ENGINEERING CRITERIA 2000: A NEW PARADIGM DRIVER

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During the 1990's, there have been numerous studies concerned with changing the paradigm for engineering education established in the years following the Second World War. Among the results of these efforts is a new set of standards, EC 2000, by which engineering programs will be evaluated for accreditation purposes beginning in the 2001-02 academic year[1]. These new standards offer great promise for moving engineering education in directions that may well have greater appeal to women.

Considerable data underscore the need for such movement. While women comprised nearly 50% of the workforce in 1996, only 22% were involved in science and engineering disciplines; worse, only 10% were in the engineering profession itself. Historically, women have been more attracted to liberal arts programs as well as to medicine and law than to engineering. A good summary of this situation is given in [1] where it is suggested that, among other things, women feel isolated, lack familiarity with typical applications used to illustrate abstract concepts, are not socialized to be aggressive in classroom and laboratory situations, and tend to underestimate their own abilities. Given also a natural proclivity to be concerned for the well being of people, women understandably are drawn away from present engineering curricula to the liberal arts. The new accreditation standards are poised to drive engineering programs towards the classical liberal arts values and, in so doing, become the appropriate liberal education for the coming decades.

In particular, Criterion 3 Program Outcomes and Assessment lists eleven attributes that engineering programs must demonstrate that their graduates possess. Six of these relate directly to the traditional outcomes associated with liberal arts studies, such as relationships with people and to society, development of critical thinking and

[1] Five institutions participated in pilot studies conducted by the Accreditation Board for Engineering and Technology during 1996-97 and 1997-98; the remaining three years will see additional programs examined on a voluntary basis.

communication skills, and ethical issues, all placed in a global context. When these six outcomes are viewed against the top ten reasons women switch out of engineering [2], the new paradigm becomes clearer, as does the prospect for increasing the number of women in engineering programs. Because EC 2000 can result in a new paradigm that places engineering and the associated technology in a societal context, has transcendent purposes that promote a holistic approach, and offers a broad educational platform suitable for many different careers, engineering study may well become the new liberal education.

References

1. R. Heses, M. M. Bland, J. Darby, and K. McDonald, "Improving the Academic Environment for Women Engineering Students Through Faculty Workshops," J. Engineering Education, January 1995.

2. E. Seymour and N. M. Hewitt, "Talking About Leaving: Factors Contributing to High Attrition Rates Among Science, Mathematics, and Engineering Undergraduate Majors," Boulder: University of Colorado, Bureau of Sociological Research.