

AUTOBIOGRAPHY

The immigrant story is the story of all Americans, and it is one that shapes my character. My family immigrated to the US when I was one year old. Refugees of the Viet Nam War, my family landed in Flint, Michigan with little more than hopes, promises of opportunity, and a resilient spirit. It was difficult to navigate our new homeland with no financial or cultural foothold but the kindness and support we received from our local community guided us through the confusion. At times, the confusion turned into humor and laughter enriched our lives with fond memories. My family's immigration meant that my first lessons in cross-cultural education began at the same time I was learning to walk. The contrasting backdrops between home and the outside world created my awareness and appreciation for different cultures. Most importantly, my parents and grandparents instilled a deep-seated value for education and fostered a can-do attitude in my siblings and me as they built their life in the US. One particularly significant moment was when my grandfather asked me, at the age of six, "What do you want to be when you grow up: a doctor, lawyer, or engineer?" Rather than feeling burdened by the pressure to succeed, I was whole-heartedly empowered by his confidence in me to succeed in these ambitious professions. Furthermore, the implications in his question left a lasting impression on me. First was the implication that education and opportunities to pursue my ambitions were accessible and available to me, just as they were to everyone else. And secondly, I could achieve *anything* if I set goals and worked hard. The self-confidence and revelations I gained from this conversation have led me to being the most petite volleyball player and junior varsity captain in my high school league, to earning a prestigious three-year fellowship to pursue graduate studies in a male-dominated field, and to recognition as a Paul Harris Fellow for my community service with Engineers Without Borders.

I pursued my studies in mechanical engineering with aspirations to apply my math and science skills to the design of technologies that would make a difference in people's lives. Upon graduation, I accepted a position at Guidant Corporation developing devices for the treatment of cardiovascular diseases. Work at Guidant was challenging and the products were important health care technologies, but the corporate environment was too isolating and removed from the people for whom I was designing. So I left the cubicle and ventured to a classroom in Ghana, West Africa. There, I shared my engineering education by teaching physics at a rural high school for nearly two years as a self-funded, independent volunteer. To gain a wider view of Ghana, I also volunteered with projects supported by non-profits such as Peace Corps and the Carter Center: Guinea worm prevention campaigns in small villages, girls computer literacy conferences in mid-sized towns, and week-long HIV/AIDS awareness bike rides through two regions of Ghana. As I anticipated, living and working in Ghana was a tremendous learning experience. First, I learned about the sincere generosity, vibrance, and joy of the Ghanaian people at all socioeconomic levels – these were not the helpless faces of poverty that are often seen on TV. Second, I gained a very intimate perspective of the real struggle of the Ghanaian people to lift themselves out of poverty. I saw how the lack of basic necessities and opportunities hindered the possibilities of breaking the cycle of poverty. I recognized how technology could alleviate problems with water, health, education, and energy, but I also saw skeletons of failed projects. This was my first encounter with well-meaning but unfulfilled promises of development efforts and my introduction to the complexities of development.

Returning to the US, I followed my conviction that the best contribution I can make to my community is to do what I do best: engineering. I joined the staff of the University of California Santa Barbara's Mechanical Engineering Department where I could practice and teach engineering. However, my interests had shifted away from high tech and towards appropriate technologies to address the needs of impoverished communities. Additionally, living in a different culture had

developed my appreciation for the richness of experiential learning. For these reasons, I was inspired to start a chapter of Engineers Without Borders(EWB) within my first year at UCSB.

I have served as advisor to UCSB's chapter of EWB since its formation in 2003. In this capacity, I work with student leaders to advance chapter development, recruitment, outreach, and fundraising. We've successfully engaged faculty, staff, local professionals, and students from diverse backgrounds. EWB has implemented projects in Peru, Kenya, Thailand, Mexico, and Mali and raised over \$250,000 for these projects. Our efforts in fact have become a recruitment highlight for the university's Admissions Office just as they have been a highlight for me personally. My outreach efforts across campus and throughout the greater Santa Barbara community has enriched my life and enhanced my work by connecting me to people whom I otherwise would not have crossed paths with. I gave a fundraising presentation at a UCSB student leadership conference and met dynamic political science students from the Mock Senate Club who gave me new insights to policy change for social justice. My EWB students and I viewed the streets of downtown Santa Barbara from a new perspective while we learned to do land surveying from the Santa Barbara City Surveyors. I've assisted the UCSB Center for Black Studies in creating awareness for their projects in Haiti since 2008. In August 2010, I traveled with Haitian Professors Claudine Michel and Nadege Clitandre as Engineering Director in support of the UC Haiti Initiative. The UC Haiti Initiative is an initiative to mobilize expertise from all ten campuses of the UC system to assist in rebuilding Haiti after the devastating January 2010 earthquake. From these outreach experiences, I've learned the effectiveness of bringing together our individual endeavors to form a more impactful collective endeavor.

EWB's strongest local partner, however, has been the Rotary Club of Santa Barbara Sunrise. I was first introduced to Santa Barbara Sunrise in 2004 through a friend I met on my daily bus commute to work. Since then, I've gotten to know them through their monthly International Service Committee meetings which I attend as a liaison between Santa Barbara Sunrise and EWB. I've coordinated students to present EWB projects at Rotary Clubs in Santa Barbara, Santa Maria, Goleta, Ojai, and Oxnard. This provided the students with the opportunity to engage with their local community and a valuable public speaking experience. Additionally, this has resulted in yearly grants and a Rotary International Matching Grant with Santa Barbara Sunrise for our Kenya project. Working with Santa Barbara Sunrise for the last seven years has also helped me develop professionally, from learning to be comfortable in a room full of formidable professionals to learning how to develop a feasible action plan for complicated international projects. I've gained exposure to current international work by participating in District 5240's Poverty Conference and the 2008 Group Study Exchange to India. By way of introduction, I met Carpinteria Rotarian Larry Siegel and currently serve as a board member of his non-profit, Safe Water International. In this capacity, I have the opportunity to join the conversation on making clean water accessible to all and sharing best practices from my field experience to projects in Malawi and Mexico.

I have always thought that I would best contribute to the global community through my work as an engineer. I realize, however, that my contributions as an advocate and a bridge between cultures are just as significant and perhaps more rewarding in ways I did not initially anticipate. While I am very proud of the many grants and awards that my EWB projects have received, I am most proud of my EWB project team members. Many of them remain engaged in public service in some capacity, inspired and informed by their participation on an EWB project. For example, one student is developing a new water testing method using his postdoctoral research work while another has volunteered with the United Way Young Leaders Society of Santa Barbara. Yet another is currently in Afghanistan to construct road and water infrastructure. If chosen as a Rotary Ambassadorial Scholar, I would be honored to be an ambassador for global understanding and engagement.

STATEMENT OF INTENT

One of my most formative single experiences occurred while I was working as a volunteer teacher in rural Ghana. I did all of my grocery shopping at the local open-air market. As in the US, garlic was one of the staple items always on my shopping list. One afternoon, as I paid for a few heads of the market's finest garlic, an elderly lady stepped up to the stall. I noticed that her step was slowed by a hobble. To me, it looked like the hobble of someone who has labored all her life. She really caught my attention, though, when she picked up the smallest head of garlic on the table. She squinted at the garlic for a long moment, her fragile fingers flitting across the bulb and rustling the papery garlic peel. I saw her look down to count the few coins in her other hand and, then, slowly and regretfully, place the garlic back on the seller's table. Although the situation was not dire, I felt her regret piercingly. I could only imagine that she had spent all her life working and yet still she could not afford to buy the smallest head of garlic to flavor her food. I was here in Ghana to share my science education with the students at Wenchi Secondary School, compelled by the belief that education will lead them to better economic opportunities and a better life. But in that moment, as I witnessed the stark reality of poverty in everyday life, my belief faltered. If this old woman could not afford garlic having worked all her life, I wondered if my earnest and dedicated students could find or create jobs. But, just as the best I could offer the old women that day was some of my garlic, the best I could offer my students was my education.

During my two years in West Africa, I learned that an education is not enough. I had chosen to teach in Ghana because of my belief that education was the highest form of empowerment. From the 100+ students who learned physics and mathematics from me, I saw that an opportunity to learn without the opportunity to apply one's learning meant that empowerment did not occur. From the dozens of my students who not only learned physics but found a previously unknown gift for learning it, I saw that their inability to pursue higher education or to translate their gift into sustained employment was truly disempowering. My goal in volunteering was to help build the community's capacity to improve their standard of living. Though my role as an educator was a valuable one, I realized that it only got me and the community halfway towards our goal.

Returning to the US, I was even more committed to international community service and led the establishment of Engineers Without Borders at UCSB. In addition to guiding chapter development, I have also been the technical advisor to EWB's Peru project for the last eight years. We developed a slow sand filtration system that brought clean water to every person in the village. We also implemented a solar-powered lighting system at the school that enabled newly founded evening classes for primary school students and the women's literacy group.

EWB projects have provided me with the rich experience of working at the interface between technology and the people it serves. I clearly saw that clean water, smoke-free stoves, and lighting were not possible without good technology. However, in my work with EWB, I continued to learn the limitations of what I was seeking to do in sustainable development. In Peru, my team had designed, prototyped and tested a viable chlorine dosing system. However, our design would not be sustainable because there were two parts that could not be purchased in Cusco. Without the availability of replacement parts, the system would be unmaintainable by the community and, thus, unsustainable. Frustrated, I was forced to look beyond the practical limitations of our organization and started to daydream about how to achieve a sustainable design. I noticed that both of the unavailable parts could be injection-molded and that there were already successful injection-molding factories in Peru. What if I set up a partnership to make these parts? What if I could

leverage my technical skills toward building a business relationship that is mutually beneficial and necessarily self-sustaining? As I discussed these possibilities with my team, my vision grew. I realized that we could make bigger strides towards poverty alleviation by coupling our engineering experience with the efforts of those in the business of creating goods and services. For these reasons, if chosen for a Rotary Ambassadorial Scholarship, I will focus my project and research on economic development and job creation around technologies that promote health and a better standard of living for impoverished communities.

I have recently been admitted to the Global Social and Sustainable Enterprise MBA at Colorado State University for Fall 2011. I have specifically chosen this program for its goal of “providing enterprise solutions that address the most stubborn issues of our time including poverty, disease, malnutrition, and environmental degradation.” Through this program of study, I will enhance my engineering and community work experience with business approaches that place value on people, planet and profit for sustained development. My long-term career goals are to create and foster local enterprises that make sustainable technologies more widely available while promoting economic development through job creation. This program of study will complement and inform my Ambassadorial Scholarship project. Likewise, my field experience as an Ambassadorial Scholar will bring reality to my academic training.

For my Ambassadorial Scholarship project, I would like to work in a developing country with vibrant enterprise models. I hope to gain exposure to the real-world challenges of establishing sustainable enterprises and the strategies that have been successful in overcoming these challenges. With this exposure, I would have a good basis for fostering successful enterprises that would build the economic capacity of communities to acquire their basic needs in a dignified manner. One country of study that is of special interest to me is Liberia.

I recently met Chid Liberty who founded Made In: Liberia, a non-profit that empowers women through vocational skills training. Graduates of the program are then placed in jobs at its sister for-profit garment factory, Liberty & Justice. Mr. Liberty has developed an innovative business model with the motto “Dirt to Shirts.” Liberty & Justice maximizes economic development within Liberia by sourcing the cotton used to make garments from Liberian farmers. Additionally, he works with farmers to grow the cotton organically for sustained land productivity. Economic empowerment of employees at the garment factory is accomplished by providing skills development programs ranging from sewing to management, 100% job placement, sole decision-making power in how profits are used, and a savings program. Mr. Liberty expressed to me a need for engineering assistance on the manufacturing side of the business. If placed in Liberia, I would volunteer my engineering skills to solve manufacturing issues at Liberty & Justice while also learning about its unique business model. I would also like to mentor engineering students at the University of Liberia to build their capacity to step into manufacturing engineering positions at Liberty & Justice. Many years of devastating civil war has left Liberian women among the most disadvantaged groups in the world. Unemployment and poverty rates hover around 80%. Made In: Liberia and Liberty & Justice are shining beacons of hope for Liberian women and their families.

I would also like to work with Rotary projects that address basic human needs such as water, lighting, or clean cookstoves where I can contribute my engineering skills and field experience. I also hope to identify potential technologies for enterprise development. If I do identify viable technology, I would like to work with local entrepreneurs to establish a business plan.

If I cannot be placed in Liberia, I am open to being placed in another country, including Malawi and Kenya. I would develop a project with similar goals of exploring opportunities for economic development and technology generation.

I am applying for the Rotary Ambassadorial Scholarship because, in my work, I aspire to the Rotary Foundation's mission to advance world understanding, goodwill, and peace through the improvement of health, the support of education, and the alleviation of poverty. Furthermore, as an Ambassadorial Scholar, I will have the opportunity to meet Rotarians abroad. From my interactions with Rotarians of the greater Santa Barbara area and the Indian Rotarians I met on the Group Study Exchange, I've learned that Rotarians are oftentimes successful entrepreneurs. I look forward to dialoguing with them to learn about their experience and their best practices for entrepreneurial success. Perhaps some would be interested in mentoring new entrepreneurs or working with me to develop workshops for new entrepreneurs. Lastly, the study abroad opportunity provided by the Rotary Ambassadorial Scholarship will effectively expand my exposure to different cultures, further my understanding of the needs of impoverished communities, and enable me to begin developing realistic solutions for poverty reduction. Without doubt, the Ambassadorial Scholarship will enhance my personal and professional growth.

In my capacity as an ambassador of goodwill, I plan to engage with local Rotary clubs, universities, communities, and organizations working to foster vibrant and healthy communities in my country of study. I will participate in the conversations of the larger development community by attending conferences and presenting my project work. Through the use of social media such as Facebook and blogs, I plan to maintain contact and share my new insights with my friends, family, professional network, and network of EWB team members. I also look forward to returning to the US and presenting my project experience to the Rotary Club of Santa Barbara Sunrise and other interested Rotary clubs.

Working with the Rotary Club of Santa Barbara Sunrise for the last seven years, I have come to develop a deep respect for Rotarians. I am truly inspired by their firm commitment to service above self, professionalism, and activism. If chosen as a Rotary Ambassadorial Scholar, I will fulfill my role as an ambassador of goodwill with great honor, duty, and privilege.

INTEREST AND ACTIVITIES

WORK EXPERIENCE

Development Engineer, UC Santa Barbara, Mechanical Engineering Dept., Jun 2003 – Present

- Design, develop, and build experiments for undergrad lab courses in collaboration with Mechanical Engineering and Materials faculty. Train teaching assistants to run experiments. Advise design projects.
- Initiated and advised ME Senior Capstone Design Projects: (1) Chlorine metering system for rural communities (2) Portable field incubator for water testing where electricity is unavailable.

Co-Founder and Advisor, Engineers Without Borders–UC Santa Barbara, Oct 2003 – Present

- Founded Engineers Without Borders student chapter at UC Santa Barbara with student leaders and staff.
- Advise student leaders on recruitment, fundraising, outreach, and project development efforts.
- **Peru:** Supervise technical design, field construction, and implementation of water purification, solar-powered lighting system, and clean cookstove projects for rural Peruvian village. Lead teams of 6-14 students and professionals to Peru yearly for implementation from 2004 to present. **Awards:** 2010 TetraTech Grant, 2008 So. California Metropolitan Water District College Grant, 2008 EWB-USA Community Education Award, 2007 EWB-USA BoldeReach Project of the Year Award, 2006 EWB-USA Sustainable Legacy Award.
- **Kenya:** Developed and advised energy and water project for rural health clinic with Visiting Nurses of Hospice Care Santa Barbara in 2007. **Awards:** Rotary Matching Grant with Santa Barbara Sunrise.
- **Publication:** *Interdisciplinary Approach to a Multi-phase Engineering Project for the Developing Community of Araypallpa, Peru*, 2006 American Society of Engineering Education Conference.
- **Invited Panelist:** *Making Global Programs Work*, 2008 American Society of Mechanical Engineers(ASME) International Mechanical Engineering Education Conference.
- **Presentations:** Rotary Clubs(Santa Barbara, Goleta, Oxnard, Ojai), American Medical Student Assoc., Raytheon Women's Assoc., EWB Conferences, World Water Forum, UCSB Mechanical Engr Seminar.

Board Member, Safe Water International, Carpinteria, CA, Feb 2008 - Present

- Provide field experience and advising on water projects for rural communities in Malawi and Mexico.

Engineering Director, University of California Haiti Initiative, Apr 2010 – Sep 2010

- Guided establishment of engineering sector of UC system-wide initiative to mobilize university expertise to assist in rebuilding of Haiti after January 2010 earthquake.
- Led engineering team during 10-day fact-finding mission to Haiti in August 2010.

Physics Teacher, Wenchi Secondary School, Ghana, West Africa, Jan 2001 – Sep 2002

- Wrote and taught original physics curriculum to 100+ high school students in science track.

ACTIVITIES

- **Aprovecho Research Center Stove Camp** · Jan. 2011 · Five-day hands-on workshop on cookstove design principles and testing protocols for better biomass-fuel stove development.
- **Village Earth Community Mobilization Workshop** · May 2009 · Two-day workshop on practical techniques for facilitating participatory project planning with communities.
- **Ghana AIDS Rides** · Jan. & Apr. 2002 · Facilitated community AIDS education workshops on week-long bike rides through Eastern Region and Brong-Ahafo Region of Ghana.
- **California AIDS Ride 6** · June 1999 · Raised \$4000+ for HIV/AIDS services and biked 600 miles from San Francisco to Los Angeles to raise awareness.
- **Gaviota Coast Run** · 2009-2011 · Organized and raised \$3000+ for Engineers Without Borders.
- **Hobbies:** rock climbing, running, cooking foods from different countries

AWARDS

- **2008 Rotary Group Study Exchange** · Rotary District 5240 to District 3110 (Uttar Pradesh, India)
- **2007 Paul Harris Fellow** · Awarded by Rotary Club of Santa Barbara Sunrise for work with EWB.
- **2005 Outstanding Organization Advisor** · Awarded by UCSB Office of Student Life for advising EWB.
- **National Science Foundation Graduate Fellowship** · 3-year fellowship for graduate studies, 1996.