Getting Started, Surviving and Thriving: A Brief History of the Division of Technology, Culture, and Communication in the School of Engineering and Applied Science

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The idea of professional engineers who are well-trained technically, humanistically oriented, and conscious of their social obligations, is not a new one, although there is much more focus on creating "well-rounded" engineers in present day engineering education. In the early twentieth century, deans and distinguished professors at the University of Virginia sought to broaden the education of engineers by creating an "Engineering English Division" in the Engineering School. This paper will give a brief overview of the history of the Division and how it managed to survive and prosper for the last sixty-plus years in spite of hard times and short-sighted critics.

The founder of the Division, Joseph L. Vaughan, Ph.D. in English from the University of Virginia, states in a hand written 1983 essay, "A Brief Account of the Origin of the Division from 1932-1966," that already in 1905-6, there is a reference in the University Catalogue that all engineering students are required to write a senior thesis as independent study, but to be approved by the Dean and a designated professor in charge. Joseph Vaughan himself, from 1927-1932 taught a first-year English course in the English department that was only for engineering students and emphasized communication skills with a focus on technical materials.

In 1932 the president of the University, John Lloyd Newcomb, and Dean of Engineering, Walter S. Rodman, formed a committee which recommended that English and Mathematics be brought into the "inner core" of the engineering curriculum. This meant that engineering students would be trained, for example, in technical report writing, oral presentations on technical subjects etc., all of which was not being taught in the College of Arts and Sciences. Joseph Vaughan became the founder and the first Chair of the Division, and hired more faculty from diverse backgrounds such as Philosophy, English, Engineering and Education, also History. This is faculty group designed courses that focused on technical written and oral communications skills as related to the intellectual interests inherent in engineering, including an emphasis history and philosophy of science and engineering. They also were put in charge of all senior theses, which meant that each student had a technical, as well as a humanities advisor for his independent senior thesis project. (Vaughan, p.3) The tradition of a required senior thesis for each UVa engineering student has continued to this day; in fact, in a 1987 Dean's office survey of the class of 1977, the senior thesis was listed as the most valuable undergraduate educational experience.

The approach that Vaughan took in shaping the Division, then named "Engineering English," later "Division of Humanities," and now "Division of Technology, Culture, and Communication," was broadly cultural: besides the training in communication skills, he placed a strong emphasis on "the role of the engineer in society" with a focus on the responsibilities of the engineering profession to society. In fact, the changing name of the Division reflects a full

integration of humanities and science and technology. To help broaden and integrate the engineering students' education, Vaughan founded an "Engineers' Reading Club, Summer Reading Programs, and trips away from the University" to focus on learning about the larger culture. He also sought the advice and assistance from colleagues throughout the University to promote interdisciplinary studies for the undergraduate engineering students. (Vaughan, p.4)

Without a doubt, Joseph Vaughan was a visionary engineering educator who had a holistic approach to training professional engineers, and who understood their importance to society. In his essay and also in many private conversations he commented on how difficult it was for people trained in the liberal arts, for example, to appreciate that engineering students have already made a choice of profession and want to pursue it with vigor. It takes a special approach to get the students to put their technical training into a broader, cultural context and to teach them to communicate their expertise effectively to the society at large. Courses taught in the Division were and are not meant to substitute for traditional liberal arts courses, but rather are a bridge between the purely technical and purely humanistic studies.

Over the sixty- plus years that the Division has been in existence, there were several attempts, particularly by liberal arts faculty, to challenge the need for such a program in the University. Inevitably, upon close scrutiny, the critics often became believers, and, at the least, stopped their objections. Sometimes just challenging the critics to attempt to offer similar educational experiences is enough to silence them; if anything, they usually offer less, not more. It is noteworthy that over the years other professional schools in the University have added specialized courses which emphasize communication skills and also their own professional issues vis a vis the society at large. Such courses can be found in the Schools of Medicine, Nursing, Law, Commerce, and Business. There are also a few other universities who have similar programs, and in recent years there have been more inquiries from engineering schools as to how to start a program such as ours at the University of Virginia School of Engineering and Applied Science. None of the courses taught in the Division are duplicated anywhere else in the University. For example, in a university founded by Jefferson, we are still the only faculty who offers a course in "Thomas Jefferson's Interest in Science and Technology," or a course in "Invention and Design," which was highlighted in the 1993 president's report as particularly innovative. There has even been student interest in the College of Arts and Sciences to duplicate our required senior thesis.

The most vocal group in support of the Division over the years has been the engineering alumni. Not only have they voiced their vigorous support of the senior thesis, and the teaching of communication skills, but also mention in letters and on personal visits their appreciation of the various courses that deal with the interface between technology and society, and engineering ethics. Quite a few former students have reported back on the ethical dilemmas that they had to face on the job and their relief that they knew how to frame the problem and come to some ultimately satisfactory solution.

Another group which values the mission of the Division is the parents of our current and prospective students. When we have parent- student orientation and parents day at the University, members of our Division are always present with brochures and a videotape, ready to

discuss and answer questions about the importance of our courses to the education of the students.

Our Division has also survived and thrived because we have taken a national leadership role in engineering education by presenting papers and networking at various conferences important to engineering, such as the American Society for Engineering Education, as well as conferences in the humanities. Our contacts with industry, which employs most engineers, give us first-hand information about current educational needs for engineers. Every year companies send representatives to the Engineering School to talk to our students and to us about life in industry. The members of the Division of Technology, Culture, and Communication continue their interdisciplinary work with engineering, college, architecture, and business school faculty, as well as educators from other universities, in the United States and abroad. Joseph Vaughan's vision of the "humanist engineer" has developed over the years into a first-rate program which keeps up with and stays ahead of the needs of the engineering profession and our rapidly changing technological society.