would be following a very different career path today. Perhaps a closer look at Eric, his personality, his background, and his own goals might help us to understand why he is one of our "stars" today. Why did he opt for the IEP? Why did he become so fluent in German? What skills, interests or influences helped him to move from one step to the next? Why was he a good candidate for international education, and why did he, in the long run, take it so seriously?

Eric is a modest and humble person, but at the same time clearly independent, confident, hard working and goal-oriented. If we follow our own stereotypical thinking, it would be easy to imagine Eric as the product of privilege, perhaps the son of an engineer, a high school honors student, a member of the track team, maybe even a valedictorian. Ironically, Eric was not a stellar student in high school and came very close to completely dropping out in his senior year. He does recall, however, that his fourth grade teacher identified him as an outstanding math student and told him that she would see his name in the paper someday because of his mathematical abilities. She wisely helped him gain confidence in the math and science areas and encouraged his inclinations in that direction. As a result, he was a good grade school student, and an honors student until his focus blurred in the tenth grade. The potential was always there, but in high school we probably would not have singled him out for success, based on standard judgment tools.

College was not automatic for Eric. There was not a strong push from home; his parents had not completed university degrees and his older brother had not gone to college. But a few things in high school played a role in helping him to see that a university education might be good for him. One was his French class trip to Paris in grade eleven, which gave him a glimpse into the larger world, and the second was a school visit from the URI assistant dean of engineering, whose enthusiasm for engineering and the IEP was contagious. Connecting engineering, technology, and especially cars with college, language, and international study and travel seemed to make a lot of sense to Eric at that time. Seeds were planted, even if they would not yet germinate.

Eric reports that his options for college were limited because of his lack of focus in high school and concomitant shaky record. Due to this and to his limited financial means, he applied for admission solely to URI, which was located just a few miles from his home. He was fortunate to get a tip from his guidance counselor about a scholarship opportunity from the locally based GTech Corporation, which he secured. Eric points out modestly the extent to which this was a lucky break, since he probably could not have afforded tuition otherwise.

When accepted at URI, based largely on his math and science grades and good SAT scores, he received more literature about the IEP in the mail and thought that might be a good option. Though he had studied French in high school, he opted for German at URI, since he thought this might possibly give him a chance to intern at his dream car company, BMW. At that point, the thought of studying another language was not exciting, but he could see the potential advantages. He tells us that he never really enjoyed the URI language classes, and found them to be his most difficult, even though he liked and respected the instructors. But he stuck with the program, motivated in part by the BMW idea, but also by the thought of going to Europe in his fourth year, seeing another part of the world and getting out of Rhode Island for a while. He clearly wanted to put some distance between himself and his high school years, and wanted to learn what was out there possibly waiting for him.

URI challenged Eric immediately and he responded with the gifts that his fourth grade teacher had identified. He not only did well academically, but also learned early and quickly to take advantage of opportunities that could open future doors and help with his financial situation. He interned for three summers in Rhode Island at GTech Corporation, a manufacturer of lottery systems. Though GTech would have been glad to have him stay on, things changed fast when he learned that the IEP had opened up summer internship opportunities with BMW Manufacturing Company in South Carolina. The program recommended him for an interview in South Carolina and Eric was able to intern at BMW the summer before his scheduled fourth-year academic year in Germany. This, in turn, helped make it possible for him to win an assignment at the Munich headquarters for his six-month German IEP internship. I was fortunate to be able to visit Eric at the internship site in South Carolina, a brand new plant where the BMW X5 (sport activity vehicle) and Z3 (roadster and coupe) were being manufactured for the world market. I will never forget seeing the proud look on Eric's face when I met him in the engineering offices of the plant, dressed in his BMW shirt, where he had been given real engineering assignments and was clearly performing to the satisfaction of his German boss, who is Eric's friend to this day.

Just as Eric had been on my doorstep when we first developed the possibility for internships at BMW in South Carolina and Munich, he also responded immediately when we opened the doors to the dual degree masters program with our partner university in Germany, the Technical University of Braunschweig. Having interned with German engineers in Munich, he learned not only that he needed a more in-depth engineering education to qualify as an engineer with such a group, but he also learned that they saw enough potential in him to suggest that he do his masters thesis in cooperation with them. Rather than go right into the workplace as an engineer, therefore, which he could have done, Eric decided to enter the new dual degree graduate program, leading simultaneously to the URI Masters of Science and the German *Diplom*, with a year at URI followed by a second year in Germany. Eric was willing and eager to do this, even though no one had done it yet, and he would clearly be a guinea pig. By this time, he clearly had his eyes set on the goal of a career in the automotive industry, with BMW as his first choice. The fact that there would be some bumps in the road with the new dual degree program did not bother him, such was the level of his risk taking skills in the name of an eventually more exciting career path. With the help of his BMW mentor from South Carolina, Eric was able to intern at BMW in New Jersey for the summer between his graduation in 2003 and the first year of graduate

school, at the location where he is now a Senior Vehicle Engineer. This in turn cemented his relationship with BMW even more, so that he would be able to do his thesis with the group at engineering headquarters in Munich. It also helped build his BMW network in general. His internship supervisor from that summer in New Jersey would also be his boss for his current position at BMW once he had his graduate degrees and a proven track record in the automobile industry.

The dual degree program was a sizeable challenge for Eric and for me as well, as I tried to help him steer his path through the maze of bureaucracy on both sides. It seems that any entrepreneurial step in academia is destined to be blocked by those who say we have never done it that way before and perhaps it simply cannot be done. But, he prevailed and the IEP prevailed, and with a rigorous year of graduate coursework at URI, additional courses, examinations, research projects and a thesis in Germany, Eric was able to graduate in 2006 with masters-level degrees from both URI and Braunschweig. In the United States he has a BS and MS in mechanical engineering and a BA in German. In Germany he is recognized prestigiously as a rare American with the title of *Diplom-Ingenieur* from the Technische Universität Braunschweig. The dual degree program not only gave him a greater depth of knowledge through his work at BMW and the Braunschweig Institute for Automotive Technology, it gave him the background and the credentials for full credibility with his colleagues in Germany.

Eric's thesis was complex, challenging, and unusual and illustrates the complexities of such a dual degree program. The dual masters require one thesis, which is supervised and must be approved and accepted by faculty advisers at both institutions. In his case, he chose a topic to be done in conjunction with a BMW research team, which meant actually meeting the demands of three parties. In reality, however, there were four parties involved, since his research focused on the testing and validation of a complex GPS-based driving dynamics system that had been first developed by a team at Stanford University. Despite the hurdles and potential barriers, Eric dove into the project and completed it to the satisfaction of all parties. The latter was a learning process that took much more than technical skills; it also demanded personal tact, courage, political savvy, patience, and determination. Of course, these are all skills that are needed for a successful career in the global workplace.

Disappointingly, despite this superhuman effort, Eric was not able to land an appropriate position at BMW that summer, despite his unique qualifications. He did, however, participate successfully in a very competitive interview process for a management trainee program with another major player in the German automobile industry and another major partner for the IEP, ZF Friedrichshafen AG. The traineeship meant that he would have a full salary and an ongoing position with ZF, but that he would start first with a series of three projects providing exposure to different aspects of the company. The first position was in the Advanced R&D department in Friedrichshafen to develop software that would estimate vehicle dynamics using just a few sensors, in order to create a low-cost active suspension system for commercial freight vehicles. The second project was based in Northville, Michigan and was with the Corporate Logistics department. Eric functioned as "the German" responsible for visiting the North American facilities and implementing tools to better manage inventory and free up cash during the 2008 financial crisis. The third project was in Friedrichshafen in the Corporate Purchasing department, this time being the North American representative to learn the German system of supplier management, cost structure analysis and cost reduction. For this project he traveled to the main production facilities throughout Germany and to various suppliers to take part in cost reduction workshops.

Upon completion of the trainee program, Eric took a position with the North American headquarters of the company in Northville, Michigan. Though he could well have stayed on at the headquarters in Germany or landed with ZF in another country, he chose to come back to the U.S., where he did very well with ZF and advanced quite rapidly in the organization. He was given responsibilities in several areas, some more technical than others and some with a greater business orientation. He attributes his success at ZF to his very unusual background when compared with other engineers in the company. Being fluent in German and familiar with the R&D headquarters of the company in Germany, being able to interact between the two cultures, being able to exchange his German hat for his American hat gave him tremendous advantages over colleagues who were also technically savvy, but totally inexperienced in the cross-cultural realm. Eric was doing well with ZF and expected to be promoted again before too long.

Eric had naturally and wisely maintained his contacts with his former bosses and supervisors at BMW, knowing that BMW would someday have interest in a German speaking American engineer with experience in the automobile industry. Given the fact that ZF manufactures many components for BMW, such as the automatic transmissions and other driveline and chassis components, it is clear that Eric was well trained for their needs. Thus it is not surprising that his former internship supervisor at BMW North America was interested in having him back on board. Because he was doing well at ZF and indeed felt an obligation to them, Eric was reluctant to move. But the Senior Vehicle Engineer position at BMW was something he had wanted for a long time and it was an opportunity he couldn't pass up.

Eric is clearly the kind of graduate we hoped to have when we developed the IEP. He is bilingual, technically excellent, cross-culturally competent, and is comfortable with his role as a liaison between Munich and North

America. Furthermore, he has achieved all of this by the age of thirty, and most certainly has a very promising future. While we take pride in the fact that the IEP helped Eric along the way, we need to ask what we as engineering, language and international educators can learn and in a sense take back from him for our future planning.

What can we learn from Eric Sargent?

1. Eric should first of all give us confidence in our belief that international education makes a difference. Certainly he would have been successful without the IEP. He could have continued his internships with GTech, for example, and possibly had a fine career there. But, the IEP experience gave him substantially new dimensions which he would not have had without learning German, studying and interning abroad, and finding his way to one of the world's leading car manufacturers. He himself tells us that he gained enormous personal confidence by working and studying in another culture and earning degrees that put him on a level playing field to work and/or compete with the best engineers in the world. Though these factors are scarcely to be measured, a simple look at his record is evidence enough to justify the title he gives himself on his resume: *global engineer*.

2. Eric should also expand our notions of who can learn a language, who should learn a language, how we can "sell" language learning to American students, and how students can have the best success at language learning. His case should also help us to dispel the myth that "English is enough." Though Eric tells us that language learning was not high on his list and that he would not have done it but for the opportunities provided by the IEP, he has indeed become fluent in the language. His self-described test for his ability in German is his ability to function in the language on a professional level. He reads German e-mails on a regular basis, communicates in German almost daily by phone, uses his German to convince the lead engineers in Munich of the BMW issues to be resolved for North America, and, perhaps, most notably, is proud to have survived many an uncomfortable situation at the bargaining table – in German.

3. Eric's story teaches us that language learning needs to have direct applications if we wish to catch the attention of larger numbers of American students. It needs to be tied to other disciplines across the curriculum, engineering being one good example, and to future career opportunities. In short, it needs to intersect with students' lives. Though the basics can and must be supplied by the classroom at home, the learning process also needs to be reinforced through immersion experiences in the culture abroad. Eric would not have gained his language fluency without studying in Braunschweig and working at BMW in Germany, where he was forced to use the language as the primary means of communication.

4. The same can be said for study abroad. Who can do it? Who should do it? What are the parameters for a meaningful and valuable experience? And how do we win candidates for programs that meet the best criteria? Eric provides ample evidence that experiences abroad can be life changing and are extremely valuable in combination with rigorous study of any number of fields, with engineering being just one example. But, perhaps the debate today no longer needs to focus on whether study abroad is desirable, but the questions of how to do it, when to do it and for how long are still wide open. Many educators argue for any and all forms of study abroad, and we see widely diverse iterations from school to school. Would Eric have experienced his personal and professional growth if he had studied for a month or two in Finland, with all work done in English? Would it have been adequate to spend a summer doing project work with Chinese students in Beijing, again in English? Perhaps practicalities prohibit us from advocating that large numbers of students follow the model that Eric represents. Yet, if American universities do not make it possible for sizeable numbers to have in-depth experiences abroad, in the language, in the culture, then we as a nation are not meeting the standards set by peer institutions and peer nations around the world.

5. Eric's story also underlines the importance of training young professionals to appreciate and deal with differences that are rooted in cultural tradition and perspective. He acquired cross-cultural communication skills through the materials that are integrated into the German language classes at URI and through the IEP pre-departure orientation, which helped open his eyes to the fact that Germans do in fact do it differently. Largely, however, this knowledge was acquired through the day-to-day experiences during his studies in Braunschweig and his internship and work experiences in Germany. Key to his success in this area is his ability to do it all in German. Without the language, he would not win the same respect from colleagues and superiors in Germany. Without the language, he would always be outside looking in.

6. On a more fundamental level, Eric should also cause us to reconsider the ways we decide who will be successful as a university student and what the main predictors are for both academic and professional success. It is important to note that family background, grades, attitude, high school performance and even social interaction were not predictors of success for Eric Sargent. He was a young man with tremendous potential, who needed a vision of something greater than his immediate surroundings to be able to unfold. We must do everything in our power to reach young students like Eric with challenging, yet exciting opportunities. It is not an exaggeration

to say that the IEP was life-changing for Eric Sargent.

7. Eric's story also sends us a message about how we reach and recruit good students for our programs. Eric will never forget his fourth grade teacher who singled him out as an exceptional math student. Even though he did not catch fire until the university level, he still had this moment of encouragement in the back of his mind. He also will always remember the day that the assistant dean of engineering from URI, Richard Vandeputte, came to his high school and shared his passion for engineering and the IEP. Without that visit he may well have followed through with his plans to simply drop out of high school at that time. The message for higher education is that high school outreach programs are extremely important. A visit to a high school may not seem important at the time and the immediate results may not be obvious. However, the seeds that are planted through a robotics team visit or the presentation by an assistant dean can easily be the necessary rescue of the kid in the back row who has lots of innate ability, but needs a push or helping hand from someone out there.

CONCLUSIONS

Grandin is able to draw several conclusions based upon the series of 15 case studies, some of which might easily be anticipated. The study reinforces our original thinking about study and work abroad, e.g., the benefits of exposure to another culture, learning another language, developing an appreciation for other cultural perspectives, learning to be mobile, viewing and experiencing difference in so many aspects of life and society. Our fifteen participants are all in agreement with these aforementioned concepts. At the same time, however, they have also stressed certain benefits of their educational experience, which we have not traditionally identified or have not brought to the forefront of our thinking. These relate very much to personal growth at a critical stage in life and to the development of soft skills, which they view as some of the most important keys to their own success.

Most of our project participants have pointed out that the year spent abroad helped them develop important problem solving skills by virtue of the fact that they were required while away to address daily issues of both lesser and greater magnitude independently. University systems abroad expect a far greater maturity of students than does the American system and are consequently less nurturing. The U.S system tends to spoon-feed the learning process and provide support for just about any conceivable problem, while parents often hover in the background making sure that their child is not being ignored or mistreated.

Most IEP students, therefore, are truly on their own for the first time when abroad, doubly challenged by an environment well outside their comfort zones. The language and culture, the banking system, the housing system, the traffic system, the university system, the diet, attitudes toward America, and so forth are all different than in the United States and each encounter has its own learning curve. Students admit readily to their culture shock in the beginning and tell us that each day brings a new challenge and a new problem to be solved, complicated by the fact that everything is to be done in a language which they are now generally using on a daily basis for the first time. All of this becomes more complex in the second part of the year when students separate from their peers and move on to their professional internship on their own, in a new city, with a new housing situation, responsibility for their own meals, a new set of strangers, and new yet-to-be-defined responsibilities in a company where they have not worked before. Help can no longer come from parents or friends and support from the home university is limited. Truly, they are young, would-be professionals on their own for the first time and very much outside their comfort zones.

Some might describe this as overly demanding and possibly even cruel, which explains why so many American programs abroad are heavily sheltered and designed to function much like the education at home. Yet, the IEP students themselves thrive as a result of this experience abroad and, especially in looking back, recognize the year as a huge personal growth period, resulting in a leap in self-confidence and the ability to take on problems as they occur.

To quote Sareh Rajaee: *The IEP experience, especially my year abroad, helped me build confidence in my interpersonal communication skills, in my independence, and in myself as an individual. The IEP showed me what I am capable of, and I am now a stronger, happier, and more independent person because of it.*

Or Daniel Fischer, who works as an engineer at Siemens Medical Solutions in Erlangen, Germany: *The IEP put me in situations that I would not have experienced in the U.S. In that sense, you grow and learn how big your comfort zone is and what you can do when you find yourself in situations on the border of or outside of this zone.*

Related to the growth in the ability to accept challenges and solve problems independently is the tendency noted among our project participants to "think big," to reach for the top, and to take calculated risks, i.e., to dare to go the extra mile. Though one might argue that such character traits or abilities are buried in genetics, in the home environment, or are due to collective life experiences, our alums have attributed much of their confidence and risk taking capabilities to the overall IEP experience. Sareh Rajaee's quote above relates to her jump to medical school from the IEP and her belief that she could, for example, dare to earn a Harvard Masters in Public Health along side her Brown MD. This once reserved and shy student then competed and won a

residency position in vascular surgery at non other than Yale. Sharon Ruggieri, who came to URI as a very reserved young woman, had the courage by graduation time to turn down a position with a global jet engine manufacturer in the belief that she would win a Fulbright year in Mexico. A year later she then turned down a position with Nissan, confident that she would be admitted to the MIT Sloan School of Management. Matt Zimmerman, who had the courage to start his own company rather than accept job offers with guaranteed salaries, also recognizes that his confidence and belief that he could succeed as an entrepreneur, were bolstered by his IEP experience. *The IEP enforced my belief that I can achieve great things and implement big ideas. Students need to see that reiterated many times. The IEP gave me the chance to live in another country during my college career. That is an experience that makes one think differently.*

Risk taking and the expansion of personal goals are qualities promoted by the IEP from the very first day of the freshman year, which then culminate in the very critical year abroad. In a sense, the IEP itself may be described as a risk. Students are being asked to devote an extra year, pay extra tuition for one semester, take on the task of learning a new language, and to leave their home comfort zone for an entire year. Accepting that challenge, which they hope will yield advantages for their careers and their salaries, is not for everyone and many find it simply too much work and/or too intimidating, especially as they get close to the year abroad. By taking this risk, however, every IEP student acquires skills and accrues advantages which are often unseen or even unimagined at the outset. One of the larger lessons is the discovery that "daring to go the extra mile" will open doors to opportunities that would otherwise not be there.

Eric Sargent, who almost dropped out of high school, took that risk by jumping into the IEP, which led from one risk to another, but ultimately to a high-level job with BMW that was once just a dream. *I can say with certainty that I would not be anywhere near where I am today, if not for the IEP.*

Ryan Cournoyer, who held a very secure position with a large global company, had the courage to transition recently to a young and small, four-person company, which will, he believes, provide a new set of challenges and greater long-term rewards. He knows he is taking a chance, but he has the courage to do so, and, as he tells us: *I was presented with an opportunity that was definitely more risky (less financial backing, but higher reward potentials). Having the international background and experience gave me the confidence to move forward and take that risk.*

Johnathan DiMuro, who originally had URI on his list of schools as a clear last resort, took the chance with his local state university after learning about the IEP. Four years later, after his year abroad and an expanded view of the world, he decided he was in a good position to compete for a Truman Fellowship, which ultimately took him to the Master's Program in Engineering for Sustainable Development at Cambridge University in England. Now he finds himself in a "dream position" as Project Manager for a major sustainability initiative at Dow Chemical in partnership with The Nature Conservancy. Like others in this volume, the IEP released a chain of events that enabled him to reach higher at each stage. As he tells us: *I'm a much different person as a result of the IEP. The world is a lot smaller and my ambitions are a lot larger.*

Another outcome of the IEP, as illustrated by this group of fifteen, relates to a shared bond, friendships, personal relationships, marriages, and ultimately, quality of life. There are those like Chris and Mike Smith who met as IEP students and subsequently married, and there are those like Jesse Schneider, Dan Fischer, and Peter Alberg who met their spouses while working or studying abroad. But there are also those like Ana Franco and Sonia Gaitan who share their lives, both professional and personal, with a large number of IEP alumni through Facebook and other social venues. And there are those who like to meet when possible, travel together and support each other in all aspects of life. A significant "culture of giving back" has emerged amongst the IEP alumni leading to the success of a recent fund-drive that raised approximately $350,000.

Though Grandin would hardly recommend the IEP to students as a means of finding a spouse, it is nevertheless valid to note that lives are changed through a long-term, in-depth experience abroad and that those who have had that experience gladly associate with others who have shared and can appreciate that. The international dimension provides a strong common bond and offers a reason to be together and identify with one another.

Grandin is able to draw several conclusions from his study on behalf of higher education, which are elaborated upon in his book. His study has implications regarding, for example, the role of language study as part of any international education experience, as it does for the discussion of the nature and value of short-term versus long-term programs abroad. It further enables him to discuss the value of programs, which truly unite the study of engineering with the humanities, and to comment on and redefine the characteristics of a liberally educated person in the 21st Century. The core of the study also helps educators understand the comprehensive value of an in-depth study experience abroad, and its importance as an educational tool for helping the nation remain competitive in a world in which nations, languages, and cultures are truly interlinked.