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Smith Introduces Immigration Plan

Representative Lamar Smith (R.-Tx) has introduced a bill which would tie immigration to the national unemployment figures. Smith describes the bill as a "common sense" approach to immigration. Smith said "...when the economy is struggling—and Americans are out of work—we should cut back" (immigration).

Smith's bill, H.R. 2259, would use the numbers used as a basis for the 1990 legislation as a basis for computing the reductions. Those numbers, 770,000 immigrants and an unemployment rate of 5.5% are the baseline for computing reductions in future immigration.

Smith's formula states "Change in immigration level = current immigration level - [(change in unemployment rate/5.5%) x 770,000]." The bill would kick in when unemployment either goes up or down by at least .5%. The bill would not affect admissions of immediate relatives of citizens (who are not numerically limited) or refugees.

AEA believes this bill is a step in the right direction, albeit a small one. We support H.R. 2259 and urge each of our readers to do the same. Rep. Smith's office urged AEA to have our members and readers of the "American Engineer" to contact their Representative and ask that he or she co-sponsor H.R. 2259.

In addition, we suggest you contact your friends and neighbors as well as your technical society and ask them to support H.R. 2259.
Billy E. Reed, AEA President

Engineers Win One - Or Did We?

Engineers have apparently defeated the Department of Labor's "Labor Market Information Pilot Program." In a letter to House Judiciary Committee Chairman Jack Brooks (D. Tx) Labor Secretary Robert B. Reich stated:

"I am today requesting that the requirement for a Labor Market Information Pilot Project be removed from the Immigration Act of 1990. Since that act became law, the Nation's economy has changed. Unemployment has increased, including in the highly technical fields, as a result of such things as the restructuring of some major U.S. corporations and defense reductions."

Reich continues "These changes have been demonstrated by the overwhelming adverse comments received during the rule making process. It has become readily apparent that such a project may adversely affect U.S. workers employed or seeking employment in highly skilled occupations.

"This amendment, eliminating the labor market pilot project, will provide proper protection and increased employment opportunities for U.S. workers presently seeking employment."

AEA was instrumental in the defeat of the LMI pilot project. Many of the comments received by the Department were due to AEA's efforts at alerting engineers and other groups of the deleterious affects of the program.

There are however still problems related to the project. First, nothing has actually changed as far as the project itself is concerned. The 1990 immigration act still requires the pilot program to go forward. This means it will take legislative action to remove the offending provision from the law.

We have been told if Secretary Reich truly does not agree with the project, all he has to do is to not include any occupations in the list for the pilot program. (i.e. there are no shortage occupations.)

In order to truly kill the project we must remove it from the 1990 Immigration Act. To simply remove all occupations from the list leaves the potential to have this fight again in the future. Conditions may not be as favorable for its defeat at that time.

This requires more effort from each of us. We must contact the subcommittees in both the House and Senate with a fervor equal to that of the response to the Department of Labor. We must insist they remove the LMI Pilot Project provisions from the 1990 Immigration Act.

It is especially important for people from the states represented on the subcommittees to contact their representative and senator on this subject. If you can do so in the representative's home district that will be even more effective. All you need to say is "Please remove the Labor Market Information Pilot Project provisions of the 1990 Immigration Act per Secretary Reich's request." If you wish, it would be good to include a copy of your comments to the Department of Labor as an enclosure to each person contacted.

You may write to your Senator or Representative at the following addresses:

For Your Senator:

Hon. (Name), U.S. Senate
Washington, DC 20510

For your Representative:

Hon. (Name), U.S. House of Representatives
Washington, DC 20515

If there is a lesson to be learned in this victory, it is this, When we stick together in a cause that is just, with a little effort from each of us we can be heard. We can have a positive influence over our careers. No one cares about your particular situation as much as you do. If you do not have enough interest in your own career to do what you can to protect it, no one else will.

You may say "well my letter will not make a difference." Every letter does make a difference. Remember, the squeaky wheel gets the grease. Let's squeak as much as possible.

Members of the House Subcommittee on International Law, Immigration and Refugees are:

REPRESENTATIVE	STATE	PHONE	FAX
Romano L. Mazzoli,			
Chairman	KY	(202) 225-5401	Not Public
Bill McCullom			
Ranking Minority	FL	(202) 225-2176	(202) 225-0999
Charles T. Canady	FL	(202) 225-2152	(202) 225-2279
Charles E. Schumer	NY	(202) 225-6616	(202) 225-4183
Jerrold Nadler	NY	(202) 225-5635	(202) 225-6923
John Bryant	TX	(202) 225-2231	(202) 225-9721
Lamar Smith	TX	(202) 225-4236	(202) 225-8628
George E. Sangmeister			
	IL	(202) 225-3635	(202) 225-4447
Xavier Becerra	CA	(202) 225-6235	(202) 225-2202
Elton Gallegly	CA	(202) 225-5811	(202) 225-0713

(Continued on page 2)

Members of the Senate Subcommittee on Immigration and Refugee Affairs are:

SENATOR	STATE	PHONE	FAX
Edward M. Kennedy Chairman	MA	(202) 224-4543	(202) 224-8525
Paul Simon	IL	(202) 224-2152	(202) 224-2223
Alan K. Simpson Ranking Minority	WY	(202) 224-3424	(202) 224-1315

Billy E. Reed, AEA President

Editor's Column

Another Myth Falls

A newspaper article has finally buried the myth that recent huge aerospace-industry layoffs do not include significant numbers of engineers. The myth went like this: engineers are being spared from layoff because of a shift in emphasis from production to R&D, and because the aerospace companies are reluctant to lay off such valuable and hard-to-replace employees.

However, check an article on page 1 of the Business section of the Feb. 2, 1993 edition of Southern California's *Daily News*. It is entitled "Aerospace firms' conversion seen unlikely." It states, "In Long Beach, where McDonnell Douglas has cut nearly half its workforce since 1990, 19 percent of those unemployed are engineers." The source of this figure is Dan Fleming, president of the Economic Roundtable, a Los Angeles-based independent research group that recently worked for the county on a survey of aerospace job losses. The article also noted that Southern California engineers laid off by the aerospace industry have dim prospects of finding employment in other industries.

Shared Sacrifice

An article on page A3 of the April 27, 1993 issue of *The Wall Street Journal*, entitled "Boeing's Chief Foregoes Raise Amid Cutbacks," tells how CEO Frank Shrontz "said he's declining any increase in his \$821,361 salary to 'share a little bit' in the impact of sweeping production cuts and layoffs at the aerospace company." The announcement came after the annual shareholders meeting at which "a company engineer made a plea... for senior officers to curb increases in salary, bonuses and stock options at a time when the company is experiencing widespread layoffs." After the meeting, Mr. Shrontz said he hadn't discussed with other board directors whether his bonus and other compensation will also be frozen. In addition to the above 1992 salary, representing a 23% increase over 1991, the CEO received a \$554K bonus and about \$59K in other compensation, plus restricted stock and stock options. Admittedly, such figures do not measure up to the multi-million-dollar salaries of CEOs in the auto industry, but the latter companies have annual volumes vastly greater than Boeing.

About That IEEE Petition

In the March '93 issue of AE, we published a petition for a proposed IEEE Constitutional amendment, initiated by George Abbott, a former member of the IEEE Board of Directors. If it had appeared on the ballot and passed, it would have made all the IEEE VPs voting-member-elected, instead of being appointed by the Assembly, as they now are. The Assembly is a subset of the IEEE Board of Directors. I was in favor of its appearing on the IEEE ballot and in favor of its passage, since it would have added more "democracy" to IEEE. I said so in the March issue. Unfortunately, not enough IEEE members signed the petition to get the measure on the ballot. So much the worse for IEEE members who are practicing engineers. So much the worse for the profession. Are engineers their own worst enemies?

A Decline In Covered Workers

That's the title of an article in the March 1993 issue of *Nation's Business*. The article stated the findings of a study conducted for the Small Business Administration that "...29% of all companies with retirement plans terminated at least one such plan between 1986 and 1990. This estimate is one-third higher than the previous estimates of plans terminated over the same period, the study says." The findings of this study are summarized in an annual SBA report, "The State of Small Business." The study attributes part of the shrinkage to increasing government regulation (ERISA and other legislation aimed at reducing retiree hardship by increasing ac-

countability of pension plans). Apparently "...61% of the smallest firms, those with up to 24 employees, said that onerous federal laws and regulations were the primary reasons they terminated a pension plan."

Another article in the same issue, entitled "Uninsured Population Grows," tells that "in 1991, one out of every six Americans under the age of 65—or 36.3 million people—had no health insurance of any kind. Just three years earlier, in 1988, the number of non-elderly uninsured totaled 33.6 million." This information, and much more on the nation's uninsured, is in a 70-page report by the Employee Benefit Research Institute (EBRI), a non-partisan research organization in Washington, DC. The report is based on data of the most recent Census Bureau Current Population Survey. It should be valuable in evaluating health-care costs of proposed reform measures now being considered by the Clinton administration.

Robert Bruce, AE Editor

Work Harder, Not Smarter

Engineers have long complained about the problem of heavy uncompensated overtime. One example is the "25% solution" that was introduced by a Silicon Valley electronics company in the early '80's: 25% unpaid overtime for everyone in the company. If recent workplace trends are any indication, this problem is now growing worse as companies downsize drastically and at the same time increase the workload of the survivors.

An article on page 64 of the Nov. 30, 1992 issue of *Fortune* magazine, titled "Welcome to the Age of Overwork," states "daily headlines announce a steady drumbeat of impending layoffs," citing examples at such large employers of engineers as General Motors, Pratt & Whitney, IBM and Digital Equipment. The article notes that "according to a survey of 2,400 U.S. companies by New York City consultants, Wyatt & Co., 29% laid off people last year; 27% will do so this year, and 18% are freezing all new hiring." Meanwhile the companies are trying to have their cake and eat it, having drastically reduced workforces and getting the same work that was provided by the original workforces.

The article notes "...anecdotal evidence and a raft of surveys strongly suggest that many white-collar Americans are approaching the Japanese tradition of 12-hour days and work-filled evenings. Priority Management, a Seattle consulting firm, recently polled 1,344 middle managers on a variety of topics and reported that the number of hours people said they are working was the study's 'single most startling finding.' While about one third work 40 to 45 hours weekly, 57% are routinely at their desks from six to 20 hours more than that, and 6% say they work upwards of 60 hours."

The article notes that a long workweek is only one of the major factors contributing to job stress. One of the extreme consequences of job stress is what the Japanese call "karoshi," which means "death by overwork," usually a heart attack. The article notes that the main cause of karoshi "is not hours put in but the attitude of the worker." The article continues, "The health risks of hating one's job have been known in the United States since 1972, when a Massachusetts study showed that the surest predictor of heart disease was not smoking, cholesterol, or lack of exercise, but job dissatisfaction."

The article notes that excessive hours can even result in reduced productivity, because fatigue impairs workers' thinking ability. This is an especially important consideration in engineering, because engineering often involves the most advanced thought processes. Another problem is that many engineers have little or no control over how they solve problems and are thus often unable to make the best use of the available working time. An example is the case of the engineer who switched to medicine when he "found himself in a room with fifty other engineers who watched the clock with one eye while working on little projects that offered no flexibility and no influence on one's career." And, as always, gross underutilization is a major cause of engineers' inefficiency in the performance of their work.

The article also mentioned two books concerned with the growing phenomenon of overwork: "You Don't Have to Go Home from Work Exhausted!" by Ann McGee-Cooper, a Dallas consultant; and "The Overworked American," a best-seller by Juliet Schor, a senior lecturer in economics at the Harvard Business School.

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"You Want Me To Sign What?"

There are laws to protect older workers' benefits, but you can also protect yourself: Know what a waiver is before you're presented with one.

As layoffs continue to hit the electronics industry, growing numbers of older engineers suspect they're being disproportionately targeted because of their age. Stories about co-workers being asked to sign waivers—documents that say the employee won't sue for "wrongful termination" in exchange for additional severance—have sparked these suspicions.

But did you know that in most cases, these documents are perfectly legal? In fact, if used properly, these documents even inform employees of the age and titles of all people included in the layoff. The problem is, most engineers don't know about or understand what their rights are concerning these waivers. Although it's important for all engineers to know about waivers, if you're an older EE it's particularly important that you know your rights.

A necessary evil?

Most companies, indeed, ask for these waivers to protect themselves from accusations of age discrimination. Their actions are not unfounded. The number of age-discrimination charges has been rising with the ongoing wave of layoffs.

The problem was, until recently, there were few controls on the use of waivers. Engineers confronted with an array of documents written in dense legalese might have had only a few days to accept or reject a severance package that depended on their signing such an agreement. Not all companies abused waivers, but the practice was not uncommon, either.

Today, however, the situation has changed. In the fall of 1990, then-President George Bush signed into law an amendment to the 1967 Age Discrimination in Employment Act (ADEA). For engineers (and other workers) over 40, the amendment, popularly called the Older Workers Benefit Protection Act (OWBPA) of 1990, establishes waiver criteria. According to the OWBPA, any document that asks an employee to give up the right to sue for age discrimination (which is nearly always the case) must conform to the following rules:

- Must be part of an agreement that is written in plain English, not legalese.
- Must specifically waive the right to bring a claim of age discrimination under the ADEA.

Change Of Address

Please let us know if you change your address. We have no way of keeping up with you unless you let us know. The Post Office will not let us know. Just send the address label from the most recent issue of the "American Engineer" along with your new address to: AEA, P.O. Box 820473, Ft. Worth, Texas, 76182-0473. You are very important to AEA—WE DON'T WANT TO LOSE YOU!

- Must *not* waive the right to sue for any action that the company takes after the date on which the waiver is signed.

- Must offer some compensation, in money or benefits, beyond what an employee is already entitled to under the employer's existing benefits programs.

- Must suggest, in writing, that the employee consult an attorney prior to signing the agreement.

- Must give the employee at least 21 days to consider the agreement (except in the case of group terminations, see below).

- Must allow the employee seven days after signing to revoke the agreement.

- Must give employees 45 days, rather than 21, to consider the waiver if a group is asked to sign a waiver as part of an exit incentive or other downsizing program. In addition, the employer must provide the ages and job titles of everyone to whom the package has been offered. This provision applies to nearly all situations in which a company is reducing its work force and eliminating more than a single person.

The 1990 legislation also makes it illegal to reduce or restrict the benefits of older workers.

Renee Bowser, an attorney for the United Feed and Commercial Workers' International Union (Washington, DC), has studied the issue of waivers in detail. She believes that the OWBPA is the first piece of legislation to spell out waiver requirements. It did so, she explains, to ensure that the waivers signed by older workers were "knowing and voluntary," particularly for employees who have no union representation. Another intent was to give employees access to information they need to determine if they've been discriminated against, "The whole purpose of the law was to inform before the fact," she says.

The IEEE US Activities supported and actively lobbied for the OWBPA. At the time, Richard Plummer, a retired communications systems engineer, headed the IEEE's age-discrimination committee. "A lot of people were being asked to sign waivers and weren't given time to evaluate them," he says. "They were told to sign today or they might be out of work in a week or two with no severance at all. We were trying to give employees a little better protection than they had."

Plummer concedes that the 1990 OWBPA was a compromise; he'd like to get rid of waivers completely, "I can think of better bills, but sometimes you have to take what you can get," he says.

Off the record

Anecdotal, anonymous evidence of discrimination is plentiful, but most engineers are unwilling to go public with their stories. One reason is the perception that an engineer over 40 who is not ready to retire will have a harder-than-usual time finding another job if he or she is known as a troublemaker.

That was a major concern for one 52-year-old former aerospace

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Signature: _____ Date: _____

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("You Want Me To..." continued)

engineer who signed a waiver—for which he got an extra month's severance pay—when his job was terminated in 1991. "On the whole, people think it is not a very businesslike thing to do," he says. "You get a reputation. It affects your personal interactions. So unless you really feel very strongly, I wouldn't do it."

This engineer had "no question" that older workers had been targeted, too. He even consulted a lawyer, but got little encouragement. "He said it would be a long, time-consuming process to bring an individual suit," says the engineer. "I had some guilty feelings about the whole episode, but no regrets. I felt I had a case, and I got strong indications that if I chose to pursue it, I would get people to testify. But I decided not to pursue it. I wanted to get on with my career." Incidentally, he found another job almost immediately.

Another EE, employed for 22 years, was faced with signing a termination agreement as part of a company-wide reduction in force about a year ago. He signed, too. "This was the first time I'd been involved in anything like this," he says. "I actually ended up retiring. I volunteered to leave, and I received an additional 30 days of severance pay as a reward for doing that. The 30 days depended on me signing the agreement. It helped me ease into retirement, which began not long after my severance pay ran out. I lucked out. I just happened to run into a circumstance where I could just squeak by."

Even though in the end, everything worked out well for this engineer, he doesn't agree with how the company handled the situation. "We kept getting letters from personnel telling us: 'You're not guaranteed a job; we are reorganizing.' This went on for months and months," he says. "My feeling was, 'Why are you telling me this if not to terrorize me?' It really caused a great deal of upset among the people who were not eligible to retire."

He also admits that he didn't know enough about waiver agreements to determine if the offer was in compliance with the OWBPA. In fact, if what he recalls is accurate, the agreement did not comply. He claims he was given only 21 days to make his decision, but under the OWBPA, he should've been given 45. He also says he did not receive a list of employees with titles and ages designated, a provision of OWBPA.

Call a lawyer

Plummer, along with others who follow age-discrimination issues, believes that indeed, some waivers signed since the OWBPA went into effect have not been in compliance with all its provisions. Such waivers, say several labor lawyers, may not be binding.

For EEs faced with the decision to sign or not, perhaps the most important suggestion is to consult a lawyer. But be sure to find a lawyer who specializes in employment issues. "Few lawyers not in the area of labor or age-discrimination law would be in a position to advise employees about whether an exit-incentive program has any discriminatory aspect," says William Payne, an attorney with the firm of Kleinbard, Bell, and Brecker (Philadelphia, PA) who also represents the Association of Scientists and Professional Engineering Personnel (Haddonfield, NJ).

Bowser agrees. "You really need to see a specialist in employment law," she says.

There are several ways to find such a specialist. A personal reference is best, of course. Otherwise, your state or county bar association (the professional association for lawyers) can refer you to someone in your area. Call the state capital or county seat and ask for the bar association's lawyer-referral service. Be sure to explain that you want to get an employment lawyer's opinion about a job-termination agreement that includes a waiver. If you think that there is a possibility you've been the victim of age discrimination, mention that, too. This information will help the referral service identify an appropriate lawyer.

Working through the bar association's referral service usually gets you a discount on an initial half-hour consultation, according to several local associations. In a spot-check of states, fees ranged from \$15 for the first half-hour in Massachusetts to \$50 in Orange County CA.

Another source of legal referrals and general advice, as well as a great deal of useful printed material, is the American Association of Retired Persons (AARP). Based in Washington, DC, AARP has 13 offices around the country (see box, "Finding help").

You can also write to the National Employment Lawyers Association (NELA) at 535 Pacific Ave., San Francisco, CA 94133. NELA is a 5-year-old, 1500-member organization of lawyers who specialize in employment law from the employee's, rather than the employer's, perspective. NELA will respond—without charge—to written requests for referrals within a week, says Anne Schnoebelen, assistant director, but is not staffed to handle calls. Many AARP offices refer callers to NELA members, adds Schnoebelen.

You may want to ask any employment lawyer you find—through your bar association, for example—if he or she is a NELA member. Membership in the organization is a good indication that a lawyer has experience dealing with employment issues from your side of the fence.

Another point to keep in mind: The OWBPA is so new that, so far, there have been no court tests of its provisions. According to lawyers, several aspects of the law could be subject to debate: For example, an engineer accepts a severance package, signs a waiver that fails to meet the OWBPA requirements, cashes his check, and spends the money. Has he made the waiver valid, in spite of its flaws, by accepting (and keeping) the funds? "That's a hot topic right now," says Bowser.

Does a valid waiver cut an employee off from being part of a later class-action suit brought by someone else? One engineer was told by two lawyers that it did not; labor-lawyer Payne thinks it probably does. So not only should you familiarize yourself with the OWBPA, but you should also keep up on future developments, too. Again, your local AARP is a good source for such information.

Kate Colborn, "EDN P&C" contributor

Kate Colborn is a Center Harbor, NH-based writer specializing in high-tech career topics.

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FINDING HELP

The American Association of Retired Persons (Washington, DC) can provide you with legal referrals and general advice, as well as a great deal of useful printed material on age discrimination. For more information, contact:

- **Area 1** (CT, MA, ME, NH, RI, VT): 116 Huntington Ave., Boston, MA 02116. Phone (617) 424-0400.
- **Area 2** (DE, NJ, NY, PA): 919 3rd Ave., 9th Floor, New York, NY 10022. Phone (212) 758-1411.
- The Pennsylvania State Office, 225 Market St., Suite 502, Harrisburg, PA 17101. Phone (717) 238-2277.
- **Area 3** (DC, KY, MD, NC, VA, WV): 1600 Duke St., 2nd Floor, Alexandria, VA 22314. Phone (703) 739-9220.
- **Area 4** (AL, FL, GA, MS, PR, SC, TN, VI): 999 Peachtree St., NE., Suite 1650, Atlanta, GA 30309. Phone (404) 888-0077.
- The Florida State Office, 9600 Kroger Blvd., #100, St. Petersburg, FL 33702. Phone (813) 576-1155.
- **Area 5** (IL, IN, MI, OH, WI): 2720 Des Plaines Ave., Des Plaines, IL 60018. Phone (708) 298-2852.
- **Area 6** (IA, KS, MN, MO, NE): 1901 West 47th Pl., Suite 104, Westwood, KS 66205. Phone (913) 831-6000.
- **Area 7** (AR, LA, NM, OK, TX): 8144 Walnut Hill Lane, Suite 700 LB-39, Dallas, TX 75321. Phone (214) 361-3060.
- **Area 8** (CO, MT, ND, SD, UT, WY): 6975 Union Pk Ctr., Suite 320, Midvale, UT 84047. Phone (801) 328-0691.
- **Area 9** (AZ, CA, HI, NV): 4201 Long Beach Blvd., #422, Long Beach, CA 90807. Phone (310) 427-9611.
- The California State Office, 1010 Hurley Way, Suite 300, Sacramento, CA 95825. Phone (916) 649-3104.
- **Area 10** (AK, ID, OR, WA): 9750 Third Ave. NE, #400, Seattle, WA 98115. Phone (206) 526-7918.

Editorial

There Never Was And Never Will Be An Engineering Shortage

The weather was beautiful on the summer weekend, so I whiled away time puttering around the yard and relaxing. I certainly appreciated the chance to unwind, but my neighbor, an engineer with a large defense contractor, wasn't so fortunate.

That Friday morning, our local newspaper had dropped a bombshell. Thanks to an inside source, it was able to break a major story about how my neighbor's employer had just lost a do-or-die Pentagon contract. The announcement meant his firm would have mass layoffs, and because the story hit print so quickly, it caught the company off guard. Management wasn't ready to field questions about when the bloodbath would start and who was going to get axed. Supervisors did what they could to calm fears, but then the end of the business day rolled around, and it was time to go home. Have a nice weekend!

The next day, as my neighbor worked on his lawn and I did some weeding nearby, I wanted to ask him about the newspaper story. Then I thought better of it. This was not a time to be inquisitive.

What a raw deal. The guy deserves better. Here was a talented engineer in mid-career with a track record of sophisticated work important to national defense. He played the game, not only getting an education, but also majoring in engineering instead of the trivia masquerading as higher education at many universities. He even nailed down a masters degree in the evenings while starting a family.

And now he found himself worrying about his future.

Well, times are tough. We go through peaks and valleys. Those were my first thoughts. Then I thought again. I've been out of college for more than 30 years, and during that time engineers have always had a tough time finding good jobs. Where did we get the myth that engineers are always in demand.

Sure, there was a brief feeding frenzy in the 1960's when NASA went on a hiring binge and California aerospace firms took on everyone who walked through the door. But the bad times have always been longer and more intense than the good. I knew engineering graduates in the 1950s who ended up collecting tickets at an amusement park. It wasn't unusual to see engineers driving cabs in the 1970s. The 1980s were hardly halcyon days. Today, it is depressing to hear about all the engineers who are flat broke and scraping by as best they can.

Yet we hear the same propaganda we have heard for 30 years. The nation faces a crisis. We must train more engineers or else we will become a second-rate power. That refrain is still sung by academia, government, and even technical societies. And I suppose everyone believes it—except the guy next door.

Ronald Khol, Editor

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Dissident Engineer's Bookshelf

"PROFSCAM: Professors and the Demise of Higher Education" by Charles J. Sykes. St. Martin's Press, New York, 1988. Paperback (originally published in hardcover), 304 pages.

To our knowledge, no one has yet written a book devoted exclusively to the ills of the engineering profession. Someone is certainly missing a big opportunity, for it is difficult to imagine how an occupation could possibly be plagued by more ills than engineering. You name it, and we've got it; you don't want it. (Actually, most of these ills are merely symptoms of the main disease: oversupply. Our adversaries simply would not be able to do all of those bad things to us if a glut of engineers did not exist.) It is therefore necessary to assemble the bleak picture of the profession from bits and pieces widely scattered out there in the literature. One of the most important of these pieces is the damage that engineering professors have done to the profession, and much of this damage is described in "PROFSCAM."

The first chapter, "the Indictment," charges the professors with certain "crimes against higher education." The charges include the following:

"They are overpaid, grotesquely underworked, and the architects of academia's vast empires of waste."

"In pursuit of their own interests—research, academic politicking, cushier grants—they have left the nation's students in the care of an ill-trained, ill-paid and bitter academic underclass."

"They have constructed machinery that so far has frustrated or sabotaged every effort at meaningful reform that might interfere with their boondoggle."

This chapter summarizes, "no understanding of the academic disease is possible without an understanding of the Academic Man, this strange mutation of the 20th-century academic who has the pretension of an ecclesiastic, the artfulness of a witch doctor, and the soul of a bureaucrat."

The charges made in the first chapter are prosecuted in succeeding chapters. Sykes reserves some of his nastiest invective for professors in technical fields. In the chapter titled, "Beyond the Dreams of Avarice: the Sciences," Sykes debunks that touted nostrum for our competitiveness problems, industry-university partnerships. He condemns these partnerships for shifting academia away from basic research and toward product-oriented research promising a quick payoff, and for encouraging secrecy that slows the

dissemination of knowledge.

He also condemns the exploitation of graduate students: "Stories became common of professors who shamelessly exploited graduate students by holding bull sessions, asking for ideas, and then handing over those ideas to a private concern for the exclusive profit of the professor himself."

In a subchapter titled, "The Feeding Frenzy of the Professors," Sykes blames the professors for not leaving academia when they become too absorbed in outside business activities: "Entrepreneurial activity is usually associated with risk. But the essence of the professorial personality is aversion to risk of any kind... Even as they ventured into the marketplace, the professors have tenaciously held onto their chairs, their professorships, their access to taxpayer-supported laboratories, and their graduate students. The impact of this double life on their institutions, their students, and their disciplines has been devastating." This chapter is mistaken about one thing: it repeats the myth that the U.S. is threatened with shortages in technical fields, because a large percentage of graduate students are foreigners who return home after graduation.

Other chapters of particular interest to engineers are "The Flight from Teaching" and "The Crucifixion of Teaching," which cover the overuse of graduate students—often with poor English skills—to fill in for the teaching duties of professors who are preoccupied with research, and "Fraud," which covers deliberate misrepresenting of research.

Dissident reviewer

Editor: One of the problems about which engineers complain is: many foreign students who obtain temporary student visas stay in the U.S. after graduation by obtaining a job, for which the employer pays low wages in exchange for permanent resident status or a so-called "green card." Some engineering organizations lobbied for a "2-year return-home" provision in the law, but counter-lobbying by industry thwarted efforts for such legislation.

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S/W EEs 'face massive unemployment'

Software engineers, programmers and systems analysts "face massive unemployment" by the end of the decade due to poor software quality, poor productivity and competitive threats from low-wage countries, according to a new book entitled *The Decline and Fall of the American Programmer* (Prentice-Hall, Englewood Cliffs, N.J.).

While author Edward Yourdon groups data processors, software maintenance people and systems analysts in this group, he also includes "the fellow designing software for embedded systems" as "very much at risk." *EE Times* readers fall into the latter category.

This dismal forecast will come as a blow to EEs who've seen software as a possible alternative career path if their jobs are eliminated. Yourdon describes demand forecasts for more software engineers as "folklore."

In the 1980s, software may have been a true alternative for hardware engineers, he says. Technology was shifting toward software. But now, downsizing is across the board. Cobol people are feeling it along with hardware types.

BLS disagrees

His conclusion bucks that of the Bureau of Labor Statistics, which forecasts a need for 600,000 or more software people by 2005.

"The industry is still growing 3 to 4 percent a year," observes Capers Jones, chairman of Software Productivity Research (Burlington, Mass.), which has looked into demand for software engineers. SPR sees continued demand ahead, but Jones agrees that low-wage countries and quality issues threaten the otherwise strong market position the United States enjoys today.

"If we control quality," said Jones, "there's a strong chance of maintaining a good lead."

Like Yourdon, Jones believes EEs working in embedded software have to stay on their toes. "They have a lot of exposure."

Software has become a major cost factor of engineering products. For some, software-associated costs have overtaken hardware-development costs. With American companies feeling cost pressures from overseas competitors, more will look to the increasingly sophisticated—yet downright cheap—software factories in the Far East, South America, and now, Russia, to perform software work. An example: Sun's hiring of Russian software experts in its latest compiler project.

Yourdon fears that engineers and programmers, and their employers, haven't awoken to the threats. He compares the attitude of U.S. software engineers to that of auto workers in the '70s: dominant, egocentric, disdainful of non-U.S. competition and unconcerned about the quality of their product or productivity.

Warning

"If you have been brought up in a culture that glorifies the American software industry as the world leader," Yourdon writes in his book, "simply remember that it was only a few years ago that we had the same opinion of our automobile industry."

"The American programmer is likely to suffer the same fate as the dodo bird and the dinosaur, because of low software productivity and low software quality."

Yourdon is a software consultant best known for his advocacy of structured software-development processes. Much of the book is devoted to key software technologies that he thinks will help U.S. software shops become world-class organizations that can withstand outside competition. As an advocate of more structured, measured solutions to software development, Yourdon not unexpectedly has a somewhat dim opinion of the free-wheeling, unstructured style typical of many U.S. programmers and software engineers.

"The American programmer is still too much of a loner and a cowboy," he writes. Furthermore, he raps the "low energy levels" he's found in many software offices.

But, "I believe the biggest problem is culture," Yourdon told *EE Times* in an interview. American software engineers, he maintains, think "bugs are inevitable—like they're some kind of independent life-form that's 'not our fault.'" Meanwhile, the Japanese refer to

bugs as "spoilage." The Japanese have a culture where "bugs are embarrassing. You don't go home until you fix them," says Yourdon. "We take bugs for granted."

Software employers, reaping record profits and enjoying a dominant market share, have even taken an attitude that there are "bugs we will not fix," Yourdon says. They're more concerned with getting it out the door.

In the book which discusses software methodology, CASE techniques and software reusability, Yourdon cites one study that ranks American software quality as seventh in the world.

That has to change, he says. Knocking at engineers' doors are Indian Unix applications developers who work for \$2,400 a year and Russian PhDs who take home a fraction of an American technician's salary.

In one chapter of the book, Yourdon recounts his experiences in India, where a primitive infrastructure and ingrained cultural biases pose formidable hurdles for its budding software industries. Consequently, at present, such countries tend to work on lower-level applications projects. That, Yourdon acknowledges, may not worry most electronic engineers in software, although such large employers as General Electric Co. and Texas Instruments Inc. are tapping into overseas software talent.

The more immediate threat for the U.S. EE community comes from Japan and Europe. Salaries in those regions are roughly comparable to those of the United States (see the *EE Times* "Worldwide Salary & Opinion Survey," Aug. 31, page 9). What they offer, says Yourdon, is "faster, cheaper, and less bugs."

On an up note, Yourdon adds that the dire outlook is "not necessarily a foregone conclusion." With commitment to quality and better software-development practices, American companies can fend off competition.

Robert Bellinger

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Reach Out

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Noncompete Agreements Can Sting at Layoff Time

In an era of global competition, some Americans are being asked not to compete.

Take the case of NSPE member Aubrey Allen. Allen had been working for one of the nation's largest consulting engineering companies for several years when some top managers decided to institute a noncompete agreement for key employees. The agreement included reasonable conditions about signing over patent rights and not disclosing sensitive documents. But it also contained this zinger: Should Allen decide to leave the company, he would have to wait two years to work for any of the firm's competitors anywhere in the continental U.S.

"Basically, if you signed that agreement you put yourself at risk for being unemployed for two years," Allen says. He refused to sign, found another job, and left.

Increasingly, noncompete agreements are being used in industry and private practice to prevent engineers, sales people, and others with access to confidential information from pirating clients and trade secrets. And during recessionary times, as bankruptcies and layoffs send more and more individuals at all job levels into the ranks of the unemployed, firms feel more compelled than ever to enforce such contracts.

Fairness

But many protest that the noncompetes are simply unfair. Vice presidents and CEOs, for example, can sometimes write their own contracts to include the proverbial "golden parachute" to cover hard times. But the ability of the average employee to modify a document drawn up by a company's attorney is very small. "It's unfortunate, but a lot of times engineers are considered replaceable," says David Ashby of the law firm of Lalos & Keegan in Washington, D.C.

Courts have addressed the issue of such an unlevel playing field in the case of adhesion contracts, Ashby notes, in which an employer forces someone to adhere to its terms simply on the basis of superior bargaining power. Such contracts have been found to be invalid when the terms are clearly onerous.

But what are the drawbacks of a standard noncompete-agreement? Ashby cites the case of a master cheese maker who got laid off last year. When he went to work for a competitor, he suddenly found himself the defendant in a lawsuit because he had signed a two-year noncompete agreement. That could just as easily happen if you designed radios for a living, Ashby notes, adding that in the case of a layoff, there is a strong argument for letting people off the hook so they can feed their families. The courts however, have not made exceptions in the case of layoffs, and concentrate on determining whether the agreement is reasonable.

And there's the rub. If a restrictive covenant is to be held reasonable, it must have a specific geographic area and a specific time limitation. The more closely tailored the language is, the more likely it is to be upheld as valid in court.

What's Reasonable?

Joe Litvin, a past president of the Ohio Society of Professional Engineers who is both an engineer and a lawyer, explains that a lifetime restriction from working anywhere in the U.S. is obviously unreasonable. "but for a local consulting firm," he adds, "a 75-mile radius may be considered reasonable; a 500-mile radius may not be. Six months or a year may be reasonable; 10 years is probably not. And for a national firm the area that's reasonable is going to be much larger than for a firm that never did any work outside of a given county."

Burton Amernick, a patent attorney based in Washington, D.C., tells of a noncompete agreement at 3M that was considered valid. The company would pay affected employees' salaries for up to two years—a kind of unemployment coverage—while they would periodically report back to 3M about their success in finding a job with a noncompetitor. "That was held to be enforceable," Amernick notes, "because the persons were being compensated, even though they didn't get the benefits they had while they were working, such as hospitalization, potential raises, and so on."

One case specifically involving engineers had to do with the Tennessee Valley Authority. An engineering firm that won a contract

with TVA required its engineers to sign an agreement not to work, until 90 days after leaving, for any competitors that were contracting with TVA. The case came to court when TVA decided to employ another company for less money, whereupon a number of the first firm's engineers jumped ship to work for the newcomer. Here, too, the contract was upheld because the first firm had won fair and square. Others couldn't be allowed to take employees away by simply undercutting an already declared winner.

An individual's position within a company may impinge on the severity of an agreement's terms. Amernick tells of a case in which several high-level managers involved in pigment manufacturing processes at Du Pont left either to start their own business or to work for another employer in a competing area. "Even though they said they wouldn't be using the same technology, the court stopped them just because of their relative position" Amernick says. "The higher up you get, the greater your obligation to your prior employer."

One strong law that has entered the picture in the last 15 years, according to Ashby, is the Uniform Trade Secrets Act, a model state law that prohibits persons who wish to leave an employer from taking things like customer lists. The act's language is very broad in its definition of such terms as "trade secrets" and "misappropriation" so that every state can adopt and tailor it. Through the '70s about 15 states had enacted it; this past year the total reached 35. "It looks like it is reaching what you call critical mass, in that it is becoming widely recognized as a very good piece of legislation," Ashby notes. "It's the subject of a lot of reference in court cases."

Engineers would do well to remember, however, that a signed noncompete agreement isn't always necessary to define a confidential relationship between employer and employee. If there is demonstrated existence of a trade secret—if employees are, for example, instructed about items such as customer lists, blueprints, and files that are accessible only by signing for them—this gives rise to an oral or assumed, agreement, and anyone breaching that confidence may be subject to a lawsuit. "The obligation to maintain confidentiality goes on without time limits until, in essence, the information is no longer confidential," Amernick explains.

Fair, well-drafted agreements can protect both employee and employer and may be most beneficial for everyone in the long run, experts note. The key is to be informed, Ashby says, venturing an estimate that "maybe half of the working engineers have never really read their contracts." People must be informed enough to realize when terms are clearly oppressive, to be open with an employer about ways to protect their livelihood in the event of a layoff. "There's no better defense than knowledge," Ashby stresses. "If you know all the terms, your eyes are open. Who wants to go to court and pay \$20,000 just to find out that the piece of paper he or she signed may be unfair?"

Friederike Velasquez, Assistant Editor

(Reprinted with permission from the Nov. '92 issue of "Engineering Times" a publication of the National Society of Professional Engineers.)

Reader's Voice

This column in the "American Engineer" is for readers to voice an opinion relevant to any issues that affect the professional life of an engineer. Articles or letters should be in good taste and not slanderous. Each submission should include the name, address, home and business phone of the writer. Except for short excerpts, we will include the writer's name, city and state (unless the writer requests anonymity). We reserve the right to edit each submission, as long as we don't change the gist of it. We assume that authors who send us material have accepted these conditions, unless they instruct us otherwise in writing.

From J. Connolly of Pgh., PA: - "I'm writing to comment on the article, 'Holding Onto Your Dignity' by Bob Bellinger that appeared in the November '92 issue of AE (reprinted from *EE Times*). The author referred to engineers over age 50 having a hard time finding jobs. I think I found out why. Recently I was laid off from my job and looked into buying health and disability insurance, because prospective employers would not provide insurance benefits. I ordered ASME's insurance information package. When I priced out the cost

(Continued on Page 8)

(Reader's Voice continued)

of this coverage, I noticed a tremendous cost increase in premiums around age 50. It appears to me that this insurance industry practice of grouping people by age and then setting rates for each group has something to do with the discrimination to which the author (Mr. Bellinger) refers. Maybe it is time to ask ASME, other engineering associations and the Federal Government to challenge the insurance companies on this practice. Enclosed are details of the coverage."

Editor: In the Nov. '92 issue of AE, we published an article entitled "Schweitzer Loses Appeal On Contract." It described how, despite the fact that Schweitzer Aircraft Corp. was the low bidder on an Enhanced Flight Screener project, Slingsby Aviation Ltd. of England won the contract. AEA has been a participant in a law suit to constrain DOD from awarding \$20B worth of MIL contracts to foreign companies. I haven't yet received any feedback on the outcome of that suit.

From Leslie E. Schweitzer, President: "On behalf of Schweitzer Aircraft and its employees, I'd like to personally thank you for your support. It is, indeed, gratifying to know that so many citizens throughout this country support Schweitzer's effort to build Enhanced Flight Screener aircraft for the United States Air Force. With the current state of the economy and, in particular, the aviation and defense-related industries, it is incomprehensible that our government take its business outside the United States. The General Accounting Office will ultimately make the decision; but regardless of the outcome, we thank you for taking your time to support our company."

Editor: Here's a letter from Dr. Gene A. Nelson to Congressman George Brown, Chairman of the Committee on Science, Space, and Technology. It debunks reports of a shortage of scientists and engineers. Dr. Nelson tells the Congressman there's an unemployment crisis among "young scientists and engineers." I don't dispute that fact, but wish to point out there's an even more serious unemployment crisis among older scientists and engineers.

Dear Representative Brown:

I am writing first to thank you for sending me a copy of the record of the hearing of April 8, 1992 "Projecting Science and Engineering Personnel Requirements for the 1990s: How Good are the Numbers?" I received this valuable resource from you on March 26. I sent in written testimony for this hearing, but it did not appear. I and many others wish to present our stories. This leads me to the topic of this letter. Simply put, there is a crisis in unemployment and underemployment of young scientists and engineers which needs to be corrected. The hearings of April 8 were an important first step. Many more steps are necessary until our crisis is resolved. I see our crisis as being closely intertwined with your concerns for the space station Freedom and the Superconducting Supercollider.

The first step in resolving a problem is to have a clear description of it. The first part of the problem is that many leaders in both the public and private sector have claimed there is a "looming shortage of scientists and engineers." This myth is still pervasive today. I will excerpt from a pair of recent articles about the looming shortage. "Supply and Demand for Scientists and Engineers: A National Crisis in the Making" Richard C. Atkinson, Chancellor, University of California at San Diego, *Science* 27 April 1990 pp. 425-432. "The demographics of the college-age population combined with the estimates of the percentage of students who will pursue careers in science and engineering indicate significant shortfalls between supply and demand for the next several decades at both the baccalaureate and Ph.D. levels."

Another source is "The Hot Demand for New Scientists" by Sandra Kirsch in *Fortune*, July 13, 1989 pp. 155-63. "In the meantime tell your sons and daughters that the career outlook in science and engineering is, in the words of one observer, 'fat city.' Salaries will be rising, and unemployment continues to be among the lowest for any profession: less than 2%." I wish these pronouncements were true. Unfortunately, they are not. I will be happy to provide my own story and present survey data on young scientist's unemployment and underemployment. The first purpose of holding hearings on the "glut" of scientists and engineers is to act as a countervailing force to those that wish to have young scientists believe these pervasive deceptions.

In follow up to my letter of October 16, 1992, almost anything would be better than my present situation. I am teaching a total of five science courses at Cuyahoga Community College, one of the top ten community colleges in the nation, according to its president, Dr. Jerry Sue Owens. I spend around 40 hours a week on preparation, labs, grading, and lectures. I earn about \$300/week, with essentially no fringe benefits! There is essentially no job security with a twelve week contract. This is my "payback" for a Ph.D. and a decade of experience?

My poor career status is not the result of "not trying." I graduated from Harvey Mudd College and the University of Buffalo, both excellent schools. I have applied for many positions and have been told that I am "overqualified." I have been interviewed for an article in *The Wall Street Journal* which will show this problem is widespread. I have applied for professional society Congressional Science Fellowships, but the pool of qualified candidates far exceeded the number of positions open. I have applied for a NIH SBIR Phase I grant, but have been already informed that there were a "huge number" of applications for a small number of potential grants. Recently, less than 10% of the technically qualified applications have been funded.

I look forward to participating in the change process that will help to restore U.S. competitiveness via increased investment in science and technology. An important first step will be to have hearings on the present employment crisis for young scientists and engineers.

Sincerely, Gene A. Nelson, Ph.D.

Robert Bruce, AE Editor

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