

Planting the Seeds of Heroism

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I have a hero in my life, but I have never seen her face. She appears suddenly, working her miracles right under my nose, and then disappears into the obscurity from which she sprang. When I was a small boy, she held an entire hotel up during an earthquake, saving my mother's life. Last summer, she saved my friend Christina during a horrific car wreck. Amidst the chaos of screaming tires, twisting steel, and shattering glass, Christina's helpless body jerked violently forward, but at the last moment my hero reached out and held Cristina's body firmly into her seat. Six years ago, I lost the ability to walk after my knee ripped apart in a terrible accident. The same hero guided my surgeon's hands, giving him sight beyond sight, so that I can walk today. I wish I could thank my hero, but I do not even know her name. She probably does not even know she saved my mother, my friend, and myself, but she planted a seed in me that grew strong and sent its roots deep into my heart. If I cannot thank her, then I will become her. I do not want to wear a leotard, apply copious amounts of styling products to my hair, or fly faster than bullets; I simply want to be an engineer.

Most people do not think of engineers as altruists, healers or heroes, but I do. Perhaps my hero was not a woman; perhaps he was a man. I do not know if my hero was young or old, slender or corpulent, American, Asian, Hispanic, European or African, but I do know my hero is dying. Under the suffocating pressure of a society that does not recognize her for her miracles, she has lost steam and is slowly fading away. The great force of American engineering that defined our nation in the 20th century is starting to crumble, and it is carrying with it the economy from which it is inseparable.

The *Science and Engineering Indicators* report published by the National Science Board is perhaps the best source of science and engineering employment trends within the United States. The 2004 report found U.S. jobs requiring education in science and engineering were increasing by a rate of five percent per year compared to only one

percent for the rest of the U.S. labor force.¹ Unfortunately, the number of engineering degrees granted in the United States each year is not rising at nearly the same rate; the number of Americans attaining engineering degrees has dropped from over 58,000 in 1979 to 55,000 in 2000.² Until now, immigrant workers have largely made up for the shortage of American engineers; however, this system cannot function indefinitely. As other big players in the world market begin to face similar shortages, the demand for engineers will only increase.³ Employers that were once readily able to hire foreign employees are now competing with shortages of post-9/11 work visas and competitive employers such as Europe and Asia. The need for homegrown engineers is increasing dramatically and, with a tremendous percentage of the United States gross domestic product directly related to engineering technologies, it is a problem that must be dealt with now.

It is my opinion that there are two main factors contributing to the shortage of U.S.-born engineers: stigmas associated with the engineering profession and the underrepresentation of females and minorities. The portrait of an engineer as a pocket-protector-toting, slide-rule-wielding, socially awkward über-geek has been exacerbated recently as our society shies away from scientific and engineering-empowering media. A recent survey of Silicon Valley youths found many students described engineering-related fields as "intimidating," "uninteresting," "tedious," and "antisocial."⁴ My goal is to try and quell these fears by providing a living example of a happy, social, well-adjusted young man who is also an engineer.

Positive role models making personal investments in the wellness of American engineering is essential for inspiring young people to pursue engineering careers. For me, those personal investments take many forms, from helping my little sister glue a balsa wood airplane together for her science fair, to tutoring math classes outside of the

¹ National Science Board. An Emerging and Critical Problem of the Science and Engineering Labor Force. *Science and Engineering Indicators 2004*. Retrieved October 5, 2006 from <http://www.nsf.gov/statistics/nsb0407/>

² National Science Board. Appendix Table 2-23: Earned bachelor's degrees, by field, race/ethnicity, and citizenship: Selected years, 1977-2000. *Science and Engineering Indicators 2004*. Retrieved October 5, 2006 from http://www.nsf.gov/statistics/seind04/pdf_v2.htm#c2

³ American Public Media. German Engineer Shortage. Retrieved October 14, 2006 from <http://marketplace.publicradio.org/shows/2006/09/14/AM200609142.html>

⁴ Ann Grimes. Even Tech Execs Can't Get Kids to Be Engineers. *The Wall Street Journal Online*. Retrieved October 5, 2006 from <http://www.careerjournal.com/salaryhiring/industries/engineers/20050331-grimes.html>

engineering department. We can dispel misconceptions about “uninteresting” and “antisocial” engineers by publicly presenting ourselves as the antithesis of these stereotypes. By taking part in cleansing engineering’s tarnished image, we will improve the health of our profession and our nation.

Unfortunately, it seems that the most difficult groups for engineering to reach out to are women and minorities. As of 1999, only 9.5 percent of U.S. engineers were women and 6.7 percent (excluding Asian-Americans) were minorities.⁵ Encouraging our young women and minorities—whether they are our relatives, friends or students at a local school—to pursue engineering is an essential step towards reseeding our nation’s crop of engineers. For example, I volunteered to mentor a student robotics team at my town’s most ethnically diverse high school and tutored physics to a young lady who is now a mechanical engineer. Positive and encouraging role models providing fun science-based activities for our nation’s under-represented youth will encourage them to pursue engineering later in life. Were women and minorities equally represented, the number of U.S. engineers would nearly double.

Engineering graduates are afforded the opportunity to work in one of the world’s fastest growing job markets, in lucrative positions for some of the nation’s best companies. Additionally they have incredible entrepreneurial opportunities, such as consulting. An engineering degree offers a high degree of job security when compared with national averages. From 1983 until 2002, unemployment rates in science and engineering related fields remained 2-3 percent lower than national averages (data not available post-2002).⁶ In fact, *Money Magazine* recently rated engineering as one of the “Top 20 Jobs in America,” with software engineering in particular coming in at #1.⁷ Engineering is an exceptional field to be a part of, and for me this makes marketing it easy. The fire for science and technology is already in the public’s heart. A 2001 survey conducted by the National Science Foundation found that about 45 percent of

⁵ National Science Board. Appendix table 3-13: Individuals in labor force in S&E occupations, by highest degree, occupation, sex, race/ethnicity, and age: 1999. *Science and Engineering Indicators 2004*. Retrieved October 5, 2006 from http://www.nsf.gov/statistics/seind04/pdf_v2.htm#c2

⁶ National Science Board. Appendix table 3-8: Unemployment rate for S&E and other occupations: 1983-2002. *Science and Engineering Indicators 2004*. Retrieved October 5, 2006 from http://www.nsf.gov/statistics/seind04/pdf_v2.htm#c2

⁷ Tara Kalwarski, Daphne Mosher, Janet Paskin and Donna Rosato. Best Jobs in America. *CNN Money*. Retrieved October 5, 2006 from <http://money.cnn.com/magazines/moneymag/bestjobs/>

respondents were “*very* interested in new scientific discoveries and the use of new inventions and technologies.”⁸ Yet there is a piece of the puzzle missing: persons willing to fuel that fire by volunteering their time and knowledge. It is my aspiration to continue planting the seeds for future engineers in my community by volunteering my time to local schools and always remaining positive, fun, healthy, and charismatic in department.

Engineers have amazing jobs and incredible opportunities. Every day, the quality of life for many people is greatly increased as a direct result of our work. Heartbeats are monitored, school busses safely tote our loved ones home, pollutants are reduced, affordable shelter is provided, food is made safer and healthier, and the gift of mobility is given back to those who were not able to move. Engineers are everyday heroes, and although we may sometimes wear Clark Kent’s deceptive mask, we still have superhuman abilities. Yesterday my hero saved me; today I will become a hero unto others, planting the seeds that will grow the heroes of tomorrow.

⁸ National Science Board. Public Interest in S&T. *Science and Engineering Indicators 2004*. Retrieved October 5, 2006 from <http://www.nsf.gov/statistics/seind04/c7/c7s1.htm#c7s112>