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## Address to the New England Council Board of Directors

Richard M. Freeland (1941-)  
*Northeastern University*

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**Northeastern**  
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## Speeches

### **Address to the New England Council Board of Directors March 14, 2001 Washington, D.C.**

I am pleased to provide an update on the work of the New England Council's Commission on High Technology Workforce Development.

The commission was established last winter in an effort to better understand the labor supply problems that confront employers of scientific, engineering, and information technology (SEIT) workers in New England. Our goal is to develop proposals for improving New England's SEIT labor market pipeline. Let me say at the outset that I personally regard this issue as one of the most important challenges we face as a region; unless we can find a way to increase the supply of highly skilled workers to sustain our technology-driven economy, the growth of the region will be significantly constrained and our future vitality severely imperiled.

Before I continue, I should take a moment to express my appreciation to the New England Council and its outgoing chair Anne Finucane for spearheading this effort. The leadership Anne and the council have provided has given us not only substantive support but considerable visibility and has served as an important impetus for our work. I also want to thank Peter Meade for his interest and support as we move forward.

This effort also has received support from a number of other sources. They include:

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SPEECHES  
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- FleetBoston Financial Corporation
- State Street Bank
- the Mass Technology Collaborative
- the Mass Software Internet Council
- the U.S. Department of Labor, and from
- Northeastern University.

The Commission on High Technology Workforce Development has 18 members representing industry, government and academia from all six New England states. Northeastern University's Center for Labor Market Studies is overseeing the commission's research, and I am pleased that the center's associate director, Paul Harrington, is here with us. Let me also say that Paul has been the driving force behind this effort from the beginning, and for my money, he is one of the most important sources of solid information on labor market issues currently available to policy makers in New England. The entire region is deeply in Paul's debt for the important work he has done.

Today I will provide a progress report on the commission's activities, which are still a work-in-progress, and I will summarize our plans for the next six months. This coming September is D-day for us. At that time, we will release findings of a region-wide hiring survey, and we will publish a comprehensive report that presents our findings and policy recommendations. We will also hold a region-wide conference at Northeastern University to publicize our recommendations and build support for action. So we are on a tight schedule, but it is a schedule that befits the urgency of the challenges we seek to address.

The work of the commission centers on three primary tasks. First, we are measuring the shortage of skilled workers in SEIT fields in New England. Second, we are assessing the nature and causes of the shortage. And third, we are developing a practical action plan. I will briefly touch on each of these.

## **I. The Size of the Shortage**

Our first task is taking stock of New England's need for high-end SEIT workers. There is much anecdotal

information in this area. News reports and op-ed pieces regularly include comments from business leaders to the effect that high-tech labor shortages are strangling economic growth in New England. I share these views and applaud these expressions of concern, but we need hard data to justify significant policy initiatives.

So last spring the commission sponsored a job vacancy/labor turnover survey in Massachusetts. In summary, the survey found job vacancy rates in excess of 10 percent in high-end SEIT labor market segments. The survey revealed that, unlike in most other labor markets, turnover was not the primary source of vacant jobs. Rather, we found that the majority of vacancies were the result of efforts by firms to expand output and employment. No stronger case than this can be made for a true labor shortage. The results of our study were widely publicized with a front-page headline in the Boston Sunday Globe along with a number of follow-on pieces, including an op-ed by Anne and myself on the need for expanded IT-related retraining programs.

Assuming that the past is prelude, we might expect that this survey, conducted when the economy was booming, produced results that were merely a reflection of the dynamics of a cyclical economy and the fact that the United States has experienced a long economic expansion over much of the last decade. Now that the economy is cooling, some might wonder whether we will now see an abatement of the high-tech labor market shortage. Our Center for Labor Market Studies will be testing this proposition this spring when it conducts a second job vacancy/labor turnover survey that will cover the entire New England region.

While we await the outcome of this next survey, our work is predicated on the presumption that New England is confronted with a high-tech labor shortage different from those we have seen in the past and distinct from what the nation's other regions face. During the 1990s, the nation's labor force grew by about 10 percent, and more than four in 10 of these additional workers were new foreign immigrants.

In New England, our regional labor force has increased by only about 1 percent since 1990, and this gain is solely attributable to foreign immigration. What this means is

that, over the last decade, nearly all new jobs generated in the U.S. were located outside New England. Let me say that again, because it is so striking and important: over the last decade, nearly all new jobs generated in the U.S. were located outside New England.

When we combine nearly a decade's worth of stagnant labor-market growth with the burgeoning of technology-related industries in New England, we have a long-term structural problem. The obvious concern here is that a shortage of skilled labor, especially in technology-intensive sectors, will pose an increasingly severe constraint on New England's economic growth. This is likely to be a concern, incidentally, even if the economy continues to cool. Even relatively severe increases in regional unemployment are unlikely to increase the availability of trained workers in the numbers needed to sustain regional economic growth. Moreover, it takes time to expand the labor-market pipeline, which is the real challenge we face.

Therefore, even if we go into a recession, we need to take steps now so that we are ready to expand when the next recovery comes. Our survey this spring will give us a better sense of the scope of the challenge we face, regardless of the region's immediate economic fortunes.

## **II. The Cause and Nature of the Problem**

In addition to measuring the size and structure of the shortage, we have sought to better understand its cause and nature. We have been holding public forums that bring together educational and business leaders, government officials and others with particular knowledge about high-tech labor markets. The commission has held public forums in New Hampshire, Maine and Connecticut. In April we will be meeting at EMC Corp.'s headquarters in Franklin, Mass.

To support and supplement these public forums, Northeastern's Center for Labor Market Studies has been conducting surveys and preparing reports that provide an additional basis for our deliberations. We are looking at five critical areas:

- First, the quality of math and science education at the K-12 levels and the readiness of New England's high school graduates to enter SEIT fields in college.

- Second, higher education's ability to prepare full-time undergraduate students in SEIT fields and launch them into SEIT careers.
- Third, the domestic migration of college graduates and other workers into and out of New England.
- Fourth, the potential to bring untapped pools of talented labor into the SEIT fields through retraining.
- \* And fifth, the all-important issue of immigration.

Let me touch briefly on each of these.

### **K-12 education**

K-12 education is the first step in the SEIT labor market pipeline and, simply put, K-12 education needs to do a better job preparing high school graduates to major in SEIT fields in college. International comparisons of the math proficiencies of high school seniors reveal that American students score well below the average of their counterparts in other industrialized nations. Moreover, over the past 20 years, the fraction of college-bound seniors indicating a preference to major in SEIT fields has fallen from more than one in four to less than one in five.

More recently, there have been modest signs of reversal of this trend in the information technology fields, but not in math, engineering or the sciences. The commission is trying to understand what is behind this trend. We think a number of factors are at work. For one thing, we suspect, even in this age of information technology, that there is a cultural bias among American youth against SEIT fields as fields of interest and work. Too many young people seem to associate interest in math and science with some form of "nerdism" or "whimpiness" rather than with the adventure of exploration or the energy of economic growth.

A further problem is gender bias with respect to SEIT fields. In New England, young women constitute a substantial majority of our entering freshman classes. Yet, females are only two-thirds as likely as males to score 600 or above on the math SAT. Moreover, those young women who score well in the math SAT are much less likely than young men to choose to major in SEIT fields in college. So

the forces at work in this arena are complex and deep and not necessarily amendable to quick fixes within the schools.

But steps can be taken within the K-12 system to counterbalance cultural forces that undermine student interest in SEIT fields. At the top of this list is the quality of teaching and programming students encounter. In a survey of schools in southern New England, the commission found that between 7 percent and 10 percent of those teaching math and science lack the minimum certification required to teach in these fields. In the case of last year's new hires, it's one-quarter to one-third of math and science new hires who lack the minimal qualifications for certification in these fields.

One of the ironies of the tight labor market is that math and science teachers who leave education and enter into other professional fields can earn about 55 percent more per year than their counterparts who remain in teaching. The commission is taking a long hard look at the way teachers are compensated. We need to at least consider whether now might be the time to begin differentiating teacher pay by specialty to make it more competitive in the labor marketplace, as is now the pattern at the college level.

## **Higher Education**

The shortage of high school graduates who are both interested in and prepared for majoring in SEIT fields in college has a considerable impact on higher education. It may well help explain one of the more fascinating and troubling paradoxes the Commission is grappling with. In the past, academic planners have assumed that the job market rules; that once students know where the good jobs are to be found, they will tend to major in fields that will prepare them for those jobs.

Lately, this rule has not held. Over the past 15 years, while the demand for SEIT graduates has reached an all-time high, and despite significant government-supported efforts to promote study in SEIT fields, the number of students completing SEIT programs in college has declined by 8 percent, while the number of undergraduate degrees granted in non-SEIT fields has increased by 26 percent. A similar pattern is apparent at the graduate level, and

would be much worse were it not for the large number of foreign students that populate our advanced degree programs in these fields.

What is driving these patterns? Clearly, at the undergraduate level, the quality and the interests of high school graduates is one of the causes; to a degree, colleges and universities must play the hand they are dealt. But some of the responsibility lies with higher education itself. In the era of big science, with most of the money and most of the glory going to research activities, some of us in academia have not paid as much attention as we ought to our undergraduate programs. Teaching at the undergraduate level can leave much to be desired. In SEIT fields, large lectures remain the standard approach to instruction, with small discussion groups often led by poorly trained graduate students, many of whom speak at best halting English. In addition, too often faculty members are more interested in the handful of students who are future doctoral candidates rather than the majority of undergraduates headed out into the job market.

The commission has organized a panel of employers of New England high-tech workers under the leadership of Bill Hogan, the chancellor at UMass-Lowell, to figure out how best to ensure that the undergraduate SEIT curriculum remains current with the demands of the market. I fully expect our final report will have some strong marching orders for higher education.

## **Migration**

Our third issue involves the migration of college graduates and other workers into and out of New England. I have already spoken of the region's stagnant labor market growth. One of the main reasons for this has been the departure of talented workers from the region. According to a study prepared by the center, between 1990 and 1999, a half million more people left New England than moved here. Among those who left, more than half were between 25 and 34 years old, and one-third had bachelor's or graduate degrees.

New England used to be a magnet for talented and highly educated workers who saw the region as the best place to answer their calling and make a living. We have traditionally been proud of the fact that many young

people came to New England to study at one of our fine colleges and universities, then stayed on after college to contribute to the talent pool of the region. As recently as the 1980s, in fact, many more talented workers moved into the region than moved out of it.

If, today, the region's glow is fading for many young, well-trained professionals, we need to figure out why and what we can do about it. The commission is using data from the 1997 National Survey of Recent College Graduates to examine the migration behavior of New England graduates. We want to know how many have left New England, and why? How many college graduates and workers come to New England from outside the region? It is likely that countering the migration of talented workers out of New England will be one of the most vexing challenges the region faces, but it is an issue we must face head on.

### **Retraining/Skills Upgrading**

We must also consider whether there are untapped pools of talented labor that can be brought into the SEIT labor market. One such pool is made up of college graduates who did well in school, who are not using their college degrees at their jobs, and who are therefore underemployed. They are prime candidates for retraining, but they can face barriers. Presently, for example, low-cost loans are only available to students enrolled in programs that lead to a post-secondary degree. For college students looking to re-tool themselves for a high-tech job, however, non-degree continuing education programs are often the best routes into the industry.

We already have some meaningful proposals to overcome this obstacle, which I will discuss shortly. A second potential pool of high-tech workers can be found among workers currently employed in declining industries or occupations and those recently displaced from jobs in such fields. Higher education, along with numerous public and private enterprises, need to do a better job helping graduates and incumbent or displaced workers who are not working in SEIT jobs to gain the skills they need to enter this vital sector of the economy.

### **Immigration**

Another source of workers, and our final area of inquiry, involves the vital but often contentious issue of immigration. Clearly, providing education and training for our own young people and current workers must be our top priority. But, given the structural issues I have reviewed, there is plenty of room for new arrivals as well, especially in a country that has always benefited from the energy and talent of our immigrant population.

In this context, I applaud the council for its strong stand in the successful recent effort to expand the H1-B high-tech visa cap. I was pleased that Anne Finucane and I could join in by publishing an opinion piece in the Boston Globe supporting that expansion while also calling for increased funding for education programs for domestic workers. That said, we must admit that the H1-B visa program has its limitations. The visas are temporary, when what we are dealing with is a long-term structural problem. Moreover, the program needs to be continuously renewed, exacting considerable political capital from its supporters.

Over the next several months, we will examine the role of immigrants in SEIT labor market in greater detail. One of the more interesting things we are seeing about this issue is the strong connection that exists between immigration and American higher education. Today, more than one-third of all graduate students enrolled in SEIT-related programs in the U.S. are foreign born and hold a visa allowing them to enter the US for educational purposes. More than 90 percent of foreign-born workers employed in the SEIT professions in the U.S. are graduates of American colleges and universities. We are planning to organize a hearing in the late spring to consider whether there are ways we might improve existing immigration policies, including those that impact upon foreign students in American universities, by linking immigration more closely to labor demand.

### **III. Forging Solutions**

The work I have described is providing a substantive basis for the commission's deliberations and we expect to produce recommendations addressing each of the five issue areas I have outlined. While we have much to do before we can rollout our entire package, we have already begun to take some practical steps to begin to address some of these issues.

- We have worked with the Association of Independent Colleges and Universities and the Massachusetts state Legislature to create the Commonwealth Futures program that funnels \$10 million annually to private colleges and universities so they can expand the number of SEIT students they enroll. This is the first program of its type in the region devoted exclusively to expanding educational opportunities in SEIT fields.
- We are working with the Corporation for Business, Work and Learning, a quasipublic workforce development organization, to develop a government-sponsored training initiative: the High-Tech Re-Entry Program. This program is designed to provide information-technology skills to underemployed college graduates (primarily with degrees in liberal arts) who have yet to gain access to jobs in the college labor market.
- Building upon these two efforts, we are working with Senator Kennedy's office to create a national skill-upgrade program aimed at providing information-technology skills to under-employed college graduates.
- We have also begun work with a number of regional banking institutions to develop low-cost loan packages for persons with two- and four-year college degrees who are enrolled in nondegree high-tech skills development educational programs.
- Finally, we are working with the Massachusetts Business Roundtable to study ways to enhance the region's infrastructure, including housing stock and transportation systems, to make New England an attractive and affordable place to build their lives and careers.

#### **IV. Conclusion**

These are examples of the kinds of initiatives I expect to see the commission developing and launching or recommending in September. I have spent some time outlining the range of issues we are exploring to underscore two central themes: First, many factors are combining to shape New England's contemporary labor market and we need a comprehensive strategy for addressing them. Second, I do believe that we are dealing with a structural condition, long in the making, and one

that will require both short-term and long-term solutions.

There is strong evidence to suggest, for example, that a primary cause of the migration of skilled professionals out of New England is the high cost of housing in the region. Many of us, Northeastern University included, are doing what we can to create new affordable housing and to free up existing apartments by building more student housing on campus. As a region, however, we have only begun to scratch the surface of this challenge.

Our goal, by this September, is to have the commission and the council in full support of a comprehensive strategy that will make a meaningful impact on the shortage of scientific, engineering and information-technology workers in New England. We will be seeking the participation and support of the region's six congressional delegations, as well as action at the state level, within higher education, and within the business community. We will certainly be keeping this board apprised of developments within the commission as we press toward our region-wide conference at Northeastern University in September, and I hope that we can count on your support for the policy agenda we develop.

I want to close by reiterating my appreciation to the New England Council for spearheading this effort. Anne and I are very appreciative of the strong support our work has received from the Council and of the hard work of Jim Brett and Larry Zabar in managing the day-to-day activities of the commission. The council is widely regarded as a leading voice in the effort to secure a strong economic future for the region. I hope that all of you are proud about the ongoing efforts of the commission to put the region's labor market needs at the center of the local and national agendas, right where they belong.

I would be glad to answer any questions you might have. Thank you.