



LYLE'S LAWS

Lyle's Law of Altitude

In my opinion, (humble, of course) one of the greatest computer applications on the Internet is Google Earth. This site, in case you are not familiar with it, allows the user to view satellite images of the Earth from almost any altitude. When the screen comes up, you are looking at the Earth from an altitude of 6,835.7 miles (more or less). This is not a particularly interesting view, but, with the flick of your thumb wheel, you can start to zoom in. You can also do a drag and drop and move to another part of the world and then zoom in some more and, depending on where in the world you are looking, move down so close that you can see cars and boats and even people.

My initial fascination was centered on seeing how close I could get to places with which I was familiar. Look! You can see Bill's car parked in the driveway! Then I moved on to places that I hadn't been. I could look at Mt. Everest or fly across the Sahara or sail around Sydney. Magnificent. Finally, I discovered another very useful function. After I had zoomed down and flown around, I found that I could now zoom out and see something that is perhaps even more important than those up-close details. I could see how the place I had been examining close up was related to other places and geographic features. This zooming out to gain perspective is the metaphor for Lyle's Law of Altitude—*Things look different from five thousand feet.*

One thing you see from 5,000 feet—or any reasonable altitude or distance—is how things are related or inter-related. I was probably about 12 years old when I had my first airplane ride from the Tama, IA, airport which was about two miles from our farm. As I looked down for the first time on the area where I had lived all my life, what amazed me was how close things were to each other and how everything fit together. Of course, I knew there was our farm and the Schraeder farm and the Betz farm and the Schuett farm and so on, but it was a revelation to see them all laid out below me and all fitting together. Somehow, it seemed there should be some vacant spaces; but of course there weren't.

So how does this apply to engineering? For one thing, I think engineers tend to live on their own "farm" and, while they know there are other farms out there, they can

forget they are all connected. It used to be worse. Fifty years ago, marketing, product development, and production (now called manufacturing) didn't work together as they do today. It was pretty standard practice to design a product and "toss it over the wall" to production, which built it at whatever cost and then tossed it to marketing to price it to sell at a profit. No more. Now there is communication and cooperation throughout the product life cycle. Even so, a view from an even higher altitude can be useful.



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It is often helpful to take a mental flight around your company and cruise over your department and then the other departments or even other divisions. If you get up high enough, you will probably see how they fit together and how what you do relates to other parts of the company. Engineers have sometimes been known to look with disdain upon the "overheaders" in the company. In case you are not familiar with that term, it is a pejorative that encompasses all the people who are not directly involved in making a profit: personnel (now known as human resources), facilities, finance, certainly legal, and probably some others. A friend of mine was president of a large company and also had a law degree. He was still an engineer, though, and continued to rail against the overheaders, presumably including himself. He was a wise man, however, and while he strove to minimize the overhead, he flew high enough to realize that every element of the company was necessary and, if any one was missing, the company could not function.

Engineers would also do well to take a flight to investigate how their product or process fits into the world at large. By flying at the right altitude, we will see that our activity will affect a whole range of things that are out of sight if we stay too close to our work. I well remember how astonished I was when I first saw a stream-table demonstration. A stream table is a large platform covered with soil and tilted at a small angle. A straight channel is cut in the soil and then a stream of water is introduced at the top end and flows to the bottom. The demonstrator made a small nick in one side of the channel and then let nature take its course. It took a while, but over time that nick grew into a pocket, the pocket into a bend, and eventually into a meander that resulted



in additional meanders down the stream. It strikes me now that an ant standing beside that nick would have seen only that the stream bank was eroding and moving. A bee flying above the table, however, would have seen the very significant overall effect. Be like the bee.

Altitude or distance can also be helpful in examining our lives and our actions. If you can back off a bit and see how the things you are doing—or are thinking about doing—fit into the overall picture, you might change your plans. There are two perspectives that will help you predict what the consequences of your actions might be. You should be able to see down the road a bit and see the coming curves and bends and also the people you will see along the way and how they might be affected. The second advantage is that, by backing off, you are able to stand where others are standing and, with a little effort, see your actions from their perspective. Oh, what a boon this is! As the Scottish poet Robert Burns wrote,

*O wad some Power the giftie gie us
To see oursels as ithers see us!
It wad frae mony a blunder free us,
An' foolish notion:*

Of course, you do come back to earth, and you have to make your decisions on the ground where you live and work. Generally, however, these decisions will benefit from the perspective gained by taking a flight to 5,000 feet and seeing how things look from there.

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

BRAIN TICKLERS

(Continued from page 49.)

Send your answers to any or all of the Winter Brain Ticklers to Jim Froula, Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or email to BrainTicklers@tbp.org only as plain text. The cutoff date for entries to the Winter column is the appearance of the Spring BENT in late March. The method of solution is not necessary. We welcome any interesting problems that might be suitable for the column. The Computer Bonus is not graded. Jim will forward your entries to the judges who are **H.G. McIvried III**, PA Γ '53; **F. J. Tydeman**, CA Δ '73; **J. L. Bradshaw**, PA A '82; and the columnist for this issue,

D.A. Dechman, TX A '57.

TAX-FREE IRA GIVING A SECOND OPPORTUNITY!

YOU SENIOR TAU BATES CAN MAKE TAX-FREE DONATIONS TO TBPi for a limited time from your IRAs if you are **age 70½ or older**. A new law allows tax-free charitable donations from an IRA under simple conditions! You must act before December 31, 2009.

This is good news for anyone contemplating making a major gift to Tau Beta Pi or another charity. Under the Emergency Economic Stabilization Act of 2008, any donor age 70½ or older may contribute up to \$100,000 annually from an IRA account and avoid federal-tax consequences. The charitable gift amount will count against the donor's required minimum distribution (RMD).

When the amount withdrawn from the IRA account is paid directly to the charity, it is not counted as federally taxable income. However, because the gift would be excluded from income, it may not be included as a charitable deduction on a federal tax return. These rules will apply to gifts made through December 31, 2009.

For more information about how to help Tau Beta Pi, please call Pat McDaniel, Director of Development, at 865/546-4578, or visit www.tbp.org/pages/giving.

You should always consult a tax professional if you are thinking about making a major charitable gift or a gift under the new law.

2009 Fellowships

Tau Beta Pi's 76th annual program of graduate fellowships for study in the 2009-10 academic year will close filing January 31, 2009, when applications must be in the possession of Director of Fellowships **D. Stephen Pierre Jr.**, P.E.

Up to 24 cash awards will be given, each worth \$10,000, made on the promise of future development in engineering or related fields, and financial need. Winners will be selected by the Fellowship Board and notified in April.

All members of Tau Beta Pi are eligible to apply. Students and alumni may download informational pdf files from www.tbp.org.

Undergraduate students may apply for the approximately 160 scholarships that will be given in 2009 until filing is closed on March 1, 2009.

New Benefit for Members

Members may be eligible for an additional discount off their automobile insurance.



This special member discount is eight percent in most states and is available to qualified members in 45 states and the District of Columbia. In addition, GEICO offers many other money-saving discounts and a choice of convenient payment plans, 24-hour access for sales, service, and claims, and a nationwide network of claims adjusters.

Call 800/368-2734 to see what savings your membership could bring. If you currently have a GEICO policy, identify yourself as a Tau Beta Pi member to see if you are eligible for the member discount.

Or go to www.geico.com for a free rate quote.

• GEICO insurance available only to U.S. residents except for residents of Massachusetts.