New endowed professorship

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$1 million gift to MSU College of Engineering establishes Creative Engineering Endowed Professorship

Thomas Wielenga, a 1978 graduate of Michigan State University, so believes in the value of the creative process that he is investing $1 million to kick-start the next teaching paradigm in the College of Engineering.

The $1 million gift creates the Wielenga Creative Engineering Endowed Professorship, which is designed to be a springboard for new approaches in educating mechanical engineering students.

“We have not applied the technology of today in creative ways to drive down the cost of education,” Wielenga said. “I’m hoping this endowed professorship will find technical ways to reduce costs, improve the capabilities of students, and move us toward new teaching models.”

College of Engineering Dean Leo Kempel said the Wielenga gift is proactive by systematically reducing the time to degree and thereby reducing the cost.

“Spartan Engineering has always been about providing opportunity to students with talent to pursue a career as an engineer, to be someone who leads future technology for the sake of society,” Kempel said. “The rising cost of higher education for families is an impediment to providing such an opportunity. This gift will not only help mechanical engineering students, it will benefit all our students at MSU Engineering and across the nation.”
Wielenga is an Honors College graduate in mechanical engineering. After MSU, he received a master’s degree in computer-aided design and a PhD in mechanical engineering at the University of Michigan. For the next 12 years, he worked for his thesis advisor, Milton Chase, founder of Mechanical Dynamics Inc. There, he was one of the developers of the mechanical simulation program, ADAMS, which is used extensively to simulate mechanical systems including cars and trucks.

Wielenga then worked as a consultant and expert in the field of vehicle dynamics and accident reconstruction. He used the ADAMS mechanical simulation program to accurately model the dynamics of vehicles rolling over during vehicle crashes.

He said this work helped him develop a deep understanding of the vehicle dynamics leading to on-road rollovers.

“Rollover crashes were increasingly common as SUVs and vans became popular,” he said. “These vehicles seemed safer because they were heavier, but they were top-heavy, prone to roll over, and consequently were less safe.”

Faced with these many tragedies, Wielenga said he thought of a way to prevent these accidents by activating the brakes in a certain way. He patented the technology in 1998 and licensed it to braking suppliers and automotive companies. His anti-rollover braking system is now on most sports utility vehicles. Today, the technology saves around 1,000 lives a year.
“Thinking over the process I used when inventing, I was able to identify a common thread in the invention process and the development of scientific discoveries, problem solving, engineering design, creating artwork, and other creative endeavors. I call it the creative process,” he said. “It may seem obvious, but having a clear view of this very fundamental idea has been very helpful to me.”

Wielenga explained that ideas are formed from combinations of existing resources.

“New ideas are subject to a competitive process that eliminates those that are less fit or less desirable. Those that survive are ‘designs’ that become the basis for new ideas in a continuing process of creation. This process results in higher functionality and more complexity. This applies to almost all fields of endeavor and to life itself,” he continued.

“In engineering, we call the creative process ‘designing.’ In science, we call it the ‘scientific method.’ In art and literature, it is the ‘creative process.’ In society, it is called ‘innovation.’ In day-to-day life, we call it ‘trial and error,’ and in nature, it is called ‘evolution.’ There are characteristics common to all these fields that govern the rate of creation and the quality of the resulting designs. An examination of these characteristics needs to be started and a ‘science of creativity’ begun.”

Wielenga believes that engineers are especially creative.

“We are the ones that make new things,” he said. “We design things that move, that protect, that heat, that cool, that shelter, that are smarter, faster or carry more things. We even make things that make things. Engineers may be the pinnacle of the creative, but often are not recognized as such.

“We have an opportunity to have an outsized influence on the technology of the future,” he added. “As the creative process continues, complexity will increase along with functionality. And because the creative process involves competition between ideas, we have to be competitive to remain relevant.”

Wielenga, who lives in Michigan and Florida, is a member of the college’s Mechanical Engineering Advisory Board.

The gift supports Empower Extraordinary, the $1.5 billion campaign for MSU that launched publicly in October 2014. To date, the College of Engineering has topped its $80 million campaign goal and is now at $97 million. The campaign closes on Dec. 31, 2018.