

GUEST FORUM

Lyle's Law of How to Start

WITH APOLOGIES TO JOYCE KILMER (“*I think that I shall never see a poem as lovely as a tree*”), I have to point out that sometimes trees get kind of ugly. Certainly the one in our front lawn was no longer a thing of beauty, with its dead branches and the big rotten section on one side. It was time for that one to go; so—with the help of our daughter and her family (our son-in-law did the climbing and sawing while I provided tactical instructions from the ground)—we cut it down, then cut it up, and hauled it away. That was during spring break.

The absence of that scraggly tree helped the appearance of the place, but my victory was not complete; the STUMP remained. Over the weeks, it lost the color of new-cut wood, but still it was obtrusive. Kilmer described the stump and roots of a tree in beautiful words (*a tree whose lovely mouth is pressed against the earth's sweet flowing breast*), but this stump was ugly and getting worse. Finally, after procrastinating as long as I could—and with the encouraging coolness of September—I dug it out.

Digging out a stump is an interesting process. The object of my attack was right in front of me—obviously. The problem I had to solve, however, was hidden from view beneath the soil and grass that looked so benign. So the first thing I did was to start digging that soil away. On the second or third spadeful, I hit a root—the first of many. The next two hours were spent locating, isolating, and excavating a total of seven major roots ranging in size from eight inches in diameter to almost a foot. Once all the roots were exposed, it was time to take a break because then I knew—I *really* knew—what had to be done to finish the job. From here on, it was pretty simple; a little chopping, a little sawing, a little prying, and, *voilà*, the stump was no longer a stump but just a pile of wood chunks, ready to go to the dump.

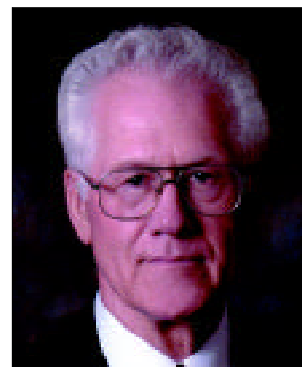
Solving the problem of removing the stump was not unlike solving other problems that we face; once the problem was defined, once I knew where the roots were located and how big they were, the rest of the job was pretty straightforward. To generalize, I give you *Lyle's Law of How to Start*.

Certainly this is a critical lesson for engineering students. I know that students are supposed to read the textbooks and work out the derivations, but the reality is that most students spend most of their study time working problems. They do this because they have learned that when they go in to take a test, they will be asked to—work problems. This system has served us well over the years and will not likely change. But, oh how much more efficient it would be if students learned

to spend more upfront time figuring out what needed to be done before they started trying to do it.

For a number of years, early in my academic career, I taught the introductory electrical engineering course. One of my students seemed like a bright enough young man, but his performance on examinations was atrocious. He seemed destined for a career outside engineering (in

case you didn't recognize it, that's a euphemism for flunking out). His test work was so strange, though, that I decided to watch him as he took an exam. It was incredible. This was before our lexicon was invaded by computer jargon, but his actions could best be described as a memory dump. As soon as he received his test, he started writing down all of the formulas that he had memorized in preparation for this horrible hour. I went over and suggested that he slow down a bit, but as soon as I left, he was back to writing feverishly. When I corrected his test, sure enough, he received the low score, once again.



The most important step in solving a problem is defining it.

In an effort to save this not-so-budding scholar, I called him in and discussed his approach to

problem solving. What I found was someone who was so concerned about having enough time to do the work that he just *had* to start immediately. It was a classic case of “Ready! Fire! Aim!” but skipping the “Ready” step and never getting around to “Aim.” So I made a deal with him. The next time he came in for an exam, I took away all of his pencils. I held them for the first 10 minutes of the test time and then returned them so he could start writing. It was a tense time for him. He was clearly distraught for the first minute or two, but then he settled down and actually read the problems and decided what he would do after he got his pencils. To make a long story short, he passed that exam, and, while he never became

Lyle's Law, continued

the top student in the class, he did pass the course and survived to graduate. I am convinced that he would never have done so had he not learned to define his problem before he started solving it.

This same principle applies as well to engineering problems of the non-academic variety. If an electronic *box* is getting too hot, an engineer might logically start trying to improve the heat-removal system. But think. The problem is a hot box. That might mean too much heat is being generated, not that too little is being removed. In solving a problem, it is at the very beginning—when the problem is being defined—that the problem solver must be extremely skeptical. And it is there that you will enjoy the greatest return on investment of time. The old adage, “don’t jump to conclusions,” modified by someone to “don’t jump to exclusions,” is excellent advice.

Finally, *Lyle's Law of How to Start* is also quite useful in solving the problems that arise in the process of living a life. I think that all of us, at some time in our lives, feel

that we don't have enough money. People solve that *problem* in many different ways: by trying to earn more, by engaging in some illicit money-making activities, or just by going from day to day in a blue funk. It would be better to spend some time thinking it through and defining the problem. Do I really *need* more money, or do I just *want* more money? Is money the issue, or is it the things that money can buy? If the latter, why do I want those things? Again, once the real problem is defined, solving it often becomes pretty straight-forward.

Engineers are, in general, very logical and orderly people. One manifestation of this trait is an ongoing search for problem-solving algorithms that allow us to obtain solutions by performing a set of pre-defined steps. This law is not such an algorithm, but keeping it in mind when approaching a problem can save a lot of wasted effort.

See you next issue.

—Lyle D. Feisel, Iowa Alpha '61, Ph.D., P.E.

SEEKING DISTINGUISHED ALUMNUS NOMINEES

THE DISTINGUISHED ALUMNUS AWARD recognizes members who have continued to *live up to the ideals of Tau Beta Pi as stated in our Eligibility Code and to foster a spirit of liberal culture throughout their lives after their college years*. These alumni serve as examples of excellence and leadership in character and liberal culture to collegiate members so as to influence their professional careers and personal lives.

Honored alumni have made exceptional efforts to demonstrate our ideals and to foster a spirit of liberal culture on local, national, and international scales. They have demonstrated integrity, breadth of interest, adaptability, and unselfish activity.

Future awardees will be chosen by a committee of national officers and invited to the Convention where they will each receive a special plaque and their achievements will be recognized. A \$2,000 Tau Beta Pi Scholarship will be named in honor of each Distinguished Alumnus.

Nominations are requested from any individual member

or any chapter, which may nominate any alumnus member or members, except a national official, for the award. There is no limit on the number of nominations. The following documentation in four sets must be sent to the Executive Director by March 15:

- (1) A one-page nomination form of biographical information and a summary of the achievements and/or contributions of the nominee exemplifying the objective of the award. (President's Book, C 32-33.)
- (2) A citation (one-page limit) appropriate for presentation, documenting the nominee's outstanding adherence to the Tau Beta Pi ideal of *fostering a spirit of liberal culture* in our society. It may be written by the nominating party.
- (3) Two letters of reference from persons, excluding the nominator(s) or sponsoring chapter president, knowledgeable about the nominee's contributions and achievements.

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