Aspire to Greatness

Arthur T. Johnson

"You can go to medical school, become a physician, and save people one at a time, or you can be a biomedical engineer and save them a thousand at a time." I've often said this to my students; it reflects my pride in being an engineer and the good that comes from engineering endeavors. Looked at more deeply, however, both paths mentioned in the above statement lead to saving, or, at least, improving the lives of, people. There is basically no difference between the two outcomes if saving people is the goal.

Biomedical engineers, I think, have made their choice of profession, at least in part, because they care about people and want to do something to make life healthier, safer, and better for others. Yes, there is the personal challenge of engineering problems, the ability to use one's imagination and creativity to produce unique designs, and the mental reward that comes from new insights, but, behind it all, is the feeling that it can all be worthwhile because someone else will be better because of our involvement.

This sense of benevolence, compassion, and altruism is part of the fabric of most of the biomedical engineering students that I have taught. Knowing this, my stated challenge to them has always been to do their best, aspire to greatness, and aim high. I have told them that I expect that each of them will do something great, that each one has the capability to make the world a better place than it would be without them.

I once had a teacher, Professor Dropkin at Cornell University, who made it a habit to tell every one of his students in every one of his classes how special they were to be there. He told us that, because we were engineering students at Cornell, we would go on to accomplish great works. His words have always stuck with me, and have been an inspiration to perform at as high a level as I could. I want my words of expectation and encouragement for my students to be as memorable to them as Professor Dropkin's are for me.

My courses were not the easiest for my students to do well in. My course on Transport Process Design was for many years the hardest course in their curriculum. Yet, former students had many times told me that this course was the one most important course that they had taken as undergraduates. I had tried hard to give my students what they would need to become successful engineers after graduation, and I also tried to let them know of the confidence that I had in each of them once they had mastered the material in this and their other courses.

I hope that my former students will develop a broad sense of social responsibility that extends well beyond their own corner of the technical world. I hope that they will have an interest in the issues important to society, and act as leaders to interpret technical issues for people who do not have the capabilities to understand all the implications of possible solutions. I hope that they will

take an interest in their professional societies, and become society leaders. I hope that they will not forget the responsibilities that they have to people even in the lowliest of circumstances.

Technology is advancing rapidly, and my students will be among those who will develop new capabilities. I hope that they will see beyond the immediate problems that they are working on to assure that their technological advances, which will probably have both beneficial and harmful potentials, are steered toward the good side. Every engineer should consider the wider implications of her or his work; enabling the positive attributes of technology is good, but not enabling the negative aspects may be just as good or even better.

Alison Gropnik, a psychologist at the University of California at Berkeley, has been quoted as saying, "One of the things we always say is that it's not that children are little scientists – it's that scientists are big children." Engineers, like scientists, need that open, creative mind of a child to bring new ideas to fruition. My hope is that my students can maintain a little of that child-like naitivité, good-will, humanitarianism, and benevolence to believe that they can help to fix the problem or make it better.

With all the wealth we have in the world, why are people still starving, why are some homeless, why do we have to use so many poisons, why are there parents who abuse their children, why is there so much violence, and why don't we have peace? I hope my students can someday find answers to questions like this and do what they need to eliminate these problems. Even if they don't find solutions, I hope they make the attempt.

It is not the sole responsibility for biomedical engineers to face issues such as these, but, as members of the human race, they belong as much to us as to anyone else. So, when I urge my students to do great things with their lives, I am hoping that they can do more than invent the next great medical device. True greatness comes by making a difference in other peoples' lives, whether it be one at a time or a thousand.