AC 2012-3462: LEGITIMIZING ENGINEERING TECHNOLOGY EDUCATION: WINSTON PURVINE, OIT, AND THE ROLE OF THE ASEE, 1946-1991.

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Legitimizing Engineering Technology Education: Winston Purvine, OIT and the Role of the ASEE, 1946-1991.

The standard model for the history of American engineering education in the Cold War period (1945-1991) stresses the impact of Federal research spending in moving engineering schools in the direction of research-focused curricula. During World War Two, universities had begun to accept federal funding on a large scale as part of the war effort, in contrast to a general unwillingness to take that money prior to the war for fear of potential federal control. Universities proved willing to continue to accept federal money in the post-war period, setting up graduate programs in the sciences and expanding their research programs.

As part of the larger effort to attract federal research dollars, engineering schools also set up and expanded graduate programs, particularly in the area of engineering science, and hired an increasing number of faculty with doctoral degrees. This, in turn, had an impact on undergraduate engineering education, which became more theoretical in focus so as to prepare students for graduate work and careers in research.

A lesser-known counter-trend that took place in engineering education during the Cold War period, the rise of engineering technology education. Engineering technology had its origins in the demand by employers for engineers trained to be private-sector job ready, rather than the research oriented engineers increasingly being turned out by mainstream universities. This ran counter to the primary trend in engineering education in the Cold War era, and so created a potential niche for those engineering educators willing to educate their students differently.

The primary driver of this change was a group of engineering educators from this period who acted as entrepreneurs and set up engineering technology programs to serve the needs of industry. These men (they were all male) came from outside the mainstream of engineering education, typically having experience with World War Two-era industrial training programs and/or proprietary, non-accredited technical schools. Working largely at non-elite colleges and universities, they sought to define an alternate form of engineering curriculum that was grounded in practice, not theory.

Supporters of engineering technology education used the ASEE as a platform to gain legitimacy for their degree programs and create avenues for accreditation. They grounded their arguments for inclusion on the basis of fairness, equivalency, and the need to set standards. Over time, their arguments proved successful, and engineering technology achieved institutional legitimacy, most notably through an accreditation process virtually identical to that for conventional engineering programs. At the same time, the need for institutional legitimacy also pushed engineering technology programs to become more like those in conventional engineering in terms of curriculum and student learning outcomes.

This paper focuses on one of those men, Winston Purvine, President of the Oregon Institute of Technology from 1946 to 1977. Purvine was a typical example of the type of men who helped to create the discipline of engineering technology. He trained before WWII in vocational education at Albany College, Oregon (ancestor of Lewis & Clark College) where he earned an A.B in 1933. In 1936 he became assistant superintendent at the Vocational Mining School in

Grants Pass, Oregon, and in 1938 he was hired by the Oregon State Department of Vocational Education as an administrator. During World War II he was assigned to the Governor's office to develop a classification system for all state employees who were not in higher education.

As a result of his wartime experience, he became interested in the agricultural and technical institutes in New York State. He began to correspond with the administrators of these and other technical schools, and he became convinced that there was a gap in the then-current educational system. In his view, there was a need for a hierarchy of technical personnel to assist professional engineers in their tasks. In particular, he believed there was a place for technicians who had some vocational training, but who also had additional skills in areas like mathematics so that they could relieve engineers of routine tasks like calculation and testing.

Purvine believed that there was a group of high school graduates who were well suited to this role who were not being served by the existing educational system. This group consisted of individuals who were of college caliber but who were not interested in a liberal arts education or in a purely vocational career. Purvine dubbed this group "The Forgotten Generation" and began to give presentations to service clubs and PTAs across Oregon.

These presentations eventually caught the attention of civic leaders in Klamath Falls, a then-growing town in south-central Oregon. They arranged for the purchase from the Federal Government of a former Marine Recuperational Barracks located there, and hired Purvine to set up a training school for returning veterans patterned on his ideas. After becoming president of OIT (then known as the Oregon Vocational School) in 1946, he gradually sought to upgrade that school to met the needs of industry by adding associate degree programs that focused on technical skills.

This eventually led Purvine to seek accreditation for these degrees through the Engineering Council for Professional Development (ECPD), and so he began to attend American Society for Engineering Education (ASEE meetings) in 1956. Purvine immediately became involved in discussions about curriculum, which at that time focused on whether there was a need to incorporate calculus into the technical school curriculum. Wentworth College had successfully persuaded the high schools in its state to advise college students that they should take calculus, and representatives of the school wanted to extend this example to other states.

Purvine was one of those who spoke up against the idea, and as a result he was asked the next day to become a member of the "Committee of 21" which at that time was the guiding committee for technical education within the ASEE. He soon after was appointed chairman of the ECPD Pacific Northwest Region. At that time, OIT was the only technical school in the region.

As a result of his new connections, Purvine became involved the discussions at the 1960 ASEE meeting that led to the first attempt to develop written guidelines for visitors who were assessing engineering technology programs. As these guidelines developed in subsequent years, Purvine was able to use his position as a leader in both ECPD and the ASEE to shape the resulting standards.

In these discussions, Purvine was a consistent advocate of increasing standards, as long as those increases met the needs of industry. He realized that the engineering profession was becoming more scientifically oriented and was raising its standards, and that technical education had to follow the same path if its graduates were to be useful in assisting engineers on the job. For example, he was a strong advocate of including non-technical subjects in the curriculum, such as writing, oral communication, and business methods. At the same time, Purvine sought to preserve what he saw as the most important aspect of technical education, a hands-on familiarity with machines and industrial processes.

Purvine was able to leverage the changes in accreditation standards to make changes at OIT. In the early 1960s, he organized a campaign to move the school from the Oregon Department of Secondary Education, where it had been situated since it was founded, to the Board of Higher Education. He was successful in this effort, and the State of Oregon funded a new campus in Klamath Falls and added OIT to the university system over the objects of the other state universities. Purvine subsequently moved to upgrade a majority of OIT's programs from two-year to four-year degrees, a move completed the year he retired in 1977.

OIT's subsequent history reflects the initial path Purvine established. It continued to focus on hands-on technical education, working closely with industry through regular meetings with advisory councils. OIT hires primarily faculty with industry experience, and continues Purvine's tradition of stressing education in communications and other non-technical subjects. It also maintains close ties with the ASEE and ECPD. For example, faculty at OIT led the effort to edit and publish the volume of ASEE Engineering Technology history in 1995. Today, the institution is recognizably a manifestation of Purvine's desire to provide for "The Forgotten Generation."

Due to his contributions, Purvine was recognized as one of the founders of the ASEE's engineering technology section when the organization organized its centennial celebration in 1993. He was one of eight men identified as founding leaders and interviewed – a transcript of that interview appeared in the book published to document the history of ASEE's involvement in engineering technology in 1995.

In conclusion, we can see in the career of Winston Purvine and the subsequent developments at OIT as a reflection of the larger trend in engineering technology education. Coming out of prewar technical institutes and the World War II training experience, a group of educational entrepreneurs sought to create an educational niche to serve industry. They succeeded, creating an alternative type of engineering education that filled a hole left by Cold War developments.

References

Michael T. O'Hair, ed., *Engineering Technology: An ASEE History*, Gelncoe/McGrae Hill, Westerville, Ohio (1995).

Winston Purvine, *Oregon Tech's First 30 years, 1946-1976*, Oregon Institute of Technology internal publication, Klamath Falls, Oregon (1978)

Lawrence P. Grayson, *The Making of an Engineer: An Illustrated History of Engineering Education in the United States and Canada*, Wiley, New York (1993)

David Nobel, *America By Design: Science Technology, and the Rise of Corporate Capitalism*, Oxford University Press, New York, (1979)

Dian Olson Belanger, *Enabling American Innovation: Engineering and the National Science Foundation*, History of Technology Series, Purdue University Press (1998)