

THE JEFFERSONIAN ENGINEER

By Ian Czekala

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Thomas Jefferson wore many hats in life, those of president, statesman, lawyer, farmer, scientist and inventor. Born April 13, 1743, Jefferson also was one of this country's first engineers. He was a hands-on guy who loved to design, invent, tinker and build.

If he were alive today, he would more than likely own an iPod, a digital camera, a laptop computer, and have a global positioning system guiding his hybrid car. Monticello, his beloved, hillside home, would sport solar panels and a sleek windmill, spinning to generate clean, renewable energy.

Jefferson was a techno-geek who loved "cool stuff," according to W. Bernard Carlson, professor of science, technology and society at the University of Virginia. At Monticello, Jefferson surrounded himself with all kinds of collections. In addition to curiosities acquired during the Lewis and Clark expedition, he employed the latest technology of the time, such as a wind-up calendar clock, a writing table with a copying pen and a cipher machine.

Jefferson was intelligent, curious and passionate. He read widely. Though he lived at a time when scientific discovery proceeded at a much slower pace, he believed that science — both basic and applied — merited serious study.

He felt that the systematic observation of nature could lead to scientific discoveries, which in turn could improve the quality of life. A man of many talents, he tracked changes in Philadelphia's daily temperature, even while engrossed in drafting the Declaration of Independence.

Jefferson believed in the power of reason to address human problems. A child of the Enlightenment, he loved new technology but pondered its social implications. While serving as secretary of state (1789-93), Jefferson was instrumental in developing policies, under the Patent Act of 1790, to promote innovation. His requirement that inventors provide working models as part of their patent applications created a museum of prototypes that inspired future inventors. While president of United States (1801-09), he also served as president of the American Philosophical Society, the National Academy of Sciences of his day.

Jefferson was proud of founding the University of Virginia, a nonsectarian institution with a mission of public service. Established in 1819, Mr. Jefferson's University opened for classes in 1825 with eight faculty and 68 students. Though he died on July 4, 1826, his belief in the importance of the "useful sciences" continued to bear fruit as the first four students graduated from the University's School of Civil Engineering in 1839.

What would Jeffersonian engineers be like today?

Well-grounded in science and mathematics, they would possess problem-solving skills and a strong sense of ethics. Educated in the humanities, they would view technology as a good servant — but a poor master — of society.

Ideally, they would have access to Science, Technology and Society programs, such as those at the University of Virginia, MIT, Stanford and Cornell universities. These interdisciplinary programs develop engineers with good communication and critical thinking skills, and an awareness of the ethical issues linked to technology. They strive to create engineers who not only consider their own work, but also its impact in a larger context, whether it's rural water quality, availability of affordable energy or global warming.

Jeffersonian engineers have important roles to play in today's world. By thinking creatively and critically, they can address the social issues of new technologies. The United States' government is not alone in needing current and future leaders literate in the sciences who can make enlightened public policy decisions.

The University of Virginia's School of Engineering and Applied Science encourages engineering students to think about their larger roles in society in several ways. In addition to its Department of Science, Technology and Society, U.Va.'s Engineering School also offers interested undergraduates an opportunity to participate in summer public policy internships, specifically designed for engineering students, in Washington, D.C., and elsewhere.

One hundred and sixty-nine years after the first engineering students graduated from Mr. Jefferson's University, U.Va. continues to pursue its founder's mission — producing new knowledge, serving the public, and teaching the next generation of leaders. Though much has changed on Grounds, Jefferson would still feel at home in his "Academical Villiage," a place where his ideals and faith in education, democracy and human progress are alive and the Jeffersonian engineer is a reality.

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