

Harvey F. Silverman

## And for the Rest of Us . . .

**I**ntellect and timing are both major factors in our careers. There are those who are extremely bright, have the good fortune of being in the right place at the right time, and have the inherent leadership qualities that entice others to follow them. These are among the most influential persons in our field. This article is not meant for these folks. It is for the rest of us. I think my career fits with “the rest of us” pretty well; I have had my share of failures, being overly stubborn, and being naive in addition to having some nice successes and great camaraderie. I also believe that smiling is vital in everyday life, so I have tried to use a humorous style in the article. Thus, I first give a brief review of what I have done and a little of why I did it. Then I try to make a few points on taking a leadership role, based on my observations of success and failure. Failure is often difficult but a great “learning experience.” Hopefully, my thoughts will provoke a few ideas in those who read it.

I’ve just turned 60 years old and have been asked to reflect and put down some pearls of wisdom on the topic of leadership from the perspective of an former dean of engineering, technical, signal processing person. Moreover, the directives said it would be great if I could make some “future projections” based on my life experiences. Perhaps the one thing that my life experience has taught me is that “future projec-

tions” are either for fun (places like this article) or for venture capitalists (who seem to need to have startup teams predict super optimistically, no matter what).

### Starting Out

Finishing my Ph.D. dissertation at Brown University in June 1970, applying some of the new DSP stuff to control-system identification, I walked out into a difficult job market, somewhat like today’s, yet different. A poor job market then meant a recession cycle, but we all knew that some neat opportunities were out there, and that there would be a recovery. AT&T, IBM, GE, and RCA were great research centers in my area and were hiring, albeit only a few. Many defense and manufacturing companies were scurrying for people, again only at a lower rate, but they were making products and hiring. It was also a growth period for many universities, in particular, as many in the Northeast were looking for more minority candidates and changing from single-sex to coed. Many of my contemporary Ph.D. graduates were having their troubles finding a position (they all eventually did quite well), but their confidence in the technical enterprise was not shaken.

In 1970, I had no interest in academia and was very pleased when I was offered a research staff membership at IBM Research. I felt this would be a great middle ground with the advantages of doing lead-

ing-edge research without having to teach and getting to work with outstanding technical people. The job I took was in image processing. Would you believe IBM wanted to look at satellite imagery to help with managing earth’s resources? IBM Research was only one of two places that could process images digitally and, at least this time, I saw the

Harvey Silverman is well known for his leadership accomplishments in industry, academia and IEEE. In his mind, intellect and timing are both major factors in our careers. There are those who are extremely bright, have the good fortune of being in the right place at the right time, and have the inherent leadership qualities that entice others to follow them. This article is meant for the rest of us, the group in which the author considers himself a member. Harvey first gives a brief review of what he has done and a little of why he did it. Then he makes a few points on taking a leadership role. These are based on his own observations of success and failure; failure is often difficult, but a great “learning experience.” Believing that smiling is vital in everyday life, he uses humorous style. I hope the ideas of the last part of the article will provoke a few thoughts in those who read it.

—Arye Nehorai

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future correctly that digital processing was going to take over the discipline. My great plan was to stay three years, write seminal papers—I would have a great technical advantage over my peers because of IBM’s preeminent position—and then go start a company or, at least, get a job at a higher level that would allow me to apply all that I had learned. Uh-uh. After six months, IBM research killed virtually all its efforts in image processing! Someone in the management chain had decided that image processing was not important. Here was my first decision point, and being there only six months, I really did not consider it a big decision point. After a year doing statistical performance analysis of 360’s—my year in purgatory—I was included as a member of a new project on speech recognition. I had a new area to learn, so my three-year plan was out the window. After three additional years and a lot of papers published, once again in a group that was strongly advancing an area with new techniques, I was certain the timing was right for a limited vocabulary, real-time speech recognition system. Another decision point—should I stay at IBM or try to do it elsewhere. A year of managerial politics and I found myself heading such a project. We were technically successful; the hardware and software worked well. However, IBM was not ready to consider speech recognition yet as a product in the very late 1970s no matter how hard I banged on every internal door. This was a critical point for me. Did I want to 1) slowly rise up the management chain at Yorktown, leaving “hands on,” 2) remain at a more technical level at IBM, or 3) do something else. When Brown University gave me an offer of a full professorship in 1980, I took it. For the first time I had to consider the academic world.

### **Academia, After All**

I found that I enjoyed the interactions with students and the changing seasons. At IBM, summer never came, and the faces were always the same! I could also be entrepreneurial and started an early speech recognition company, Sphere Technology, which failed when our backers thought it would take too long for the market to develop. I must say, however, the lessons were invaluable. I understood a lot more of the real world that was becoming more and more entrepreneurial.

In 1991, and at age 48, our rotational position of dean of engineering was offered to me. After some consultation with several close friends from the speech/signal processing community, I decided to take the job which I held for seven years. By now, as a research staff member, a young manager, a professor, and an entrepreneur, I had accumulated a body of knowledge on how the job of dean could be approached. One of the errors I had seen on the part of several predecessors who did not have any outside experience was that the focus was a bit on micromanagement and too little on the larger picture. At IBM management school (affectionately called charm school by Research attendees), the importance of NOT micromanaging had been made very clear. Thus, I let my staff handle most everyday details, and I set to work on a few larger goals. First, in an unfortunate time of a slight faculty reduction through nonreplacement of retirees, I wanted to continue the Division’s policy of making “islands of research excellence,” not covering all research areas but forming strong groupings of faculty who could collaborate within and outside of their group. This involved the dissolution of one program and its reestablishment in a new direction as well as many other hard choices. Second, I dug into a book on the history of Brown and

found that I could reasonably say that our engineering program would be 150 years old in 1997, so, when I took the job, I obtained the president’s early support for a large celebration in the fall of 1997 for our sesquicentennial celebration. This turned out to be a very successful four-day event that attracted alumni, faculty, students, great honorary-degree awardees, and local politicians. It was the perfect kickoff for a vital phase of our program in which I wanted to raise all the funding a priori for a new building to house our undergraduate laboratories. I focused on this, and it all got done (although the bricks and mortar were completed after I finished my term as dean)!!

Life did not end at that point. I have returned to teaching and research and am having the most fun ever in that I am working only on problems of great interest to me. I am somewhat fortunate in that I could continue most of my research when I was the dean and in that time filed a few patents that have since been licensed. Brown’s patent policy is such that some of the royalties go back to support the research, so that allows me some real flexibility.

### **Leadership Thoughts**

So what was it all about? What can I impart to you, the younger reader, that will change your life? Probably very little, but let me suggest a few ideas anyway.

One concept is that, like the gain-bandwidth product of an operational amplifier, there seems to be a *wisdom-enthusiasm product* for each technical individual. Of course, some are blessed by having this product higher than others, some start out with little enthusiasm even in youth, and, in rare cases, there are those for whom this product grows larger with time. This last type of individual represents a truly great contributor to

technology. They are able to apply vast knowledge while maintaining a child-like enthusiasm for the world around them. However, for the rest of us, it is fair to hypothesize that this product is approximately constant for an individual over her/his lifetime. Unfortunately as your true wisdom, and I do not mean raw intelligence, accumulates, your enthusiasm wanes. If you think of each of these as a dimension of a rectangle, is there a particular time when the rectangle turns square—some optimum point? Probably so. Ask a venture capitalist if he/she likes to support a team of 25-year olds, or, for that matter, 65-year olds. Universities like to appoint presidents with a bias toward wisdom, but with as much enthusiasm left as possible (it takes energy to

raise money), and often appoint a person in her/his fifties. CEOs of large companies are often appointed in their forties. Besides lower costs, industry likes to hire 25-year-old researchers because of their great enthusiasm. In some sense, industry is happy to sacrifice “wisdom” because, in many cases, dynamic energy and a “damn the torpedoes, full speed ahead” attitude wins. Perhaps knowing as a young person that you will be reaching this “square point” some time in your forties or so will help you in your life’s plan.

Another inward look that is there for all of us might be called the *TTY threshold*—don’t we all love acronyms?—a “True To Yourself” “line in the sand” that, I hope, each of us establishes. The TTY is that threshold below which you may sell out and above which you will likely say no way. If your threshold is very low, I hope your enthusiasm-wisdom product is sufficiently high to allow you to get new jobs consistently! If set too high, you will be perceived as a great team player, but, perhaps, too much of a yes man, effectively sealing you from the best top-management jobs. For most of us in the middle, we challenge this threshold almost on a daily basis. The pearl here is that as one ages, we move more easily from the idea of selling out to that of being a wise compromiser. In my own case, I think my TTY threshold was always slightly lower than that of many of my colleagues, and it caused me a lot of mind-wrestling with whether my stance was correct. I’m sure I would have risen in the chain faster, at least to some point, were I to have had a higher TTY threshold; some of my managers wanted yes men. However, in the wisdom of retrospect, I am not unhappy with the results.

Finally, I like to talk—most say too much. I had to learn to listen and listen with the intent of full understanding. This was my own

personal problem that, when it was uncovered after all the years of schooling (I think this was masked in the respect I showed for teachers and professors), I set out to address as I went through my career. I am certain that any successes I had as dean were based in large part on becoming a good listener. However, one does not really change his/her personality; it takes conscious effort to curtail one’s natural inclinations for the sake of succeeding in a leadership role. This introspection was essential in that deans have to build by consensus, and integrating the ideas of others, not really by fiat.

### My Advice

So my advice is 1) assess your wisdom-enthusiasm product and establish where in your career you think you are, 2) think about your TTY threshold level and ask yourself whether you are comfortable with it, and 3) determine the area of your behavior that YOU would like to see improve and do something about it! And finally, never look backwards mourning over the path not taken, be the best walker on your current path.



*Harvey F. Silverman* received the B.S. and B.S.E.E. degrees from Trinity College in Hartford in 1965 and 1966 and the Sc.M. and Ph.D. degrees from Brown

University in 1968 and 1971, respectively. He worked for IBM at the Thomas J. Watson research center from 1970 to 1980 and then was appointed professor of engineering at Brown University. He was the dean of engineering from 1991 to 1998. He was the general chair of the 1977 ICASSP and received an IEEE Centennial Medal in 1984. He was a Trustee of Trinity College 1994–2003, and is a Fellow of the IEEE.

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