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Curricular "Reform" Threatens Integrity Of Profession

Previous articles in this newsletter warned that current effort to "reform" engineering programs threaten the integrity of the engineering profession. A particularly bad "reform" program at Philadelphia's Drexel University was described in a *Chronicle of Higher Education* article (April 7, 1995, page A19) titled, "Re-engineering." The article said, "Engineering students at Drexel University used to spend their first year toiling away in science and mathematics courses. The curriculum was tough, often boring, and students left the major in droves, before they were exposed to engineering itself. Drexel decided to do some major tinkering." Unfortunately, part of this "tinkering" was the watering down of the technical content of the curriculum: "Chris Rorres, head of the mathematics and computer-science department, is concerned about the amount of math in the new curriculum. Engineering students who took four terms of calculus now take only three." Another unfortunate result of the "tinkering" is the introduction of design work before the students are ready: "I've talked to students in engineering at other schools, and they're in science classes while we're in design classes," says Doug Gahrig, a freshman. "We're building bridges the first week."

The article notes that the desire to keep engineering classrooms filled is one of the major motives for the so-called reforms: "According to the American Association of Engineering Societies, undergraduate enrollment in engineering dropped to 376,000 in 1993, a decline of 53,500 since 1984. About half of the students who enter engineering programs abandon them for other majors." But considering the abysmal employment outlook for engineers, is this enrollment decline bad? The article also notes, "The graduation rate of freshmen who went through the new engineering curriculum beginning in 1989 was 69 per cent, compared with 43 per cent for those

who passed through the old program." Does it make sense to use student retention rates as a basis for judging the quality of an engineering program? What is your hard-earned engineering degree going to be worth if engineering becomes a "snap" major?

" 'This curriculum will give engineering a new image,' says Y.T. Shah, dean of Drexel's engineering college. 'It will become a technical liberal-arts degree.' "

Sadly, Drexel's new program has the blessings of the National Science Foundation. The article notes, "In the late 1980's, the National Science Foundation began financing projects to encourage curricular reform in engineering. 'About the best we got was an improvement in a course,' says Susan Kemnitzer, deputy director of engineering education and centers at the NSF. 'We weren't getting sufficient movement.' So, in 1990, the NSF started giving grants to coalitions of engineering schools that had promised to work on curricular reform. Now 60 colleges are participating in eight such groups." Ms. Kemnitzer said of the Drexel program, "there's a tremendous difference between talking about what needs to be done and doing it. And the Drexel people are moving into practice."

Louis Guy, Jr., the National Society of Professional Engineers' former representative on the Accreditation Board for Engineering and Technology, said it best when he quit the ABET in disgust over the accreditation policy changes that were being pushed through by overinfluential academics on the board: "Practitioners have lost the war. The fox is in the henhouse."

Dissident Engineer

Editor's Column

The August issue of AE contained six pages, instead of the usual eight. Blame it on the editor, or rather the misfortunes of the editor. In July, there was a death in my family, and I had to bury the deceased in Florida, where she formerly resided. I hope to be able to turn out 8-page issues of American Engineer in the future.

ANOTHER KIND OF PROBLEMATIC JOB AD

For over a year, I've been running verbatim the full texts of what I call 'Illusory Job Ads.' These are ads run by state employment services, and the identity of the employer is concealed. The listed job requirements are so extensive that

they constitute a biography of the (intended) applicant, who is often an alien temp engineer already on the staff of the hiring company. Sometimes, the job ad lists the college courses that the intended applicant took. Chances are that no other applicant will have taken the same courses. Since no one else fits the exact description, the employer is free to 'hire' the temp as a permanent employee, for which he/she receives a 'green card' as a reward.

Here are other job ads that look like a problem to me. These ads are run by identified, well-respected names in U.S. industry, so they are not blind ads. I've deleted the employers'

(Continued)

(Editor's Column Continued)

names, to avoid lawsuits. The job requirements are so extensive that I can picture members of Human Resources Departments licking their chops at the prospect of getting many skills for the price of a few. This comprises a new form of exploitation of the professionally-powerless engineer. Also the employer asks for all this experience in only a few years of engineering practice. Engineers with twenty five years of experience (which contain all the listed requirements) are not likely to be hired. Is this age discrimination? Go prove it. Do you know anyone who can fill these requirements?

SENIOR ANALOG DESIGN ENGINEER - The selected candidate will have 5+ years' electrical design experience in commercial, medium to high volume environment involving analog simulation tools, phase lock loop (>100 Mhz), lamp control, power supply, audio/video. We prefer design experience with microprocessors as well as digital design and thermal experience.

SR. ENGINEER ELECTRONIC - BSEE required, MSEE a plus. Three to five years experience in research/product development (may include coop experience). Experience and knowledge in at least 3 of the following areas: analog and digital control circuits, power electronic controls and components, motor controls and feedback systems, electronic packaging (particularly surface mount) preferred, design automation tools preferred. Excellent communication skills and ability to work in a cross-functional team environment. Very creative/innovative and ability to lead technical associates. Responsibilities include investigate and develop cost effective electronic concepts that satisfy end user needs, play an integral role in implementing these concepts into viable products, work with outside subcontractors to manufacture the new products, member of a cross-functional product development team responsible for implementing electronic controls, maintain focus on speed, quality and cost while implementing electronic controls, maintaining focus on speed, quality and cost while developing electronic controls, track electronic technology trends relevant to power tools, effectively utilize design automation tools to insure design integrity, effectively communication (sic) status of active programs and new control opportunities.

DESIGN ENGINEER - A leading manufacturer of electrical test and measuring equipment, has an excellent opportunity for a design engineer with the following qualifications: BSEE and five years experience in an electronic design environment. Thorough knowledge of complex analog, digital, and power electronics with emphasis on design analysis and synthesis techniques. Experience in programming Microprocessor Intel X86 family and DSP Analog Devices ADSP2101 family. Advanced computer and CAE skills, Analog P-Spice.

WOMEN IN ENGINEERING

The Chronicle of Higher Education contains a column entitled "In Box." The April 7 column discusses women in engineering. It begins by stating the conventional wisdom: increasing the number of female professors in the sciences leads more young women to major in those fields. But a Princeton doctoral student did a study that found no evidence for this notion.

The study examined ten years of data about the faculties and students of Princeton, University of Michigan and Whittier College. It found that increasing the number of female professors by 10% in a year led to less than a 1% increase in the

number of women majoring the field several years later. Results of the study appear in the April '95 issue of the *Industrial and Labor Relations Review*. I regard women in science and engineering as a non-issue. There are affirmative action programs that give favored treatment to job applicants who are minorities, or women (who are not a minority). **QUES:** why do members of the education industry preoccupy themselves with a head count of women in college? **ANS:** because they are academics who would like to stimulate entry to their institutes and fill their classrooms with students of any ethnic background and any gender. In their view, full classrooms are better than half empty classrooms. This is what I call self-interest. I wish engineers had such self-interest. Then maybe there wouldn't be such high unemployment in the profession.

When I attended engineering college, there were two women in the entire graduating class. There was no college policy, either overt or covert, to exclude women. The women simply chose not to enter. I've never seen a barrier to women entering either engineering college or engineering jobs. Women can read the news media. They hear about the cyclic nature of engineering and the resulting intervals of high unemployment, the professional powerlessness and the truncation of careers. Many respond by seeking other careers.

Women were aware even when I was in college, that engineering is a series of jobs, not a career. If we could bring that message to high school seniors or even college freshmen, we might exert some influence to counter the deluge of propaganda coming from the education establishment. I've attempted to influence Institute of Electrical and Electronics Engineers (IEEE), with its 250K members in the U.S. alone, to disseminate such a message. They are currently warning engineers to stay current and follow closely the financial status of their employers. However, they encourage talented high school students to enter engineering, for a challenging career. Challenging is right.

IMMIGRATION AGAIN

Labor Day weekend, I attended the IEEE PACE Conference in Cedar Rapids. PACE is the conference that deals exclusively with professional issues and is attended by IEEE professional activities mavens from all over the U.S. There was one 'Hot Issues' Panel discussion on immigration, in which the panelists were David North, Lynn Wooty Sixel, columnist of *The Houston Chronicle* and Edith Holleman (Washington representative of AEA). Much of Mr. North's presentation is in the article, "Indirect Labor Market ... Foreign-Born Scientists and Engineers," that is carried elsewhere in this issue of AE. I am aware that this article constitutes a press release about Mr. North's new book, "Soothing the Establishment." However it contains valuable information, which justifies printing the release. Readers who wish more information can read Mr. North's book. I have a copy.

Ms. Sixel told of a study she made for *The Houston Chronicle*. She found: the employer convinced the Department of Labor

(DOL) 99% of the time that there were no qualified workers to fill a job opening, and 98% of the time there was an alien already holding the job that the employer listed as the opening. Thus DOL approved the employer's application to allow an alien to fill the advertised job (which he already held). Ms. Sixel also found that salaries for these aliens were less than the required 95% of prevailing wages. DOL was unable to assess what the prevailing wage was. Immigration and Naturalization Service (INS) also doesn't check salaries, and corrective action either by DOL or INS is complaint-driven. That is, they don't exert any corrective action by themselves. She told of an incident in which DOL advertised jobs for welders at sub-standard wages. The welders union got its members to flood DOL with applications, which overloaded DOL and effectively prevented them from processing the applications. Then the union negotiated satisfactory wages and jobs for their own members. Note that engineers don't have any union, and their professional societies have constitutional provisions that prohibit collective bargaining. This includes IEEE.

Ms. Holleman noted that nothing in immigration law prohibits the firing of U.S. engineers and replacing them by foreign, temp engineers. The foreign temp workers are in effect indentured servants, since their alien status makes them vulnerable to instant dismissal, which might result in deportation. Thus they have no leverage to raise their wages to prevailing levels. Ms. Holleman pointed out that IEEE can not wait for the next presidential election to exert pressure on the government to reform immigration law. The time to do so is now. Senator Alan Simpson, one of the Senators who backed an earlier bill that relaxed immigration quotas, is planning a hearing on immigration and its impact on scientists and engineers.

Ms. Holleman urged IEEE members to write Simpson, requesting that he actually hold hearings and write law that tightens immigration quotas. I urge AEA readers to contact Senator Simpson with the same message. Write him at Senate office SD-113, Washington, DC 20510, or phone his office at 202/224-3424. Tell him about high engineering unemployment and displacement of U.S. engineers by low-paid immigrants. If you have a personal experience with such a situation, tell him about that.

CONGRESSWOMAN BENTLEY'S AWARD

In the closing days of the 103rd Congress the American Engineering Association recognized retiring Congresswoman Helen Delich Bentley's (R-Md) contributions to the engineering and scientific community when Dr. David Lewis presented her with a plaque on behalf of the AEA. During her tenure in Congress, Mrs. Bentley worked hard to preserve American jobs and the United States industrial base. Congresswoman Bentley did not support NAFTA. Mrs. Bentley represented the 2nd District of Maryland. She will be greatly missed.

Robert Bruce
AE Editor

Editorial

EE Envy

SCRATCH A BILLIONAIRE, find an EE wannabe. That's the lesson I learned last week from watching Bill Gates on CNN's "Larry King Live." Gates was promoting Windows 95. Starstruck Larry asked Bill what it takes to run a big-league operation like Microsoft. "Well, Larry," replied Gates, "I think you have to be an engineer to run a technology company."

Whoa! Let's play that tape back again. Last time I checked, chairman Bill had dropped out of college ("When I was at Harvard ..." he reminded viewers) to co-found Microsoft with Paul Allen. No shame in that. Heck, most real engineers would be proud to cite such a successful startup on their resume.

It's unfair to dump on Gates alone. He's got company, in the form of John Sculley, former chairman of Apple Computer. Sculley was a successful marketer of Pepsi before joining the Macintosh vendor. At Apple, he took such a shine to PDAs and other nifty gadgets that he decided to confer upon himself the title of "chief technician"—a position no real engineer could have invented.

For actual EEs, "member of technical staff" is just fine. After many years, if you keep moving up the ladder, you might make "chief engineer." (Beam me up, Scotty!)

I can't recall many real engineers—for example, the people who help found Silicon Graphics and Sun Microsystems—prattling on about their EE credentials:

Maybe Gates and Sculley suffer from EE envy?

As EEs who've suffered through four years of electromagnetic theory, we should be flattered that these guys so want to be taken seriously that they sometimes gloss over their bona fides. (Remember that Steve Wozniak—a technology hall-of-famer if ever there was one—was so irked by his lack of a degree that he went back to school.)

There's a serious lesson here. EEs have been too passive about letting anyone who's hacked around with a word processor call themselves an engineer.

People who practice law or medicine without proper training are in for serious trouble. It's time for engineers to assert the legitimacy of their profession, as a profession. (*EE Times* readers have been debating this issue in our "Profession" section and in "Crosstalk.")

So, Mr. Gates, call yourself rich, and call yourself powerful. Just don't call yourself an engineer.

By Alex Wolfe

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Reader's Voice

This column in the "American Engineer" is for readers to voice an opinion about issues that affect the professional life of an engineer or other technical professional. Readers are encouraged to write AEA with their professional concerns. Each submission should include the name, address and phone number of the writer. Except for short excerpts, we'll publish the writer's name, city and state (unless the writer requests anonymity). In that case, we'll publish initials, city and state. Let's hear from you.

From PJC of Bayside, NY: - The engineering job market is stinko. All the ads I see require 3-10 years of experience. When they see/read BS 1969 (or equivalent information), I never hear from them again. In the last 5 years or so, my employment vs. unemployment ratio is about 40%. Forget underemployment; right now I'd be happy with underemployment. Here's a letter I mailed to a local newspaper, which might interest your readers:

To Mr. Greg Pierce of *The Washington Times*: I believe you erred in the last sentence of the section of your column entitled "Bipartisan Blunder," that appeared in the July 10-16 *Washington Times*. You stated why American companies now rely on the technological skills of foreign nationals. I believe this is not because they are better than U.S. engineers, but because they work cheaper.

I'm an American engineer with 25 years experience, a BSEE and an MSEE, but I can't find a job. Why? Not because I'm "Out of Date" and not because I'm incompetent. My track record attests to my competence. It's because I have 25 years of experience that would normally draw a salary of \$50K to \$70K/year, depending on the job location and the particular specialty. The foreign engineer may work for as little as \$8.10/hour and be thrilled to get the job. I would not be considered for that position, even if they had no foreign engineer in mind, because they would believe that I'd leave if something better came along.

In 1991, when I visited the Department of Labor, I was required to search the computer files for a job. In so doing, I found a listing for an engineer with my approximate qualifications AND a PhD in EE, with a salary of \$8.10/hour (about \$16,200/year). A PhD today would command \$80K or more, depending on the above-mentioned variables.

Foreign engineers take these low-paying jobs, because they are 'desperate' to stay in the U.S. Once they get a 'green card,' they search for a high-paying American job and take off, to be replaced by another foreigner. The employers (or nowadays the local State Department of Labor) place job ads with very specific requirements, written around a particular person they intend to hire. When no other suitable applicant is found to fill the stated requirements, the foreigner is hired, as was intended in the first place.

When I was a young engineer, I saw an article in an engineering magazine which showed that the number of engineers in the profession dropped after 45 years of age. The curve had the same shape as that of other professions at 65 years of age. At the time, I thought this fate would not befall me, but it did.

From L.F. of L.A.: - An article in the May 22, 1995 issue of *U.S. News and World Report*, entitled "A School for Success," praised Motorola's job-training programs for employees. The article stated, "In 1995, Motorola will spend about \$150 million to deliver a minimum of 40 hours training to each of its 132,000 employees. All together, the company lays out more than 4% of its payroll for training, far above the 1% average invested by American industry." However, what is really remarkable is not how much Motorola spends for education and training, but how little other companies on average spend in this area. Other companies mostly just bellyache about phony 'shortages' of engineers (or 'good' engineers) and other skilled workers, while doing little or nothing to upgrade the skills of their workers.

Robert Bruce, AE Editor
Box 620726, Little Neck, NY 11362

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Indirect Labor Market Impacts Of Growing Numbers Of Foreign-Born Scientists And Engineers Criticized In New Publication

The often harmful, but indirect, effect of large numbers of foreign-born scientists and engineers on American labor markets is criticized in a newly published book.

Only 48% of the U.S. PhDs awarded in 1993 in engineering and in the physical sciences went to U.S. citizens. The citizen percentages are larger in biology and the other life sciences, and at lower academic levels (BS and MS) in all these fields.

While David North, author of "Soothing the Establishment", finds the foreign-born people involved to be "a talented and highly attractive population" and one that secures an excellent graduate-level education in the U.S., he is worried about what they do to American labor markets, and American incentive systems in the long run.

"This is a group that clearly does not use welfare, does not commit crimes, and is much more likely than most immigrant groups to become U.S. citizens, but on the other hand their presence does warp some American systems," he said. He notes these indirect impacts:

- the presence of large numbers of talented foreign educated candidates for graduate school admission diminishes the pressure on American systems to encourage more Americans, including more American women and Blacks, to seek PhDs in science and engineering. In 1993, for example, there were 2,818 PhDs awarded to the foreign-born in the physical sciences compared to 41 to American Blacks.

- the large numbers of these foreign-born PhDs keeps financial rewards down for Americans who do graduate work in these fields, as opposed to those Americans who do their graduate work in law, medicine and business administration. "This is not helpful in the long run," North says, "we need more technically proficient Americans, not more lawyers."

- the large numbers of foreign-born scientists and engineers allows universities to pay low stipends to all graduate students, and low wages to all post-doctoral fellows. "People with 20-23 years of education should make as much money as auto assembly workers, but they do not."¹

North also suggests, though he admits that the cause-and-effect ties are hard to establish, that the low wages to post docs allows universities to structure their finances so that they can draw high overhead rates on their government contracts.²

North, a former assistant to a U.S. Secretary of Labor, regards graduate schools in science and engineering as a specialized labor market, with the graduate students playing the role of ill-paid workers and the universities serving as the employers. He points out that government research contracts, which are very significant to the funding of science and engineering departments, continue to be granted because of the labor of the graduate students and the post-docs. Univer-

sities resist the notion that graduate schools are a labor market.

The book makes a major distinction between two international flows of these workers, one of which it finds more disturbing than the other. Group movements of engineers and programmers, usually from the Third World, and usually with less than a doctorate, often lead to exploitation of those workers, and to depression of wages and working conditions for competing American workers. Some of these movements are legal but ill-regulated, others are illegal. CBS-TV's "Sixty Minutes" ran a story on exploited alien computer programmers in this category.

The other flow of foreign-born scientists and engineers involves single individuals, usually being admitted to graduate school in the U.S., and then studying here. About half of these individuals then stay in the U.S., and become immigrants, and later naturalized citizens. The others return to their homeland, or go on to a third nation to work.

North's book also makes three other points about the labor market role of the foreign-born scientists and engineers:

- 1) Their continuing arrival has coincided with rising unemployment rates among young scientists and engineers, and the forced early retirement of some middle-aged American workers in these fields.

- 2) There is no viable advocacy group working on the economic interests of scientists and engineers (either foreign- or native-born); he draws a sharp contrast between the "total institutional ineptitude" in this field to the savvy, successful work on behalf of lawyers and physicians. He says that the scientists and engineers "need a new John L. Lewis."

- 3) Despite the relatively low incomes (compared to MDs and LLBs) received by scientists and engineers, generally, there appears to be no economic discrimination (within their fields) aimed at those born overseas. In fact, he cites a number of data series showing, when other factors are held constant, that naturalized scientists and engineers tend to earn a little more than native-born citizens in the same fields.³

The study also shows that while graduate schools do discriminate in favor of the admissions of U.S. citizens, they are more generous with financial aid to the foreign students they admit than they are to Americans. One of the troubling statistics that emerged in this study is that American citizens, particularly Blacks, are about twice as likely to be in debt as foreign students on the day they secure their science or engineering PhD.⁴ This is the case because the foreign students get grants in many situations in which U.S. students get loans.

"Soothing the Establishment" reports that government agencies play a passive role in the immigration process, rubber-

(Continued)

stamping decisions made by the real gatekeepers, universities and corporations, on the immigration status of foreign-born scientists and engineers.

Some months after he finished his study North concluded that it would be a good idea for graduate schools to adopt country-specific tuition assistance policies in science and engineering; if the candidate is from the U.S. or a developing nation, be generous; if the candidate is from a well-to-do nation, such as Germany, Korea, Japan or Taiwan, suggest that the candidate secure funding from the home government. Universities currently do not follow this policy.

The exhibits that follow are taken from the book, and show how U.S. scientist's and engineers' incomes have fallen relative to those of lawyers and physicians in the second half of this century (Exhibit One). Exhibit Two shows the growth of the size of the population of foreign-born scientists and engineers.

"Soothing the Establishment" was written on a grant from the Alfred P. Sloan Foundation, New York, N.Y.

The author has studied and written about immigration policy and its enforcement for a quarter of a century. Among the supporters of his previous research have been the Ford and Rockefeller Foundations, the U.S. Departments of State, Justice and Labor, and the governments of Australia and Haiti.

#

"Soothing the Establishment" by David S. North, University Press of America, Inc. Lanham, MD, 190 pp., \$29.50, ISBN 0-8191-9887-0.

¹ See "Soothing the Establishment", pp. 91-98.

² *ibid* pp. 124-129

³ *ibid* pp. 105-111.

⁴ *ibid* p. 85 and for more recent confirmation, see National Research Council, Summary Report 1993; Doctorate Recipients from United States Universities, Washington, 1995, p. 30.

Exhibit One

Measures of the Stock and Flow of Foreign-Born Scientists and Engineers

Measure Used	1969	1990	1992	1993
INS Data				
Non-immigrant Admissions (FYs)	3,947	39,583	54,653	59,664
Immigrant Admissions (FYs)	9,259	13,572	21,782	22,300
Enrollment Data				
Graduate School	na	70,245	75,059	na
All University	51,137	142,540	147,850	153,750
Degrees Granted				
Bachelor's	na	9,243	na	na
Master's	na	13,569	na	na
Doctorates	2,450	6,957	8,204	8,474
Total	na	29,769	na	na

Note: INS and degrees-granted data are measures of the flow of foreign-born scientists and engineers through INS and academic processes; enrollment data are a stock measure of those nonimmigrants studying science and engineering in U.S. institutes of higher learning. Nonimmigrant admissions after 1979 and some of the enrollment information are estimates; the rest of data are counts. For a detailed explanation of the data sources and definitions used, see Appendix One to "Soothing the Establishment."

Exhibit Two

Changing Financial Reward Patterns Among U.S. Professions: A 1946-1991 Comparison of Median Earnings in Five Fields (Basis: Median Engineers' Earnings = 100)

Year	Engineer	Lawyer	Physician	Dentist	Natural Scientist
1946	100	96	153	105	n.d.
1979	100	150	204 *	n.d.	93
1991	100	154	177 *	n.d.	91

* The Census Bureau, probably under some pressure from the medical profession, obscured the high earnings of physicians in 1979 and 1991, which are presumably far higher than those noted above. For the statistical techniques used by Census, see "Soothing the Establishment", Exhibit Three.

Sources: Various Census data, see the Exhibit cited above.

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Retaining The HIGH-POTENTIAL Employee

Executives who have the unenviable job of managing the best and the brightest technical professionals who work in the field of electronic design must continuously concern themselves with the issue of retention. How do I go about keeping top-notch talent in our ranks and prevent them from leaving for another organization?

Without question, this kind of talent requires the maximum in care and attention from management. The following advice on how to retain these professionals is gleaned from the experience of many cutting-edge companies that share the problem.

Advance their learning curve: The first and most commonly practiced technique is to provide this talent with access to state-of-the-art computer software and hardware systems, so they can maintain their leading-edge technology competency. This effort produces a win-win situation: The employee advances his or her knowledge; the company benefits in productivity gains.

Another way companies and employees can gain is to invest their professional development by sending them to advanced training programs at leading universities and professional associations. If your company isn't already doing so, bring the education to them by sponsoring lunch-time learning sessions and other on-site learning events.

Help them keep their careers moving: The trend in most corporations today is to let employees fend for themselves career-wise. Reengineering has, regrettably, done away with long-term career planning that human-resource departments used to be able to provide. Executives who manage high-technology professionals must work with their staffs in annual career counseling sessions. This will help employees ultimately achieve their career development objectives. Your staff will respond with loyalty and a sense of ownership in your organization that more than justifies your investment.

Foster personal development and learning about larger business issues: High-potential employees need exposure to business issues and senior-level executives to boost their personal development. Give your staffers increasing levels of responsibility on special projects and task forces. Give them direct access to the Chairman, CEO, and Executive Vice President of Engineering on special projects, committee

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Members of the American Engineering Association are encouraged to submit names and addresses of friends and associates who they think would be interested in receiving a sample issue of the "American Engineer."

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work, or by sponsoring a new idea to improve the business, develop a new or improved product or design a more efficient process.

The combined effect of all these suggestions will boost productivity and loyalty, and confirm your staff's belief that your company takes very good care of its people. This, in turn, will enable your organization to attract the best and brightest and differentiate it amongst its competitors.

By Terry Gallagher

Terry Gallagher is the Chief Operating Officer of Battalia-Winston International, an executive search firm located in New York, New Jersey, and Chicago. Gallagher's specialty involves the recruitment of senior-level information technology executives.

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Quantity At The Expense Of Quality

A recent "American Engineer" article, entitled "Foxy Academicians in the ABET Henhouse," warned that proposed accreditation 'reforms' threatened the integrity of American engineering education. The threat is so serious that the National Society of Professional Engineers (NSPE) representative to ABET, Louis Guy, Jr., resigned that position in protest. He said, "Practitioners have lost the war; the fox is now in the henhouse." In contrast, an article in the November 1994 issue of ASEE *Prism* magazine (starting on page 20) and mistitled "From Quantity to Quality," presented a rather favorable view of these proposed reforms. The title of the *Prism* article has it backwards. The real purpose of these proposed reforms is to try to maintain *quantity* of engineering enrollments at the expense of *quality*.

The *Prism* article noted that a committee appointed by ABET made the following observation: "The current accreditation criteria are too long and by their very nature encourage a rigid, bean-counting approach that stifles innovation." ABET-sponsored recommendations include the following: "When pos-

sible, criteria should be structured to do away with quantitative curricula criteria (such as detailed specifications and credit-hour distribution) and focus evaluation on student achievement of clearly-defined educational objectives.

"Each institution should be responsible for defining its educational program objectives, and the processes and measures used to assess and adjust the program. Professional societies need to encourage 'the right people to do the right jobs.'" (brilliant idea)

On the contrary, the 'bean-counting' in accreditation is desirable for the following reasons: (i) This bean-counting helps assure that the BS degree indicates basic engineering competency. This is especially important because this degree is the only professional credential that many engineers have. (ii) With most programs scheduled to take only four years, there is virtually no room for flexibility in the curricula. (iii) Mathematics should be studied in an orderly, sequential fashion in separate math courses.

The Dissillusioned Engineer

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