

# How to Avoid Becoming a Chronically Unemployed Older Engineer

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One of America's dirty little secrets is that most engineers over 50 are underemployed or long term unemployed. However, this is entirely hidden by a reporting system that fails to count ANY of the underemployed or long term unemployed people as such. Indeed, underemployment is such a subjective concept that hard data may be impossible to gather.

Just how bad is this? According to an IEEE unemployment survey<sup>1</sup>, the mean duration of unemployment has grown from 84 weeks in 1995, to 92 weeks in 1996, to 103 weeks in 1998. To put this into engineering terms, this situation is deteriorating at the rate of 6 weeks per year, despite our improving economy! As you can well imagine, long before most engineers have been unemployed for 2 full years, they are prepared to take just about any job, yet are still unable to find anyone who will hire them, even into underemployment.

The obvious response is to blame those over-the-hill has-been engineers for not being able to keep up with modern technology, and dismiss this with a so what. The actual situation is far more complex than such a simplistic view recognizes. Formidable political and economic forces are now plaguing this group.

## Forces Behind the Problem

Quoting artificial unemployment figures that only include the short-term unemployed people, major corporations have paid lobbyists to successfully promote legislation to bring in many more foreign engineering workers. This number peaked at about one million in the early 1990's, then dipped, and is now headed up again with authorization to bring in 585,000 H-1B people without advanced degrees during the next three years after authorizing 115,000 this year. These people are often paid the minimum of \$40K/year, around half of the prevailing rate for software engineers. There is NO LIMIT to the number with advanced degrees. This is not an insignificant fraction of the software engineers in America. This was passed by a 96-1 vote on October 3, 2000, purchased with \$22.1 Million dollars<sup>4</sup> in legalized bribery from the high tech industry. In short, our years of college and decades of experience have been sold out for only \$31.57 per engineer!

Note that it was a bogus claim that there are 300,000 jobs going unfilled for a lack of qualified workers that propelled this into law. What are they going to do with the extra 300,000 **MORE** people than are supposedly "needed"?

Perhaps you saw the CBS 60 Minutes presentation where the VP of Hewlett Packard kept repeating "No Comment" when challenged regarding this. Now, Sun Microsystems seems to now be leading this effort through the Information Technology Association of America, who themselves have reported that 80 percent of all programmers are 44 years old or younger. This horrendous disservice to our most experienced engineers has been

done simply so that a few employers can employ younger engineers at depressed rates. Any competent, experienced programmer can learn almost any contemporary language or tool in less time than a suitable H-1B worker can be found, moved, and put to work, and once employed, the domestic worker will almost certainly be more productive.

Look at the numbers. At Microsoft, after the automated resume' filters make their selections, typically 25% are found to be fully qualified and are interviewed. However, only 8% of these fully qualified applicants actually receive job offers<sup>2</sup>. These numbers are typical across the IT industry. Further, software engineering salaries are certainly not extremely high. Clearly, there is no desperate shortage of software engineers, as some H-1B proponents claim, only a shortage of expertise in utilizing the available domestic engineers. The problem is in HR, and not in the labor pool.

In short, there is now a big business in destroying the careers of our older engineers as part of a well paid for effort to destroy the market for software and other engineering. Any older engineer choosing to stay in their field must understand these powerful forces and engineer a success path despite the forces allied against him.

### **Scope of the Problem**

This is a human disaster of immense proportions. We are now leaving our most experienced high-tech engineers to literally beg or die on the streets. In simple numbers, when you count the wives and children of the directly affected engineers, this disaster directly affects millions of people. When you count the other engineers who have had to take lesser jobs to survive, as well as those engineers able to stay in their field but who must now work for significantly less money to remain competitive, this disaster is much larger.

### **Genesis**

This really got its start about 25 years ago. Then, some young engineers at Intel developed the first microprocessor. Note that many others were working to do the same sort of thing, but differently, including myself. At that time, there were many people who had much greater computer credentials than those who were involved in Intel's early microprocessors. Indeed, these early chips were viewed as "logic replacement devices" and were not initially viewed as even being computers, so computer skills weren't a prerequisite for working on these early devices. As it grew, the only way that these early developers could keep control was to carefully filter out all applicants who were better qualified than they were. It was in this climate that poorly designed software tools, with overly complex user interfaces, became the accepted norm, a trend that continues today. Times were pretty tough for me then, until I dropped all of my mainframe development experience from my resume'. The industry-wide steady increase in the average duration of unemployment started here, and this trend has continued to the present two years, with no signs of abating.

## **The Chicken or Egg Problem**

There was a long, slow change in America's school systems around 30 years ago, when they shifted their attention from empowering their best students to propping up their worst students, now known as "the dumbing down of America". The oldest engineers completed school before this process started. However, the youngest of the older engineers can be in serious trouble trying to keep up with modern technology, a situation that can only continue to get worse.

Similarly, during the 1970s, entirely new computers with entirely different instruction sets were being released every couple of years, so it was necessary to learn completely different systems at a fast pace. Those who survived this era all encountered the "Three Machine Effect", where learning got much more difficult with the 3<sup>rd</sup> machine, and required a substantial mental re-organization to ever get past the 5<sup>th</sup> machine. Now that new instruction sets are rare (except for Digital Signal Processors), programmers can grow old enough that they CAN'T re-organize their thoughts when they finally run out of mental space sometime in their 30s. The present problem is that there is a corps of older engineers who have and can continue to deal with unbounded change, but younger HR people don't realize that many engineers in their 50s can really out-learn many engineers in their 30s, due to their radically different experiences when younger. I often out-learn good engineers who are less than half my age.

Would you rather hire someone with lots of knowledge but little experience, or someone with lots of proven skill, and who can simply pick up whatever he needs to know? Knowledge alone is useless, you need skill to make your future products successful, and this is what the older worker brings. He will pick up the knowledge on the fly, so fast that you will hardly notice that he arrived without it.

However, there are so few older engineers who have escaped this sinister process that the entire hiring process has become skewed and knowledge based, appropriate for fledgling engineers, rather than skills based, as is more appropriate for experience engineers. This completely ignores the great value that older engineers bring. That this situation could come to pass illustrates how completely mainstream HR has swung in this crazy direction.

Sure, our economy is doing well right now and nearly everyone with current skills can find someone to hire them. However, this frequently doesn't help the older engineers who often have periodic two-year breaks in their careers, so that their experience may no longer be current across their discipline. This probably doesn't significantly affect their ability to perform their future jobs, but the current evaluation process works unfairly against them. Hence, they often remain unemployed despite awesome skills and a booming economy.

## **Plague of the Bean Counters**

More than any other factor, the bean counter mentality of many employers is at the root of the older engineer's problems and many companies' low productivity. Employers now routinely look for very specific experience when broader skills would be of greater value, simply because the employers don't know any better. For example, let's look at an apparently simple requirement for an assembly language programmer with very specific microprocessor experience for a family of Point Of Sale (POS) terminals:

First, how was it decided that this should be in assembly language rather than C? This is probably simply how things have been done for years. A senior engineer would decide, on a case by case basis, what tool is best for each application, even if he had no specific experience with some of the tools under consideration. However, a junior engineer with only this specific experience holds your future products firmly in the past.

But what about the Electronic Data Interchange (EDI) aspects of your product? What about security against fraud? What about planning a growth path so that you don't have to start from scratch again for your next product? What about product requirements that the marketing department forgot to consider? These areas are probably covered by most of the older engineers, but probably are not covered by their younger counterparts, and certainly not covered by foreign workers.

In a very real sense, it is the younger engineers rather than the older engineers who are holding the high-tech companies back in the past. The standing joke is that modern technology is proceeding backwards at the rate of 6 months per year. As younger engineers replace older engineers, Corporate America is continuously recreating its past developments, but not as well as done before. Some of the results of this include overly complex software tools, further perpetuating the dependence on specific experience with specific tools. This is a vicious cycle that works to the detriment of everyone involved; yet is seldom recognized by those who are in its grip.

## **Planning a Defense**

Like in the movie "Logan's Run", many younger workers understand their looming fate, but have no practical plan to survive it. The usual approach is to try to hang on to their job from age 40 until they reach age 65 – a total of 25 years. However, a LOT can and does go wrong in 25 years, employers go out of business, people suffer medical problems, people get tired of what they are doing, etc. Often an employer will transfer their senior employees to a project, and then cancel the project and lay off the associated employees. The result is that most engineers can't keep their jobs until retirement.

When unemployment finally does overtake them, their monolithic experience makes them unemployable. I lived in Seattle during the "Boeing Crunch" of the early 1970s. Every evening, another former 20 year Boeing veteran was featured on the evening news, working in a fast-food or retail job, along with others who couldn't even find this type of

work. This clearly demonstrated the questionable benefits of such "stable" employment to me.

There are several strategies to avoid this looming future, each of which will be examined in detail.

### **Keep your Skills Up to Date and Plan to Become a Consultant**

While you are still employed, you absolutely **MUST** keep your skills up to date to have any sort of reasonable chance at surviving. If your plan is to continue doing the same thing as long as there is any market for it, then when you are finally forced to change, you will have less experience than anyone else in your new skill will. Many engineers allow themselves to lose the skill of learning, so their fate is sealed. Volunteer for projects involving new technologies, and sound excited about them so that you are selected.

When you become unemployed, you may have little practical choice but to become a consultant or contractor. Most of the resistance employing older engineers doesn't apply to being a consultant, so your age may actually be seen as a benefit rather than a detriment, depending upon how you present yourself. Do you come off as being a mature expert, or just an over-the-hill programmer? Strip out all those obsolete skills, experience, and terminology from your resume' and see that all the latest buzzwords are there to trigger the automated resume' scanners. I have even put in sentences explaining why I elected not to use some technology, just to get the buzzwords in. Don't include anything that is more than 10 years old. This way, they have to actually see you to see that you are older, so at least you get past the resume' filter. If you aren't getting interviews, then your mistake is here. Don't give anyone your resume' unless there is no way to avoid it, as resumes seldom if ever sell older engineers.

### **Become Involved in Startups that could Employ you Later**

From my experiences, somewhere around 10% of the motivated people with a good idea are able to establish an operating startup. Of these, around 10% are ultimately able to make their members rich. While a 1% proposition may look pretty thin, helping several 10% propositions out can significantly improve your chances of staying employed. The challenge is in helping enough to make a difference and become indispensable, without putting so much of your time in that you threaten your present existence. It is important that you are providing your expertise rather than your time, and that you are seen as an indispensable member of the team. Becoming the CTO who meets with the venture capitalists' experts to explain the technology being funded, then guide the company through the technology once funded does this best. This is a lot of work to find a job and often takes years.

However, I have found that the real benefit is that for every startup attempted, at least a dozen people see you as a competent person at the top of your field, and job opportunities flow from them. I haven't found the right startup yet, but I have found years of consulting work from trying.

## **Make Agreements with Other Engineers to Help Find New Positions**

Quietly meet with other engineers in your same age group and form alliances to employ each other if given a chance. Since older engineers often find themselves hiring others, this often works quite well. In my case, I have hired several of my contemporaries, and am currently working for one at this time. Further, I have given a number of stellar references for my contemporaries, which they have also done for me as needed.

## **Adopt a Subsistence Lifestyle to Live on as Little as Possible**

My current home has 6 wheels and a large diesel engine, and is paid off. While I may have to change where it is parked, I can never be evicted! I never move, but sometimes change where it is parked. While this probably isn't the best solution for those of you who have managed to pay your mortgages off, it sure works for those of us who haven't been so lucky.

## **Color that Gray Hair**

Displaying a bunch of gray hair (or shiny spots) tells everyone that you just don't care much about how you look. Why? This gray flag is really a red flag. Maybe you have just given up. Whatever your actual reasons are they'll never know, only their imagined explanations of impotence and incompetence.

I was interviewing for a job. I had done my best job of hair coloring, so it was hard to judge my age. The interviewer looked at me and said, "I know that I'm not supposed to ask, but if you don't mind, how old are you?" My answer was 39. I figured that this was the oldest acceptable number, and was about as young as I could possibly represent my age. My actual age at that time was 50.

I was hired, and of course I had to state my age on the paperwork, which I did accurately. Apparently no one noticed the discrepancy, or at least nothing was ever said. Had this been noticed, my plan was as follows:

I planned to explain that I presumed that the question of my age, when asked during an interview, affected whether or not I was hired, and hence was improper age discrimination, as the interviewer had acknowledged he knew when asking the question. My false answer was in my own defense against a specific visible illegal practice. Of course they could discharge me, but this would have then become a pretty strong case for age discrimination.

## **Avoid Employers who don't have a Positive Policy Regarding Older Employees**

Look around. Do you see older faces? Is the company known to hire foreigners on H-1B visas? Ask questions to understand what is happening. Even if their discrimination doesn't apply to you (yet), discriminatory environments are best avoided for many

reasons in addition to career longevity. There is a sort of narrow mindedness that develops in these environments that inhibits interesting conversation, so working in discriminatory environments is pretty dull.

If you are in doubt about their intentions, there is now a web site that publicly posts LCAs in searchable form<sup>3</sup>. LCAs are the applications that employers must file to employ H-1B people. Here, you can see who needs the latest in foreign high tech skills, like The Salvation Army in Los Angeles! The actual images of some of the more noteworthy applications are on line, making them pretty hard for an employer to deny.

### **Avoid Job Fairs**

The IEEE unemployment survey<sup>1</sup> determined that attending job fairs actually adds 29 weeks to the duration of unemployment! This face-to-face setting makes it easy for prospective employers to discriminate on the basis of age, whereas networking and phone interviews can often get you in the door and past HR's automatic age filter. Networking has shown to reduce the duration of unemployment by 36 weeks on average. Hence, simply shifting from job fairs to networking can on average save you over a year of unemployment.

### **How to Escape if you Become Entrapped in Late-Career Unemployment**

My escape came when a contemporary of mine gave me a copy of Visual Basic and encouraged me to write an application. Armed with a demo of my application, I got a programming job. Armed with my job experience, I got a succession of contract programming positions, then moved into consulting.

### **When it's the Miles, Not the Age**

Eventually, everyone starts to "feel their age". When in your 50s instead of your 80s, this is either due to poisoning of some sort (e.g. smoking) or malnutrition, and not physical age. The American Academy of Sciences, responsible for determining how little it takes to keep prisoners alive, has determined that there is NO diet that provides enough Vitamin B-12 to avoid clinical deficiency symptoms, and that there are substantial problems providing enough other nutrients, like magnesium. This primarily stems from our present "open loop" food chain, where we now flush our water-soluble nutrients into the ocean rather than returning them to the land. This now catches up with most people sometime in their 50s, and will continue to get worse in the foreseeable future. You have a simple choice: Take nutritional supplements, or suffer loss of cognitive ability and become an early has-been. Take your choice. How else can you compete with the fresh college graduates like you once were?

No, a simple multi-vitamin pill is NOT enough to reverse decades of malnutrition. To begin with, they just don't have much of what older people are most short of. This is a very complex area of study, but necessary if you wish to continue feeling young. To get a jump-start on this, join a SIG such as the Smart Life Forum in Palo Alto or Monterrey,

read books like "Smart Drugs II" by Dean, Morgenthaler, and Fowkes, and subscribe to health related periodicals.

### **Perceived Negativism**

Probably the most common complaint regarding older engineers is something like "whatever I propose, he tears apart". By the time an engineer has 30-40 years of engineering experience behind him, he has seen it all, and doesn't want to see the worst of it again. The prime directive for all engineers is to correct the faults BEFORE it is built. People have a tendency to make the same mistakes as their predecessors, so having seen a lot of hidden faults in past projects, new proposals often contain the same mistakes as were seen in past projects. There is nothing like dealing with a mistake for a year or so to clarify it in anyone's mind. With decades of such clarification, it scarcely takes a heartbeat for older engineers to see the weaknesses in almost anything.

However, this can be very disconcerting to younger engineers, who attach their ego to their work. When this problem makes its way to the HR department, the knee-jerk reaction is usually to blame the older engineer, without realizing that every one of those "negative" comments probably saved your company \$10K or more each.

Drill down. If the older engineer's comments were valid, then the attention should be directed toward the person having a problem with his comments, rather than the older engineer. Don't kill the messenger.

"But I need solutions, not objections". First analyze, then design. Often, the engineer was given something to review, in which case the job was to find the problems. Objections that solutions were not offered at the same time are out of order, as the problem must be understood before an optimal remedy can be devised. Usually, this comment is a just case of bruised ego.

### **Interviewing Older Workers**

Many get it, but some just don't. A gray haired applicant walks in. You see a hint of a lack of coordination. You review his resume' and see that he hasn't done much new in the last 5 years. This all paints a pretty clear picture of someone who is just "hanging on", and is certainly not a part of a dynamic new high-tech company. However, these people are in the minority.

Alternatively, an older applicant with dark hair walks briskly in. You review his resume' and see a mixture of new and old on it and make a comment. He explains that he uses whatever works best for whatever he is doing. This guy brings more experience to your company than a dozen new college graduates, and will keep your younger engineers out of a lot of trouble. Hire him.

You won't have any trouble recognizing older applicants who "get it". You'll have a hard time estimating their age due to contradictory clues. You'll see recent new experience on

their resumes. These are your most valuable future employees - hire them quickly, before someone else does.

When hiring older software engineers, I talk with them about their early experience, and mentally count the entirely different machines and languages that they have had significant experience on. Where this number is 5 or greater, as it usually is, I know they'll quickly come up to speed and have no problem with any of today's tools.

### **What to do with an Older Engineer**

Now that you have hired an older engineer, what do you do with him?

Dual appointments often work best. In addition to their assigned duties, they should be utilized to periodically review everything in the company within their skill set. They will find countless problems before they become visible problems, when they are still cheap to fix.

This presumes that your company is into project reviews. Aside from finding problems, project reviews are an excellent way to educate junior engineers and to improve your products. Those with experience with project reviews are usually enthusiastic about how much you get for how little you spend.

Of course there are always those younger engineers who don't want their work scrutinized. This should tell you something about what they think about the quality of their own work. Certainly, resistance to the light of day is no reasonable basis for leaving things in a potentially bad way.

Another technique is to set up an apprenticeship or mentoring program, where junior engineers have direct access to an older engineer who is not their direct supervisor. Here, the older engineer can show them the easy ways without the risk of embarrassment that asking such mundane questions of a supervisor might bring. Rotate these assignments from time to time, so that the junior engineers can get the best of what several older engineers have to offer.

### **How to Help a Friend or Loved One**

Go down the checklist and cover the bases that aren't covered. Being a good coach, how can you fail? If you encounter strong resistance on an important element, e.g. he doesn't want to cover his bald spot, doesn't want to take nutritional supplements, etc., then effective help may be impossible. Explain this to him in blunt and undeniable terms. He's an engineer, give him a chance, he'll figure it out. Covering the remainder of the bases will NOT make up for important ones that aren't covered. Most people die by their own hand, and some older engineers prove this principle by refusing to take the steps necessary to succeed. The checklist is:

1. Appearance. Cover the bald, grow some facial hair, and paint the gray.
2. Take a broad spectrum of nutritional supplements.
3. Acquire the latest tools and become proficient in them.
4. Do a personal project to demonstrate proficiency in the latest tools.
5. Sell consulting services in parallel with job hunting.
6. Attend lots of Special Interest Group (SIG) meetings.
7. Don't waste time with job fairs or employers who don't hire older engineers.
8. Renew old friendships and call long lost associates. They may now need YOU.
9. Get involved with one or more unfunded startups.
10. Reduce expenses and prepare for lean times.
11. Keep your resume' consistent with contemporary resume' construction.
12. Use your resume' as little as possible, as they don't work well for older engineers.
13. Get on the Internet to stay current.

### **Conclusion**

Look around your company - are half the faces over 45 as in the general population, or do you see 80% younger faces as in most of Corporate America? Are you hiring people for a lifetime based almost entirely on their experience on things that are only a year or so old? Are you hiring people on H-1B visas rather than looking for older engineers for the same positions? While foreign workers may be up on the latest technology, most employers discount the value of the American cultural experience as an important prerequisite for engineers designing successful products for sale in America. Further, any competent programmer, regardless of specific skills, can come up to speed on your equipment faster than you can get a specifically qualified H-1B person in house. Foreign workers are well known for their low productivity despite their qualifications, sometimes as low as  $\frac{1}{10}$  of their domestic counterparts<sup>2</sup>. Hence, you will almost certainly spend more and take longer using H-1B workers than using older engineers.

We all notice the grammatical errors in documentation that tell us the nationality of the author, which thereby greatly reduced the value of the product in our own minds. We have all seen products where a tool is needed to operate a control, as our fingers are too large. In many ways, foreign engineers often significantly diminish the value of what they design, in subtle ways that often make it into the marketplace.

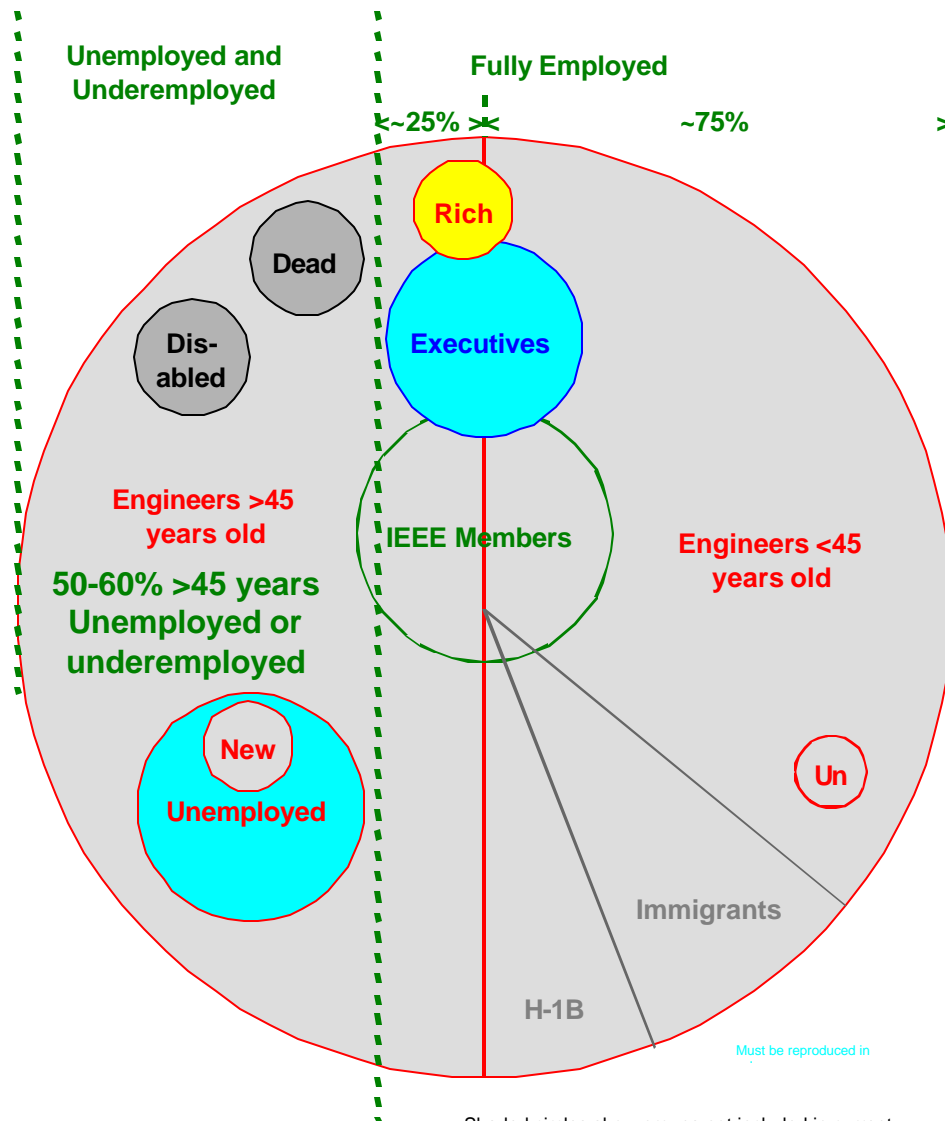
When you prefer younger and foreign workers, you are telling your most experienced workers that they had better start looking for work elsewhere, quickly, before they are aged out. This leaves your company vulnerable to the expensive errors those young engineers so often make.

Hire older workers on their way up, and your company will enjoy the success that their experience brings.

## Bibliography

1. *AN ANALYSIS OF UNEMPLOYMENT TRENDS AMONG IEEE U.S. MEMBERS* by Laura Langbein, PhD. This contains a wealth of detail, and leaves no doubt in anyone's mind regarding the seriousness of this situation. <http://www.ieeeusa.org/EMPLOYMENT/langbein.pdf>
2. *Debunking the Myth of a Desperate Software Labor Shortage* by Dr. Norman Matloff. This clearly explains how and why there is no actual problem for the H-1B visas to solve. <http://heather.cs.ucdavis.edu/itaa.real.html>
3. *H-1B Visa LCA Database*. This site allows you to search by employer, job title, or location to see who is hiring H-1B people and for what, and see just how little they are paying them. <http://www.zazona.com/ShameH1B/VisaDatabase.htm>
4. *Visa bill opens doors to 600,000* by Bart Jansen of Associated Press, printed on page E1 in the October 4<sup>th</sup> issue of **The Press Democrat** of Santa Rosa, California. Therein, he cites the independent Center for Responsive Politics for providing the \$22.1 Million lobbying figure.

# Career Expectations for US Engineers



## Notes:

1. Most engineers are CS/IT, which has been hit much harder than EEs.
2. 59% of H-1Bs are computer related, while only 5% of H-1Bs are EEs.
2. 80% of employed IT engineers are <45 years old.
3. Industry apologists are not older IT engineers, who know better.
4. 83% of IT workers are native-born citizens.
5. 2.2 million people in core IT occupations.
6. Only 19% still programming 20 years after graduation.
7. Only 2.3% of programmers qualify for unemployment benefits.
8. 90% of older degreed scientists and engineers are somehow employed.
9. 7% of H-1Bs are over 40.

#### About the Author:

Steve Richfield is usually the most senior high-tech consultant in every professional organization in which he is a member. Remember the early picture of Bill Gates and Paul Allen with the Teletype between them? Steve installed that Teletype, helped teach those kids programming, and was recently brought back by Bill Gates' personal invitation to Microsoft to meet with his entire research staff. Steve has personal experience with all of the alternatives presented in his paper.