

COMMENCEMENT ADDRESS
DEPARTMENT OF MECHANICAL SCIENCE AND ENGINEERING
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
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Faculty, guests, and most especially, graduates of the Department of Mechanical Science and Engineering at the University of Illinois at Urbana-Champaign, it is an honor to be addressing you this blustery December day. Yesterday's National Weather Service forecast predicted an afternoon high of $34^{\circ} F$; as an engineer like you, I'm probably more comfortable with $274 K$; in any case, the prediction seems accurate! In growing up on a farm in nearby Wapella, Illinois, 51 miles west of here, and in my ten years at UIUC in Mechanical Engineering, along with heavy and multiple doses of Applied Mechanics, I knew many such days. In 23 years of teaching mechanical engineering in snowy South Bend, Indiana, I have known more. And a couple of those cold days were proud ones such as this. You are completing what I believe to be amongst the finest educations in the world, one which has been used by many to change our world for the better.

My entreaty to you today is to go into that world and put *your* data- and science-driven predictive skills to work. Just as we can now accurately predict the weather over short terms, to the benefit of society, there are more and more arenas where the scholarship you have attained can be harnessed for general good. These arenas range from traditional engineering disciplines of manufacturing and design and energy infrastructure, to economic forecasting, government service, national defense, global development, and health care, and to

fields we have not yet contemplated. At the same time, I urge you to continue your self-education in the humanities to better enable you to communicate the truths you have learned here to the broader society. And if you do that with humility coupled with confidence, society will listen. Our humanist friends often define a pessimist as one who sees the glass as half empty and an optimist as one who sees it as half full. To an engineer, it is not a question of psychology; rather, that glass is simply over-designed by a factor of two!

Indeed, psychology and emotions are real and often wonderful features of humanity; however, we need to remember to leaven these with data and rationality, and in this you are well equipped to lead. I am presently absorbed in reading Tolstoy's *Anna Karenina*; Hollywood typically highlights the tragic and beautiful emotional story of the unhappy family of Anna, but downplays the happier family of Levin, who while sorting out his complicated life, plans carefully how to bring technology onto his farm—all the while contemplating Tyndall's discussion of the unity of theories of heat, electricity, and magnetism. His careful counting of the data of the world around him coupled with an openness to new ideas brings harmony to his life and those he loves.

The good news I have for you today is that I have confidence that you have been inoculated with the skills and work ethic of one of the world's great universities to be the type of carefully counting innovator the world so needs to counter the data-free windbags who too often dominate our national conversation. And twenty-three years outside of Illinois has given me the perspective to recognize how lucky I was to receive an education so similar to yours: TAM 210, Statics, and ME 300, Thermodynamics, combined with the persuasive

arts of Rhetoric 105 remain a potent combination! When we interview prospective faculty and graduate students at my university, the existence of a UIUC degree is a strong positive for any candidate, of whom we have hired many. The reasons were better stated to me last week at our College Christmas party by a now-retired colleague, a smoothly polished Harvard-educated physicist, former vice-president and dean, and collaborator with Nobel prize winners. He has had long interactions with UIUC—and characterized it as a no-nonsense place, where people simply roll up their sleeves and create great science-based technology that changes the world. Our public relations machine may not be as well oiled as those of our coastal brothers, but those who look through what gloss we have find gold.

This notion was well summarized by the author of *The Right Stuff*, Tom Wolfe, in a 2000 compilation of essays. Speaking on the development of Silicon Valley, he stated

“Most of the major figures had grown up and gone to college in small towns in the Midwest. . . . Some of them. . . had gone East to graduate school at MIT, since it was the most prestigious school in the United States. But MIT proved to be a backwater. . . the sticks. . . when it came to the most advanced form of engineering, solid state electronics. . . . The picture had been the same on the other great frontier of technology in the second half of the twentieth century, namely, the space program. The engineers who fulfilled one of man’s most ancient dreams, that of traveling to the moon, came from the same background, the small towns of the Midwest. . . . It was engineers from

the supposedly backward and narrow minded boondocks who had provided not only the genius but also the passion and daring that won the space race... In the 1940s a bright youngster whose parents were not rich... was far more likely to receive a superior education in Iowa than Massachusetts. And if he was extremely bright, if he seemed to have the quality known as genius, he was infinitely more likely to go into engineering in Iowa, or Illinois, or Wisconsin, than anywhere in the East.”

Wolfe was looking back to the twentieth century. It has been my privilege to serve on the MechSE Alumni Board in the twenty-first century. In so doing, I have interacted with numerous Illini engineering students. On that basis alone, I am confident that Wolfe’s praise will be echoed by future humanists when they contemplate the new frontiers you will create and develop in your bright futures.

In closing, let me cite the words of a late, great midwestern engineer who had passion and courage, educated a few miles to our east at a school in Indiana, Neil Armstrong. While stated by a Boilermaker, his words should resonate with Illini engineers:

“I am, and ever will be, a white-socks, pocket-protector, nerdy engineer, born under the second law of thermodynamics, steeped in steam tables, in love with free-body diagrams, transformed by Laplace, and propelled by compressible flow.”

Your education is his. May you use it to keep his spirit alive in service to humanity. Congratulations 2012 graduates and Godspeed!