

AMERICAN ENGINEERTM

A PUBLICATION OF THE AMERICAN ENGINEERING ASSOCIATION

© 1994 by the American Engineering Association

APRIL, 1994 Volume 4, Number 2

Use It Or Give It Back—The Rights To Buried Patents

AEA members in other states would do well to follow our example and push for a USE-IT-OR-GIVE-IT-BACK law like the one I proposed to the Minnesota Governor and state legislature. This law has bill numbers HF844 and SF753 from the Minnesota State Assembly and Senate respectively, and was printed in the Feb. '93 issue of "American Engineer." Even better would be a Federal law with such provisions. What provisions?

Very simply, HF844 and SF753 stipulate that an employer who acquires title to an employee invention (by virtue of the employment contract) must make a substantial investment to utilize the invention within one year, or give the rights to the invention back to the employee. Why do I think this law should be passed in Minnesota, in your state, or best of all be the law of the land?

There is a vast, untapped backlog of patents that employees were obligated to give to their employers, which are buried in the corporate files. I mentioned examples in the Feb. '93 issue of "American Engineer." The employer owns the patent, but chooses not to exploit it, for various financial or marketing reasons. He does not return it to the employee, because he is not obligated to do so, and its value to the employee is not reckoned. The employee receives a dollar and honorable mention in the company paper.

Releasing these unused patents would permit employees to develop them off-site and could lead to creation of jobs and new, small companies. Readers must be aware that small firms are the ones that have been producing most of the new jobs over the past decade, while large firms are the ones doing the layoffs. USE-IT-OR-GIVE-IT-BACK is a proper way to cut down the surplus of engineers in the U.S. by creating gainful employment for entrepreneurial engineers. It can also boost the economy. This measure would help the U.S. become more globally competitive by putting new U.S. products on the market before foreign competitors do so.

The mere existence of bill numbers to this legislation does not guarantee passage. U.S. engineers have to light a fire under their representatives, who "vote their mail." Readers of "American Engineer" can write either author of the bill, to obtain copies. They are Sen. Kevin Chandler and Rep. Betty McCollum. Write them at the Minnesota State Capital Building, St. Paul, MN 55101. I urge readers from all over the U.S. to write both their local state representatives and the Minnesota representatives. Lots of out-of-state mail will show Chandler and McCollum that this is a hot issue. It could also give the matter enough visibility to stimulate federal legislation.

R.P. of No. St. Paul, MN

Editor's Column

ILLUSORY JOB ADS

The March and December '93 issues of AE carried examples of what I called "illusory job ads." They were ads that purported to offer a job to the most qualified applicants, but were so detailed that they were really biographies of the applicant that the firm intended to hire in the first place. Also they offered such low salaries that no one other than the intended applicant (and an unemployed engineer) would even bother to apply. This smacks of immigrant recruiting. Besides that, the ad listed only a state employment service, and the employer remained unidentified, so that his reputation would not be affected by the ad. Here's another such ad, which sounds as if it should be filled by a PE who enjoys sub-professional work and low wages. Can someone tell me if an alien can obtain a PE?

Quality Assurance/Quality Control Specialist. B.S. in Elect'l Eng' w/1 yr. exp in position or 1 yr eng'g exp. Must have worked in other eng'g fields incl'd civil, instrumentation, piping & mech, as well as field work. Must have worked w/ applicable computer progs incl'd database IV, LOTUS & other database programs w/ability & interest in performing below job description. Will assist in preparation of project specific Project Quality Plans & Procedures. Assist in preparing eng'g discipline quality procedures & Project Procedures & in review of multi-discipline design drawings, specs & reports for conformance w/contract, corporate & project req'm'ts, & incorporation of quality assurance req'm'ts. Plan, execute & report findings of Supplier Shop inspections of purchased products & conduct Project internal, Supplier & Contractor Quality Assurance Audits. Develop & utilize Project Quality Assurance Record Database Systems to record, report & status to

**Last Issue Of "American Engineer"
For Some Of Our Readers — See back page**

correction or resolution. Audit findings, Nonconformances & Drawing, Specification & Data Review Comments. Prepare procedures & plans for completion & documentation of inspection & testing of new & existing piping & instrumentation systems. Conduct field inspections & prepare inspection & test records for compliance w/ federal emissions reqs & prepare As Built record drawings. 8 a.m. - 5 p.m. 40 hrs/wk. Salary \$657.70/wk. Apply or send resume to D. Abernathy, Alabama State Employment Service, 4130C Government Blvd., Box 190399, Mobile, AL or apply in person at any Alabama State Employment Service, Employment Service office. Refer to JO #AL3034382. E.E.O.

SHORTAGE SHOUTERS CLAIM TOUGH GRADING DRIVES AWAY STUDENTS

The Jan. 5, '94 issue of the *Chronicle of Higher Education* has an article on page A45 entitled "Grade Inflation's Consequences—Students are said to desert the sciences in favor of easy grades in humanities." The article states "The widespread impression among professors and students, supported by studies at several universities, is that averages in science courses tend to be lower than those in the humanities or in pre-professional fields." It goes on to say "...a growing number of college officials ... think low grades are steering people away from science at a time when nearly everyone agrees the country needs more scientists and technologically literate people." Those college officials are just making the tougher grading a scapegoat for sagging student interest in technical majors. Of course, some students have always avoided technical majors, which are demanding. However the main factor repelling students from such majors is the abysmal job market, not the tougher grading

(Continued)

(“Editor’s Column” continued)

in technical courses. The article admits, “To say that relatively low grades alone are what drive people from the sciences would, of course, be gross oversimplification.”

HEWLETT SUED IN CALIFORNIA OVER WORKER CONTRACTS

That’s the title of an article in the Oct. 6, ‘93 issue of *Wall Street Journal*. It tells how a non-profit organization called Californians for Population Stabilization filed suit in California Superior Court in Santa Clara, alleging that Hewlett Packard violated state worker-protection laws, while importing computer job shoppers from India. The suit also named Tata Sons Ltd. of India (with operations in Santa Clara) as a defendant, for providing contract workers to HP. The suit uses a California law that allows people to sue on behalf of the general public. It alleges that Tata contracts with Indian programmers contain several illegal provisions, including pay less than minimum wage, discouraging workers from becoming pregnant and requiring them to share housing with other programmers. Tata spokespersons could not be reached for comment, but HP rejected the allegations as groundless.

AN IMMIGRANT-WORKER SCHEME COMES UNDER FIRE....

is the title of a Nov. 8, ‘93 *Business Week* article. It mentions that Digital Equipment Corp. (DEC) cut 21,446 jobs since late 1991 and applied for visas for 1,100 foreign workers. A DEC spokesperson stated that the company actually imported only 50 foreign workers, despite the large number of visa applications. However James Schneider, president of the Northern California Chapter of the National Association of Computer Consultant Businesses, complained that imported workers are “putting American taxpaying citizens on the street.” These workers come from India, China and the Philippines, and are paid less-than prevailing wages. This is offered as the reason why on Oct. 6, the Labor Department quietly proposed legislation to crack down on the H-1B visas that are used to bring skilled foreign labor into the U.S. The legislation would bar U.S. companies from laying off Americans in occupations that they intend to fill with foreign workers. It would also require employers to do something to train Americans for such jobs. The business community is understandably opposed to legislative curbs on their ability to recruit foreigners for skilled jobs. A Motorola human resources person is quoted as saying, “It’s important to get new blood into the organization.”

A MOVE TO CURB IMMIGRANT VISAS?.... is the title of an article from Feb. ‘94 *Nation’s Business*. It mentions efforts by the Labor Department for more stringent regulation of H-1B visas. Labor Secretary Robert Reich has proposed new regulations that would allow the Labor Department to investigate the validity of a company’s assertion that it needs an H-1B visa to bring in a foreigner. The 1990 Immigration Reform Act required that prevailing wages be paid to imported labor, but it allowed Labor Dept. investigation, only if a complaint was filed. Proposed new regulations would permit investigation without any complaint. Spokespersons for industry contend that the new regulations would impede timely importation of foreign talent. It appears to me we should write Labor Secretary Reich and thank him for proposing regulations beneficial to America’s long-suffering engineers. We should also urge our Congressmen to enact laws supporting the new regulations. Suggestions on how to write your Senators and Representatives are in the July ‘93 issue of *AE*. Tell them there were 68K engineers unemployed in the third quarter of 1993. Indiscriminate importation of foreign talent at sub-standard wages not only circumvents the law, but also robs U.S. citizens of work. Whom do the Congressmen represent? Don’t answer.

Robert Bruce, *AE* Editor

Sample Copies Available

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*.”

Send names to: AEA, P.O. Box 820473, Fort Worth, TX 76182-0473.

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 L.F. of L.A.: - I’m writing about a short article in the Dec. 27 issue of *Fortune* magazine, entitled “The Future of the Factory.” It said in part, “DeAnne Julius, chief economist of British Airways, and Richard Brown of the Manchester Business School predict that mass manufacturing will inevitably shift to increasingly efficient, low-cost developing nations. Prices of goods will thus decline, pushing down factory wages in the U.S., Japan and Europe. In an essay that beat 259 others to win an American Express Bank international contest, the economists say manufacturing in the major countries will sink below 10% of total employment within a generation, from 23% now.”

Then the *Fortune* article said, “Deindustrialization does not necessarily spell economic decline. Julius and Brown note that developed countries should specialize in manufacturing high-value-added products. As these more advanced industries grow, they will create new, high-income service jobs, in engineering, for instance.” Since when are such engineering jobs (in industries manufacturing high-value-added products) classified as “service” jobs? And experience has shown that high-tech (or “high-value-added”) industries are often just as likely as low-tech industries to migrate to low wage countries. I regard this as ‘more nonsense from economists.’

Editor: More information from L. Siphkema about pension portability and the formulas used to compute lump-sum pension payments. Here’s a part of letter from Mr. Siphkema to the Assistant Secretary for Pension & Welfare Benefits, a Mr. Berg.

From L. Siphkema of St. Paul, MN: - Disclosure means to uncover, to reveal. Disclosure includes, but is not limited to, the right to search. Nevertheless, present Labor Department policy is to advise pension plan participants of their statutory right to search for the lump sum equation “... among other things... instruments under which the plan is established and operated.” Such instruments might not contain the lump-sum equation. In contrast, documentation of the lump sum equation in the pension plan would provide proper disclosure. Employees would no longer need to use the court system to discover the proper lump sum.

Therefore, I would be grateful, and I believe pension plan participants would be grateful, if the Labor Department would implement adequate disclosure provisions... This request does not require new law, — it requires only the fair enforcement of existing law. It complies with the intent of Section 4009, Portability Assistance, of the Employee Retirement Income Security Act of the 1974 (ERISA). Section 4009 intends that employees understand the lump sum option, which implements portability. This request does not require employers to increase pensions; it only requires that employers deal in good faith with respect to the pensions they voluntarily offer. It will be very helpful to pension plan participants who are presently ignored by government and by the legal system. This simple, inexpensive procedure will change uninformed victims of the pension system into informed supporters of the Federal Labor Regulations. This request is fair to all Americans: to employees, to employers and to taxpayers. If you agree, please insure that pension plans contain the lump-sum information outlined above. If not, I would be grateful if you would explain the reason(s).

Robert Bruce, *AE* Editor
P.O. Box 4493, Great Neck, NY 11023

Downsizing In The Country Called WE

Once there was a big, powerful, prosperous country called WE. One day the managements of the country's factories had a brilliant idea—"If we buy such-and-such components of our products offshore, we can save some money and increase our profits." So they bought the components offshore, and found that not only could they save money, but now they didn't need the employees who had made the components, so they laid them off and saved more money. (Management called it "downsizing.")

The laid-off employees, not having any income, stopped buying things.

Then the managers had another brilliant idea: "If we increased our profits by buying components offshore, we can increase them still more by buying subassemblies offshore." So they bought the subassemblies offshore, and made a bigger profit. Of course they didn't need the employees who had made the subassemblies, so they "downsized" some more.

The newly unemployed stopped buying things just as their predecessors had.

Now the managers decided, "If we made bigger profits by moving the components and subassemblies offshore, let's move the whole factories offshore and make really big profits." So they moved the factories offshore and "downsized" to the point where there was no one with a job except for the managers.

With all the former employees jobless—and not buying anything—the managers began to wonder why they weren't selling anything. Since nothing was sold, there were no more profits, and this made the boards of directors unhappy.

The directors thought for a while, then came to a conclusion: "Those offshore factories are making big profits." (They had other customers besides WE.) "They must have better managers than we do. Let's downsize completely and hire offshore managers. Then we'll make big profits again." So the directors moved the management offshore, and the former managers joined the unemployed.

Meanwhile, the millions of unemployed got a brilliant idea: "Since there are no manufacturing jobs, we will set up a service economy!" So they did, and all got rich taking in one another's laundry. And they lived happily ever after.

Robert J. Nedreski
Erie, Pa.

(This letter reprinted with permission from the Jan. 17, '94 issue of "Electronic Engineering Times," a CMP publication.)

Reach Out

We need the cooperation of our readers to improve our ability to enhance the profession. This improvement will result from our heightened visibility to Congress, the media, and the profession.

Reach Out to your Congress, senate, other representatives and the news media. Your "American Engineer" is our way of reaching you with facts, articles and information concerning engineering issues. You can copy these articles and send them to your representatives and the news media to support your concerns.

Reach Out to an associate and encourage them to join and support the AEA. If you're the bashful type, just place your "American Engineer" or a copy in their mail to be read at their convenience. You can also Reach Out to an associate in another department, company, division or state by mailing them your copy of AE. We encourage you to copy AE for a friend or associate in the hope that they will also support our efforts.

Reach Out to the active volunteers that are making this publication possible. Tell them what you like or what you dislike. Provide them with questions, answers and information or just a hand written note of appreciation. Believe me when I tell you that it is important to let your volunteers know that you care.

Reach Out to the following:

Bill Reed, AEA President

P.O. Box 820473, Fort Worth, TX 76182-0473

Richard Tax, AEA VP, General Information

PO Box 2012, River Vale, NJ 07675
(201) 664-0803

Robert Bruce

"American Engineer" publication and related issues
P.O. Box 4493, Great Neck, NY 11023

Dr. David C. Lewis, Immigration

609 Siding Court, Vienna, VA 22180

Richard Plummer, Anti-Discrimination

P.O. Box 326, Valley Forge, PA 19481

Robert Rivers, Manpower

P.O. Box 129, Union, NH 03887

R.T. Pinkerton, Staff Cartoonist

Ideas and subjects for new cartoons
P.O. Box 820473, Ft. Worth, TX 76182-0473

I am concerned about my career and U.S. Engineering capabilities.

Please enroll me as a member of AEA at the following grade.

SPONSORING MEMBER \$100___ SUPPORTING MEMBER \$50___ MEMBER \$30___

Name: _____ U.S. Citizen: _____
(Please Print)

Address: _____ Apt: _____

City: _____ State: _____ Zip Code: _____

Home Phone: _____ Work Phone: _____

Engineering Discipline: _____ Industry: _____

Please enclose check or money order and send to: AEA, Box 820473, Fort Worth, Texas 76182-0473

Signature: _____ Date: _____

All members receive a subscription to the AEA publication "American Engineer."

Annual membership begins on receipt of Application.

Dues in the AEA are tax deductible.

Page 3 - April, 1994 - "American Engineer"

MAKE THINGS HAPPEN!

The writings of engineers about technical subjects are very positive, constructive and bring things to fruition. Read the writings of engineers about their professional concerns and the tone is negative, down and seemingly hopeless. These two opposites make us aware that we can and must approach our professional problems in a more positive and assertive manner. Further, I imagine you are getting fed up reading all the complaints and would prefer to hear about more constructive ventures. Well! So am I.

This past March was the third anniversary of the **AMERICAN ENGINEER** and we have provided our readers with a "dose of reality in issue after issue" - to quote Ronald Khol, Editor of **MACHINE DESIGN**. Our publication is accurate, but at the expense of becoming strident. I think most of us are very much aware of the problems and to complain about them without providing solutions will continue to waste precious space and energy and eventually discourage member support. We should expend more energy on problem solving and, once a problem is identified, more effort on details, affects and combative tactics. I invite everyone to participate in this opportunity to identify and solve our problems.

Our first identifiable problem lies in the fundamental financial ability to solve our other problems. How can AEA come up with \$4,000,000 needed to advertise to increase membership, staff an office, fund action committees, support active volunteers and provide a professional publication? We could also add supporting local sections to provide our members with contacts and opportunities to meet their peers at home. You can all help us come up with the money, methods to obtain the funds or participate in recruiting new members. Our potential for a \$10 million organization with more than 300,000 members still exists, but we need help in getting there.

Our February issue contained a letter to President Clinton, requesting help for members of the engineering community. The bureaucratic, non-committal, response we received that made no reference to the subject material of our letter caused me to wonder why we pay a government aid, on the President's staff, a salary for such poor performance. Perhaps the President needs help more

than we do. Then, in our letter, we did offer to repay the President's help many times over for his current assistance. Keep trying and don't let this issue rest.

I hear some IEEE entities are planning to endorse our letter to the President. AEA members can also endorse the letter and get friends to sign it. Our women members might get better results by writing to the First Lady. I would be grateful to those that follow up on this issue and keep me informed. In return I shall keep the members current.

Our Free Overtime article has turned up an interesting fact. Apparently, government auditors do not get concerned when overtime, in their favor, is not recorded. They don't like being short changed, but it's all right to cheat the companies working on government contracts. **Shame on you!** More information on Free OT is still needed.

Question: What would it be worth to you if you never had to work one more hour with out pay? In other words; no more Free Overtime! Would you spent \$30 per year to support AEA for this benefit alone?

Where in the problem solution is the AEA member? The member is some place between issues of AE, waiting for something more to happen and that is not enough. Our AE provides the lead and gives you opportunities to act. Between copies of the **AMERICAN ENGINEER** you can make things happen. We shouldn't need a 2x4 to get your attention.

The answer lies within one's desire to contribute. Each member is in a position to take an active part in AEA to fulfill our goals, and I hope our goals are the same. Participation will vary, but something, some time, some contribution is much better than nothing at all. Even 10 to 20 minutes each day or week is better than nothing.

Back to the issue at hand. Keep writing, identify the problems, but be positive and look for solutions and ways to participate. Let's solve our professional problems the same way we solve our technical problems.

Richard F. Tax, V.P.

SEEDY EYE STRIKES AGAIN!

CDI Technical Services (pronounced Seedy Eye) has done it again. They have serviced the American contract engineer.

In a February 24, 1994 issue of the London Daily Telegraph, CDI is advertising for automotive engineers and computer programmers. In the advertisement CDI Technical Services is billed as their "International Division (Recruitment)". This industry of putting Americans out of work is growing so big that the fat cats at CDI have found it necessary to establish a foreign recruiting division just to handle the demands of US corporations.

Quoting from the advertisement "CDI Corporation is the largest provider of temporary Technical Services in North America with annual sales approaching \$1 Bn."

"Modern Engineering is a CDI Group Company and is one of the worlds leading Automotive Engineering Services Companies." Am I wrong or did the entire U.S. automotive industry experience a nearly forty percent reduction in white collar workforce over the last few years? Hey Seedy Eye didn't that include thousands of automotive engineers?

"CDI Computer Services is growing rapidly and provides a broad array of consulting and Technical Services in the USA." Does this mean we no longer have to export the work but import people? "As a combined force, we currently seek individuals for contracts in

various locations in America in the following discipline. The ad goes on to say "Long term contracts - Competitive hourly US\$ rates - and good benefits packages."

As our longtime readers will remember, CDI is the power in the National Technical Services Association and as such has had a very deleterious effect on the American contract engineer. NTSA is one of the organizations who brought us Section 1706 of the tax law that makes you an employee of the contract firm which payrolls you.

For those automotive engineers, computer people and cad designers out there, I would suggest you contact CDI's (pronounced Seedy Eye) main office with your resume and indicate you are interested in one of the jobs referenced in the London Daily Telegraph. On the other hand, why should we limit it to automotive engineers? If you have a spare resume laying around, send it to CDI (pronounced Seedy Eye) referencing the advertised jobs and work on the English accent.

CDI may be contacted by phone at 1-800-562-5643 their Philadelphia headquarters. You may fax your resume to (215) 569-1452 or mail it to CDI Corporation - 1717 Archer Street - 35th Floor, Philadelphia, Pa - 19103-2768.

Bill E. Reed, AEA President

The End Of Jobs

(Continued from Feb. 1994 AE)

Within the next twenty years throughout the underdeveloped world, more than 750 million men and women will reach the legal working age and will enter the labor market, adding to the 700 million people currently unemployed or underemployed in poor countries. (These are United Nations figures and represent extremely rough estimates, but it can be safely assumed that the national and international officials involved in compiling these figures have no interest in inflating them.) In countries with the highest population growth rates, such as Mexico, Kenya, and Pakistan, the labor pool is growing at nearly 3 percent a year. In India and China, the birthrate is down somewhat, but the new job seekers are additions to what in 1985 was already a combined labor pool of nearly a billion men and women. Progress in public health resulting in lower infant mortality and prolonged life in many other countries has further diminished the prospects of finding enough work at a living wage for the hundreds of millions seeking jobs worldwide.

The "feminization" of the workforce is also changing job prospects everywhere. As traditional cultural barriers begin to give way, large numbers of women have entered the labor market in Asia, Africa, and Latin America. Because of the numbers of women taking jobs, and also because of the worldwide practice of paying women much less than men, this feminization of the world labor pool exerts further downward pressures on job prospects and wages. To take but one example: in South Korea in the late 1980s, female earnings in manufacturing were 50 percent of male earnings in the same industry.

The global job crisis is so profound and its interrelated causes are so little understood that the best of the currently fashionable strategies for creating jobs just nibble at the problem; others are likely to make it worse. "Jobs, jobs, jobs!" George Bush's famous battle cry as he sallied forth to trade talks last year, remains the main selling point for the North American Free Trade Agreement (NAFTA). The free traders argue that once trade barriers fall, jobs will spread across the earth like buttercups. Pro-NAFTA forces add that only the marriage of U.S. technology with Mexico's low-wage workforce can beat back the onslaught of cheap Asian goods.

But an economic strategy that ultimately requires increasing numbers of American workers to outproduce Mexicans and Chinese does not augur well for either the standard of living or job security in the United States. Unless wages and working conditions in poorer countries improve, global corporations will use the threat of relocation to bargain down working conditions in richer countries. At the same time, the drive for "global efficiency" means that the numbers of Chinese, Mexican, or other workers who land a job in the system, while growing rapidly, will still barely make a dent in the ranks of the jobless.

Fear and confusion about unemployment keep governments from initiating sensible policies. Take the case of the arms trade. The spread of weapons around the world is making the planet ungovernable because the great powers regard overarmed societies that are coming apart as too dangerous and expensive to police. Hence the abandonment of Bosnia to the mercies of genocidal thugs. Yet no government, including the "sole remaining superpower," is taking an initiative to stop the arms traffic or to prohibit weapons production. Quite the contrary. The dollar cost of continuing weapons traffic may not be calculable, but politicians everywhere have a pretty good sense of the number of jobs that would be lost if serious steps were taken to do something about it. (The cuts in the U.S. military budget already projected will cause the loss of 1.9 million jobs by 1997, according to the Bureau of Labor Statistics.) The fact that sensible reinvestment and industrial conversion strategies to meet a host of private and public needs could eventually create many more jobs than are lost is cold comfort for politicians facing an election this year or next. The choices are much the same with respect to the environment; water, air, trees, and fish are routinely traded for jobs, disappearing jobs in many cases.

Robert Reich has been eloquently making the case for years about the need to educate and train the American workforce to make American industry more competitive. He correctly points out how the

Japanese emphasis on "bringing the bottom half of its primary and secondary school population up to a minimum level of competence" has built a workforce against which poorly educated U.S. high-school graduates cannot effectively compete. Improving America's schools at the primary and secondary levels and making first-class technical training available to workers to help them adapt to the inevitable changes in the job market they will face throughout their working lives are good things to do. But how, in the end, will this create jobs?

Reich says he thinks he knows where the new good jobs can be found. Industry and government should focus on the human dimension of automation by promoting a new class of middle-level technical workers. The education and training systems would be reconfigured to produce more computer-aided machine operators and other semi-skilled technical workers for whom a year or two of post-high-school engineering training, apprenticeship, or on-the-job training would open up a choice of good industrial jobs. But the future is now, and it is not sunny. Investment in human-displacing automation has already progressed quite far. I have visited a variety of highly automated factories in the United States and Europe, including automobile, electronics, and printing plants. The scarcity of human beings on the factory floor in these places is spooky.

New jobs will be created by robotics, but more will be lost. Many of the new jobs are designed to pick up the tasks that are too inconvenient, costly, or difficult to assign to robots, and these slots are often temporary because robots are getting smarter and more agile all the time. Labor unions historically have played a braking role in the automation process by putting forward various strategies to protect endangered workers. But because capital can move around the world at the punch of a key and workers are relatively tied to a place, the labor movement has lost power throughout the industrial world. In the United States, organized labor is especially weak; according to the secretary of labor, only 12 percent of the private-sector workforce is now unionized.

A problem with any jobs strategy tied to increased productivity is the perverse consequences of such gains. Workers who raise their hourly output eliminate jobs for other workers and in the long run may endanger their own jobs. Ultimately there is a conflict between, on the one hand, the profitability of individual corporations and the pressures of global competition and, on the other, human needs everywhere for high employment levels, decent pay, healthy working conditions, and job security. It was precisely this contradiction that gave rise to the socialist movement, and it was the failure of authoritarian command economies to resolve it that led to the demise of state socialism.

So education and training alone do not solve the more basic question: What fate lies in store for the millions who are trained for the good jobs they will never get? The \$40,000-a-year jobs with good benefits are disappearing, and as this process speeds up, increasing numbers within the "middle class" whom Bill Clinton appealed to in the last election are joining the ranks of the unemployed and the working poor. Workers who put in at least a forty-hour week for poverty-level wages now constitute 18 percent of the U.S. workforce. Why will U.S. workers, however well trained and skilled they become, land the good jobs if the work can be easily dispatched to Mexico, Spain, Singapore, or China—where well-educated, highly motivated workers can start tomorrow for a fraction of a U.S. wage? Training for niches that will not exist is a recipe for replicating the frustration and social tensions that have been commonplace in Third World countries that produce an overabundance of gifted and skilled human beings.

Hopes for "full-employment" have traditionally rested on the assumption of technological rescue. The Austrian economist Joseph Schumpeter pictures capitalist development as a series of "gales of creative destruction" in which aging markets, obsolete factories, and unneeded jobs are swept away and replaced by new plants with greater numbers of higher-paying jobs producing for bigger markets. Makers of buggy whips, having lost their jobs because of the horseless carriage, enter the middle class by landing jobs at automotive plants. Laid-off autoworkers, in turn, are to find

("The End Of Jobs" continued)

work in the promising commercial technologies of the near future—high-definition TV, interactive TV, and high-tech information technologies. Unfortunately for this narrative and for countless American workers, the new post-industrial technologies appear to offer consumers either marginal improvements, new wrinkles and styles, or games. These are not fundamentally new products to create new human needs and attract massive new global markets, like the automobile or the airplane, and they are unlikely to trigger what the

economist Robert Heilbroner calls a "transformational boom."

To be continued.....

By Richard J. Barnet

Richard J. Barnet is a senior fellow at the Institute for Policy Studies, in Washington. "Global Dreams: Imperial Corporations and the New World Order," co-authored by Barnet and John Cavanagh, will be published early next year by Simon & Schuster.

(This article is reprinted with permission from the Sept. '93 issue of "Harpers Magazine.")

Jan. 1994, (c) Robert A. Rivers, PO Box 129, Union, NH 03887

RECORD 4.7%, (24,000) ELECTRICAL ENGINEERS UNEMPLOYED

In the face of general increases in employment and declines in unemployment, engineers and electrical engineers in particular are experiencing declines in employment and record high levels of unemployment.

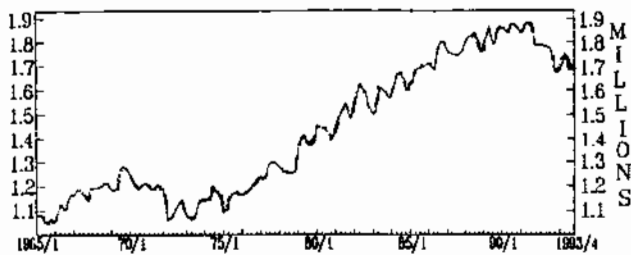


Figure 1. Quarterly Engineering Employment

Figure 1 shows engineering employment in millions from the first quarter of 1965 to this just completed fourth quarter of 1993. At its peak, engineering employment reached 1,890,000 in the third quarter of 1990. Its most recent minimums were 1,668,000 in the fourth quarter of 1992 and 1,683,000 in the third quarter of 1993. The drop in employment shown by the data does not however show the extent of career dislocations for engineers. More appropriately, one should extrapolate the employment data of the earlier eighties to estimate the available supply since continued employment, new graduates and immigrants of that period were permitting the growth. Since then, reduced new graduates has probably been compensated for by significant immigration increases leaving an expanded supply.

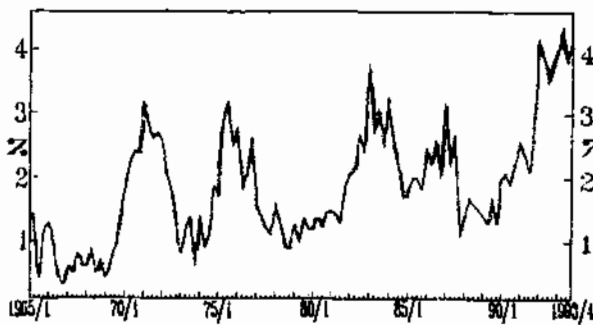


FIG. 2. Quarterly Engineering Unemployment

Figure 2 shows engineering unemployment for the same period as employment. It clearly shows the effect of recessions on unemployment. This latest engineering recession reached record levels of unemployment in two quarters of 1992 and all of 1993. In the last two years, the number of unemployed ranged from 64,000 to 81,000. The accumulated dislocated is in the 300,000 to 400,000 range as estimated from the extrapolated demand and the number employed. Adjusted unemployment would be close to 20%.

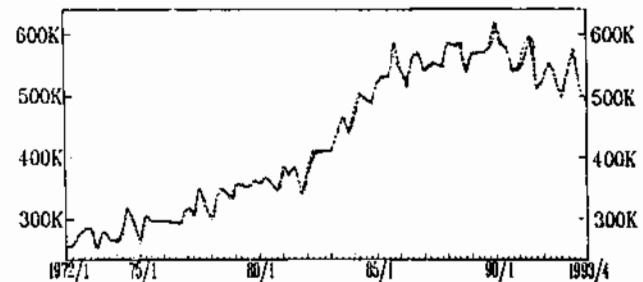


Fig. 3. Electrical Engineering Employment

Figure 3 shows Electrical Engineering Employment topping out at 622,000 in the first quarter of 1990 and in a downtrend since that time reaching 490,000 in the fourth quarter of 1993. Even using the slow growth period of the later eighties as a proxy for the supply, a supply-demand gap in excess of 20% has opened up since that time.

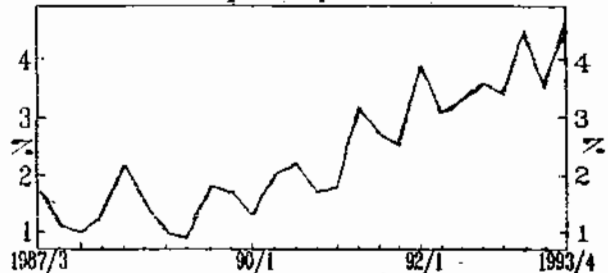


Fig. 4. Electrical Engineering Unemployment

Figure 4 shows electrical engineering unemployment since 1987. It shows an increasing unemployment trend since the first quarter of 1990 and long past the time that the recession was declared to be ended in the general economy. It reached a record high level of 4.7% with 24,000 unemployed in the fourth quarter of 1993.

1. Employment and unemployment data is from the Bureau of Labor Statistics (unpublished) based on the Current Population Survey.

Foxy Academicians In The ABET Henhouse

A front page article in the December 1993 issue of *Engineering Times*, published by the National Society of Professional Engineers (NSPE), discussed recent controversial proposed changes in the accreditation criteria and procedures of the Accreditation Board for Engineering and Technology (ABET). According to the article, these proposed changes, which were introduced at the recent annual meeting of the ABET, include the following: (1) Replacing detailed curricula specifications with lists of "competencies" expected of engineering graduates; (2) Extending the accreditation period beyond the current six years; (3) Giving visiting accreditation teams power to make routine decisions; and (4) providing incentives that would improve the pool of campus evaluators and other ABET volunteers. The article notes that reservations about ABET's proposed changes have already surfaced. For example, William Agnew, a member of the Engineering Accreditation Commission (EAC) and a retired General Motor's Corp. research lab engineer, "contends that six years is sufficient time for a program to go downhill and that colleges given free rein to follow their own objectives could put together an education that has much more to do with management, for example, than with engineering... 'I worry we're going to throw out the baby with the bath water,' he says." As an indication of the seriousness of the situation, Louis Guy, Jr., the article notes, "even resigned his position as NSPE's representative on the ABET board of directors in part out of concern that college administrators have grown too dominant in the organization and that accreditation will turn into a 'peer review' process." The article states, "while former representative Guy agrees that ABET 'needs change,' he expresses concern about who is controlling the changing. He notes that two-thirds of the people on the ABET board and executive committee are now university administrators and worries that they will cut vital parts from the accrediting process... 'Practitioners have lost the war,' says Guy, the Norfolk, Virginia utilities director. 'The fox is now in the henhouse.'"

According to the article, the reasons for the proposed changes are: "(1) the burden of preparing for evaluation visits;" (2) "costs of

accreditation, which can run into the hundreds of thousands of dollars for a school;" (3) "delays in learning of accreditation results;" (4) "ABET's unwillingness to accredit programs until students start graduating;" (5) "school administrators say the specific requirements of ABET's current system lead to a 'bean counting' accreditation process that discourages new approaches to engineering education." However, there is another, ulterior motive for the proposed changes: the academicians' desire to try to bolster sagging enrollments by watering down and sugar-coating the degree programs and by "broadening" engineers' education for the purpose of preparing them for the likelihood of non-engineering employment in fields such as business administration (the engineering professors are probably well aware that business administration has been a far more popular major than engineering for many years, and that business professors are now better paid than engineering professors). Student interest in engineering is gravely threatened, partly as a result of the incompatible combination of a rigorous degree program and poor employment prospects. And even those newly graduated engineers lucky enough to get engineering jobs face a bleak future of horrendous age discrimination and salary compression.

In an editorial on page 4 of the same issue of *Engineering Times* ("Aiding and ABETting Education Reform?"), the NSPE acknowledged, "The predominance of educators among current ABET leaders leaves open the possibility that accreditation will turn into a 'feel good' peer review process and that university 'innovation' that takes students far afield from actual engineering practice will end up getting ABET's seal of approval." One of NSPE's proposals for preventing this scenario is to have the ABET "make special efforts to involve engineering practitioners outside of academe in the organizational transformation." However, if the NSPE itself did not waste so much effort on such trivia as pre-college education (example: NSPE promotion of MATHCOUNTS, a pre-college math competition), it might be able to devote more effort to things that are really important to engineers, such as preserving the integrity of engineering education. *The Phantom Engineer*

AEA FIGHTS FOR FASTENER SAFETY

AEA president Bill Reed and director Roger Boisjoly submitted comments to the senate Subcommittee on Science, Technology and Space concerning a provision which would have permitted commingling of fasteners from various vendors, batches etc.

According to AEA's Reed, "The American Engineering Association opposes commingling of fasteners by grade, by vendor, or any criteria at any level at anyone's facility."

"It will lower quality, prevent traceability, virtually eliminate responsibility for those who would fraudulently mark fasteners and create additional quality and safety problems for American products all over the world. Put more succinctly - how many people will have to die to make our point?"

In a letter to Senator Rockefeller, Chairman of the subcommittee, Rep. John Dingle Chairman of the Committee on Energy and Commerce wrote "Unfortunately, a few vocal distributors and importers continue to press for additional revisions to the traceability and commingling provisions of the law. These companies base their arguments on suspect economic analyses and claim huge financial burdens associated with complying with the law. It is clear to me that some companies, no matter what the law says will seek to continue to do business in the precisely the same manner as they always have, no matter what the cost may be to others."

AEA Director Boisjoly wrote "The life you save may be your own or a dear loved one or close friend. You now have before you a bill to amend the previous good bill (PL 101-592 Fastener Quality Act) that has provided for high quality fasteners for use in this country. Do not weaken the fastener quality act to accommodate special interests at the expense of all Americans. I do not make this statement without the actual engineering experience to back up what I am saying."

"I am one of the engineers who recommended against launching

Challenger and was ignored... I have 27 years experience as a Mechanical Engineer in the Aerospace Industry in the major disciplines of Mechanical Design and Structural Analysis and was involved deeply in the selection of fasteners and their design and usage on critical equipment."

"I have personally experienced the huge negative results of fastener failures on at least four separate occasions and am aware of many other instances of fastener problems directly related to poor quality fasteners that were sold as top quality hardware...when defective hardware, like fasteners, find their way into critical assemblies (and they will if the opportunity is available), the potential for disaster is enormous."

"The country now has the appropriate law in place to prevent such shoddy practices from occurring and it would be a terrible mistake and a disservice to all citizens to weaken a good bill to only accommodate a selected few who want to essentially sell everything they manufacture to minimize scrap and maximize profits at the expense of everyone else."

"It has nothing to do with the manufacturer's ability to produce high quality fasteners. Their focus is strictly on profit and in this particular instance we could all pay for their greed with our lives or the lives of a loved one." Please do not take these words as a threat or as an exaggeration, because I do not engage in either method to generate action. I am simply still genuinely concerned for the health, safety and welfare of the public who are actually the beneficiaries of good engineering and unfortunately the victims when engineers like myself are not heeded. I implore you and your colleagues to leave the current Fastener Quality Act alone without any amendments that would weaken it and increase public exposure to harm."

Editorial

New Grads Have It Rough Too

Many engineers in mid career are facing corporate cutbacks or have already been caught in them. To make matters worse, most of these people have a tough time finding new jobs. In one interview after another, they are told they are overqualified, too specialized, or have experience in the wrong industry.

This often makes people over 40 look enviously at recent graduates. Young people with fresh diplomas are fortunate, so it seems, because they normally are thought of as ready to be molded into shape and are priced at the bottom of the salary ladder.

The envy, however, may be unjustified. According to Thomas Kicher, dean of engineering at Case Western Reserve University, recent graduates aren't having an easy time either. Members of this year's class were lucky to have a single job offer at graduation. Moreover, the situation doesn't look temporary. It may be the wave of the future, he explains.

In light of all this, Dean Kicher gives some brutally frank advice to graduates who still don't have jobs. And what he has to say no doubt comes as a jolt to students who entered college expecting to be recruited vigorously at graduation.

First of all, he points out that many engineering graduates may never in their entire careers see a regular paycheck from full-time employment. The reason is the increasing use by corporations of contingency workers. These private contractors, free-lancers, or temporary people of various types add up to a work force never permanently employed.

He also feels new graduates may have to look for satisfaction from something other than a large salary and generous benefits. As with secure employment, they may never materialize. Another thing new graduates must learn to accept is not being able to live where they want to, and they should get ready for more competition from foreign engineers. The job they didn't get may have been lost because the work was farmed out to somebody in New Delhi.

What should new graduates do about this? First of all, he advises not to give up. He says many successful people started out in exceedingly adverse circumstances. And having an education is better than not having one. Aside from that, unemployed graduates should be willing to accept student co-op jobs or part-time employment if that is all they can get. He even suggests they work for free in an internship if necessary simply to prove their worth. If they get part-time work, he suggests trying to do it at nights or on weekends, saving weekdays to look for full-time employment.

Finally, he advises young people to manage their finances skillfully. Without a corporate employer to provide health insurance and

pensions, individuals now have to be careful about their own money matters, including provisions for retirement and medical insurance.

This less than cheerful assessment surprises me because it comes from a member of the academic community. Normally, this group tries to put a Pollyanna glow around every issue that might influence college enrollment. Dean Kicher's forthright statements mark him as a man of uncommon candor and courage.

Ronald Khol, Editor

(Reprinted with permission from "MACHINE DESIGN," 7/23/93, a Penton Publication.)

LAST ISSUE OF AE

While AEA is trying very hard to increase membership and support, for some of our readers this will be the last issue of the *American Engineer*. In the hope of gaining more support AEA has made it a practice to provide potential members with complimentary copies of AE. We have also carried some of our members for a rather significant period past their membership renewal date.

In fairness to our dues paying members and our financial responsibilities, we cannot do this indefinitely. We recognize the fact that some may be unemployed and may be unable to maintain their full dues. For our unemployed members we have a \$15.00 "unemployed membership" rate, which is good for one year.

Those readers who have requested information about AEA more than three issues ago will also have to be dropped from our mailing list. It's time to make your decision. Members of AEA with renewal dates of April 1, 1994 or before will be put on inactive status until dues are paid.

AEA needs and wants both your moral and financial support and values your membership. However, even a non-profit organization must remain solvent to continue to pursue your interests. We want to retain your support and gain the support of others, so please join or renew your membership in AEA. We need your help; get others to help and you will continue to benefit from our activities.

Bill E. Reed, AEA President

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!

BOARD OF ADVISORS

Hon Tom Vandergriff, *Former Member of Congress*
Jerome M. Zeifman, *Former General Counsel*
House Judiciary Committee
Johnny W. Richards, II, *Attorney and Counselor at Law*
Tommy Grant, *President Grant Fasteners*
Maj. Gen William P. McBride, *U.S. Air Force Ret.*
Ms. Nell E. MacCracken, *Consultant*
Al D'Nak, *President Alnak Publishers*
Norman G. Comish, *Past President*
Nat'l Council Industrial Defens

PUBLICATIONS COMMITTEE

Billy E. Reed, *President*
Richard F. Tax, *Vice-President*
Robert Bruce, *Editor*
Michael Perugini, *Publisher*
David C. Lewis, *Immigration*
Richard W. Plummer, *Anti-Discrimination*
Robert A. Rivers, *Manpower*
R.T. Pinkerton, *Staff Cartoonist*

AEA
P.O. Box 820473
Fort Worth, TX 76182-0473
(817) 431-1319

FIRST CLASS
U.S. Postage
PAID
Permit #32
Mt. Arlington, NJ 07856