

Offer More Liberal Arts: A Debate

Winslow, electrical engineering junior, says yes. He believes that present curriculum robs students of a broad education—of chance to better fulfill role as citizen.

By CLEON WINSLOW, '55

Today's engineering graduate has the educational background that makes him valuable to industry. He will be sought after and paid well because the foundation of technical knowledge laid in college makes him a valuable investment.

But it is less than factual that engineering graduates have a background that makes them as valuable to the world in which they live as they are to a small segment of it—industry. It is questionable that their educational background will allow them to take their place among those who can discern social and moral values attached to life and its problems.

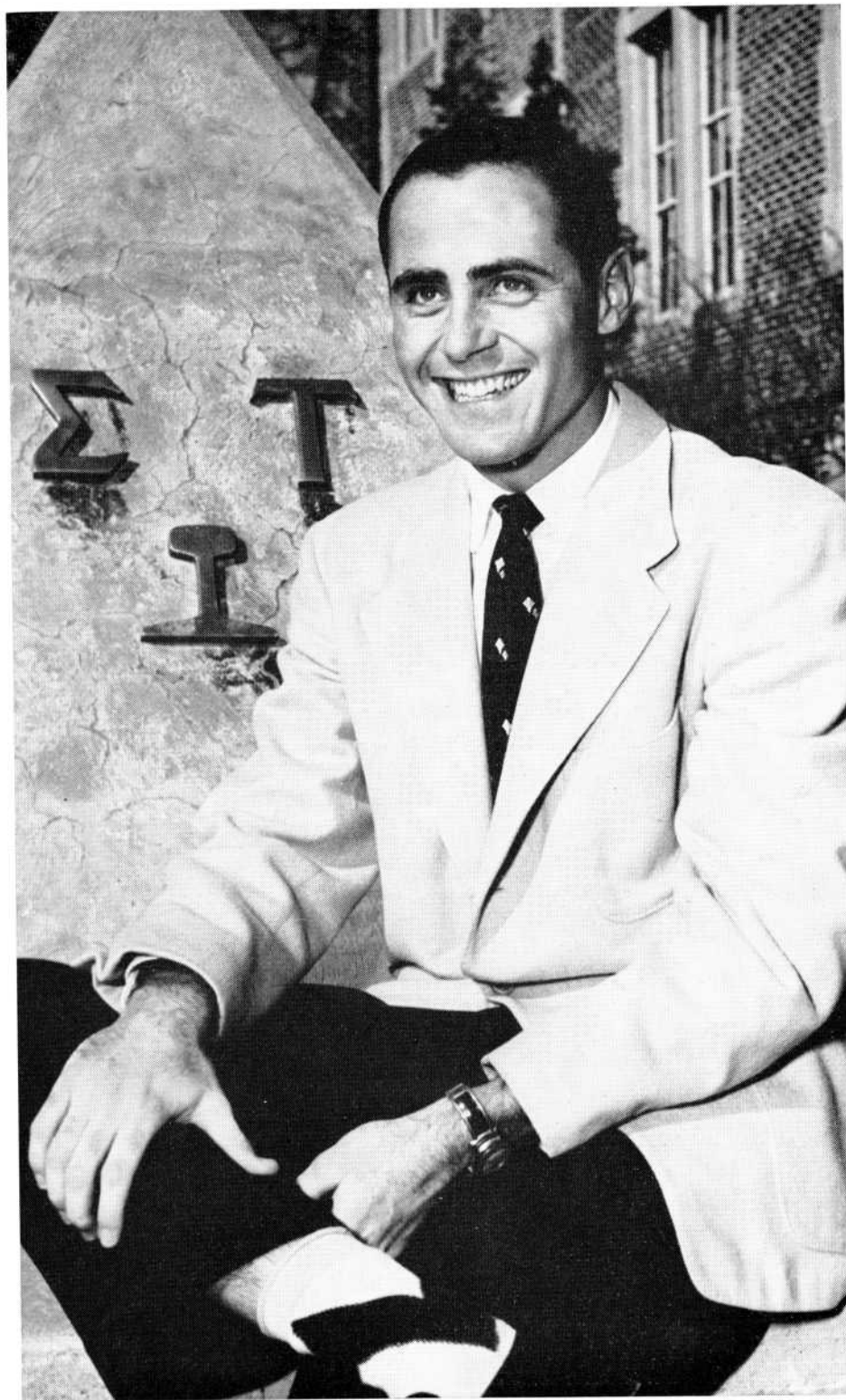
Scientific advancements are of little value unless they are used to mankind's ultimate advantage. That advantage is not served, in my opinion, as well by today's prosperity as it is by a successful planning towards a better society for tomorrow.

It is not hard to establish the fact that engineering curricula are set up with an eye on today's greater prosperity. The viewpoint of immediate practicality is necessary, and can be defended, but this does not alleviate our responsibility to provide for our children a healthy social atmosphere.

How do engineers meet the responsibility? The answer is, they do not in many cases. Many do not understand the meaning of social responsibility because they have no background in the social sciences.

A large U.S. industrial concern has for its slogan, "Better Living Through Chemistry." The half-truth contained in this slogan illustrates my viewpoint. By advancements in chemistry and other sciences man makes his environment more comfortable, his world more liveable. But, I believe, it is a keen moral judgment and a better understanding of man's social problems that provide a truly better living.

How much is a slum area profited by the discovery of a new fabric or a new propulsive mechanism? Would a minority group in the U.S. be profited more by a faster airplane or a faster enlightenment of minds—an enlightenment that would remove the label of inferiority? The engineer can contribute to the fabric, propulsive mechanism and airplane, but I do not



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Much broader educational requirements for advanced degrees would help insure liberal viewpoints for engineering teaching and engineering management.

In summary, it is admitted that social-humanistic subjects are valuable to engineers. However, further additions of such subjects to the present undergraduate engineering curriculum should not be made for several reasons:

1. It would require another year of formal college education. Some students cannot afford a fifth year. Many universities could not adopt this plan at the present time.

2. Industry needs many men with specialized technical training. Industry has not specified its need to the contrary. Best utilization of time and effort is achieved in technical training.

3. Technical training can be liberalized without increasing the amount of liberal arts requirements.

4. A liberal education would be more advisable in the graduate rather than the undergraduate engineering curriculum.

Despite some exceptions occasioned by the particular problems of a few schools, these reasons are valid considerations for not increasing the social-humanistic subjects in undergraduate engineering curricula throughout the country.

Winslow Says Yes . . .

believe he is prepared to meet the greater social need.

There is a demand in industry today for engineers capable of handling positions in management—men who have engineering know-how and yet possess the broad background in the liberal arts that would make them equal to the responsibilities of management. The surprising thing to me is that few engineering students are inclined to accept the challenge. Instead of broadening their intellectual horizons, they narrowly pursue a single phase of education, and as a result rob themselves of a vast personal satisfaction as well as the benefits offered to the career of one who is not willing to let himself remain narrow in his knowledge.

It is not that students talented along engineering lines are unable to comprehend material contained in liberal arts courses, but that engineering students are, in many cases, indifferent to any non-technical subject.

The reason for this indifference does not rest wholly with engineering students. The prevailing attitude in the engineering profession holds that any course which does not require the use of a slide-rule is to be regarded as practically useless to an engineer.

This viewpoint is reflected in the curricula of engineering schools. Instead of providing a broad base upon which industry and the individual can build, the curricula seem to be striving to make specialists of engineering students even before they leave college.

As an example of the specialization of an engineering student, consider the curriculum which is to gain me an engineering degree. Before I will be graduated I will have completed the following:

In the field of liberal arts, English, 6 hours; government, 3 hours; history, 3 hours, and speech, 2 hours—a total of 14 hours.

In engineering or related fields, mathematics, 25 hours; physics, 12 hours; chemistry, 8 hours; electrical engineering, 41 hours; mechanical engineering, 4 hours; mechanics, 9 hours; engineering drawing, 5 hours; industrial education, 2 hours, and civil engineering, 3 hours—a total of 109 hours.

In addition, I have taken 20 hours of naval science under the NROTC program—giving me a total of 143 hours by the time I graduate.

A good picture of specialization can be drawn from the percentage of non-technical and technical hours as presented here.

I will have completed 9.8 per cent non-technical college work, 75.2 per cent technical studies, and 14 per cent naval science.

A great many engineers are employed in work totally different from the particular phase of engineering that they studied in college. These engineers have found that their specialization has profited them little. For them, as for other engineers, their education would have been much more valuable if they had coupled the fundamentals of engineering with an acquaintanceship with the liberal arts!

The engineering approach to technical problems is systematic and effective. Businessmen have been quick to see the value of such an approach to the problems of management. The paradox of the situation is that most engineers, when asked to leave the world of slide-rules, are not able to adapt themselves to a new environment well enough to be able to apply the engineering approach to non-technical problems. They are such total strangers to the 'other world' that they are unable to orient themselves well enough to be able to use the facilities at their command.

There is a great deal of truth in the idea that the basic benefit derived from a college education is not the preparation for a profession but rather a fostering of an effective process of thinking and the ability to use that process. Unfortunately for many engineers, all of life's problems are not engineering problems. They can only be dealt with effectively by those whose thinking is flexible. Engineers educated solely from today's engineering curricula can not be blamed for their lack of effective thinking in areas outside the engineering realm. If they approach life with the viewpoint of a specialist, remember that was the way they were taught.

The benefits to be gained by an engineering student who will extend his knowledge only slightly into the liberal arts are most gratifying. Enough, I say, to warrant extending or modifying the engineering curriculum to include more courses in the liberal arts. Such a curriculum would produce engineers better trained for industry. Such a curriculum would also produce more useful citizens and members of the society in which they live. Such a curriculum would tend to help the individual meet his problems of living.

I can think of no greater return for time and talent invested.

About the Authors: Gerald Glahn has a 3.92 grade average in the School of Chemical Engineering. President of the Engineers Club, a Rhodes Scholar applicant, 1953 Dad's Day winner, he graduates in June. Winslow, a year behind Glahn in standing and awards, is a junior in the School of Electrical Engineering with a 3.71 grade average. No comment is necessary concerning their intelligence. These articles and their grade averages speak for themselves. Neither student presented his full views on the debate topic but limited himself to a 1-sided argument at the editor's request.

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