

THE GLASS CEILING: HAVE WE BROKEN THROUGH?

Lynn E. Bertuglia, P.E.

National Society of Professional Engineers
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It is indeed a privilege to be invited to address you today. During the past three years, I have had the opportunity to talk to, and interact with, and learn from many organizations throughout North America that are working to increase the numbers of women practicing engineering, and the success of those already in the field. Of these many organizations, I consider WEPAN to be one of the most important players. Your members are on the front line every day, dealing with young women, and giving them the encouragement it takes to keep them from giving up. Your corporate members are a "Who's Who" of industry good guys; the efforts of these companies are a beacon to the employers who are trying to do the right thing.

Three years ago, if you had suggested that I would be standing before you today, representing the National Society of Professional Engineers, telling you about the attitudes and prejudices of male engineers, and the implications of these "filters" for the advancement of women in engineering, I would have suggested that you slow down on the margaritas. As a matter of fact, it was just about three years ago last month that one of the NSPE past presidents approached me about addressing the NSPE plenary session on the topic of "Women Engineers in the Pipeline." He wanted me to share what I knew about career guidance. Since I'd been a good SWE member for more than a decade, I felt pretty confident of my ability to cover that subject.

In spite of the fact that I had been involved in career guidance for all those years, the first thing I did was scour the journals for facts and figures. As luck would have it, both the Cooper Union survey and the report of the US Congressional Task Force on Women, Minorities and the Handicapped in Science and Technology were very hot news at the time I was doing my initial research. What I was searching for was information about how the number of women in the profession was growing; what I found was that it was hardly growing at all. But this did not surprise me nearly as much as the fact that the percentage of women enrolled in engineering had levelled off. I had been going merrily along, assuming that more and more girls were choosing engineering, resulting in more and more women in the field, and that as a result, we were approaching a critical mass where no one would ever again have to hear those familiar words "I hired a woman engineer once..."

Although my mission was to share what I knew about career guidance for girls, I was quickly sidetracked into trying to learn why our progress in attracting young women into engineering was so limited. I concluded that the attrition of women from

the field, and the system's failure to attract or retain young women in our engineering schools was symptomatic of the lack of visible progress of those women practicing in the profession. My conclusion was shared by many others, most notably the three other individuals who addressed the same NSPE session.

Over the course of the months that followed, I spent a lot of time mulling over what I had learned and talking with others about how women were faring in our profession. And what I learned really surprised me. I learned that in some ways, women engineers are a group of very unhappy campers. Most of them are interested in and challenged by their work, and most of the women I talked to are glad they chose engineering. But almost every one over the age of 30 was dissatisfied with how her career was progressing.

But the thing that was the most surprising to me was that I had never had an inkling that this undercurrent existed. In spite of the fact that I have been a very active member of SWE for fifteen years, and have many, many women engineer friends, I had no idea how other women engineers felt.

There is one thing you must understand, and if you only leave here today with one thing, let it be this:

Engineering is such a male dominated profession, with such powerful pressure to conform, that women, in the interest of survival, ignore, discount, and try to disguise the things that we, as women, have in common, as well as those experiences and characteristics that make us different from our male colleagues.

The implication of this is that many, if not nearly all women engineers, have been going around thinking "You're Okay, but I'm not." But pretending to others that we are, in fact, just great. Until the reports of surveys of women engineers were published, we didn't share our disappointments and self-doubts with each other. It was as if each of us had four or five pieces of a jigsaw puzzle, and not realizing that others held other pieces, we kept trying to get those pieces to form something meaningful. But individually we were unable to piece the puzzle together. I did not know how my friends felt.

Let me share a very sad, but true example. Last fall I received a call from the executive director of the Department of Labor's Glass Ceiling Commission. She had been contacted by a woman engineer in Kansas who was having a very rough time on the job, and seemingly nowhere to turn. I was asked to contact the engineer and offer whatever moral support or advice I could. One of my suggestions was that the woman become involved in SWE as a way of forming friendships with other women engineers in the area and in her company. Her reply was that she had attended SWE meetings, and had quit going because she didn't fit in. When I asked her to explain, she said that everyone else there seemed so happy. Now I know most of the women she was referring to quite well, and I can assure you that none of them were ecstatic. We put up a good front, whether out of pride or habit or eternal optimism.

When I started suggesting in small groups and one-on-one conversations that some women were not particularly satisfied, virtually every woman engineer I

encountered was quick to relate her "little shop of horrors." The stories sounded very much the same wherever I heard them. Women not being taken seriously. Women doing much more work for much less, if any, recognition. And the number one story of all: being passed over for promotion in favor of a fair-haired male with all the political skills, and little if any technical ability. What really put things in perspective for me was sharing what I was learning with some of my older friends, nearly all long retired from trailblazing careers. They were not surprised by what I told them; the stories were theirs, as well. It seemed that women had made little, if any real progress in the 40 years since Rosie the Riveter.

While I was gathering anecdotal information and pondering what it all meant, NSPE was becoming interested in the issue of the glass ceiling. With women comprising less than 5 percent of our membership, and effectively 0 percent of our leadership, you may rightfully wonder why. First, and foremost was the concern that women's lack of progress is hampering our ability to attract talented women into the profession. NSPE was spending big bucks on career guidance programs like MathCounts and Discover "E," but the actions of our employers were denying them the ability to be effective with one-half of their target population.

Second, our members had expressed concern for their inability to hire capable candidates. Especially women. These employers were losing out to the companies like IBM and DuPont with established programs to foster the success of their women. And last, but certainly not least was NSPE's desire to do the right thing. What we saw troubled us, and by us, I really mean the (male) leadership. As luck would have it, our president and president-elect both had daughters, and for that matter, so did our past few presidents. No one is a better advocate for women than a man who has put a daughter through college.

So we set out to do what we could. A "task force" comprised of me and a member of the NSPE professional staff brainstormed. We spent about a year studying the issues, and listening to engineering firm owners and human resource specialists, and men and women engineers. And after all that listening and studying, we decided that what we, as a largely white male dominated organization, could contribute was the male perspective. After all, surveys had been conducted to determine how women felt about their careers, and parallel surveys compared the responses to a group of male engineers of comparable age and experience. But there was no research about male perceptions of women engineers.

The Department of Labor defined the glass ceiling as "those artificial barriers based on attitudinal or organizational bias that prevent qualified individuals from advancing upward in their organization into management level positions.¹" When you break this definition down, the key words that jump out at you are "artificial barriers," "attitudinal or organizational bias," and "prevent qualified." Attitudinal bias is merely perceptions and stereotypes, based not on fact, but on expectations or acculturation. It is, simply stated, The System's attitude toward women. The Male Perspective.

In an October, 1991 hearing on the glass ceiling before the Senate Subcommittee

¹ U.S. Department of Labor, *A Report on the Glass Ceiling Initiative*, 1991.

on Employment and Productivity of the Committee on Labor and Human Resources, Sen. Paul Simon cited a study by the research group Catalyst, in which 241 corporate executive officers were polled on issues relating to women and the workplace. "Of those [who] acknowledged the existence of barriers to promotion for women, 81 percent said the barriers are based on misconceptions and stereotyping," Simon said.

In addressing the same Senate subcommittee, Women's Legal Defense Fund President Judith Lichtman stated "To further understand the term 'glass ceiling,' one must look at its component parts, the specific behaviors, practices, and attitudes that prevent women's advancement in the workplace. Working women face discrimination at every turn, at the point of hire, as well as on the job. Pay inequities, sex stereotyping, mommy-track practices, sexual harassment, lack of job-protected leave, and discrimination based on pregnancy and marital status are all components of this glass-ceiling discrimination."

Once we knew what we wanted to do, NSPE formed a real task force. The task force was comprised of all women, which gave us two very important advantages. First, the dynamics of the group were decidedly female; we all spoke a common language, and we could listen to more than one speaker at a time. The metaphor that comes to mind when I think of this group is that of a quilting bee; each of us brought our own squares to the table, but in the end, it was the collaboration of all those squares that shaped the final product.

The second advantage was that we all shared a very high opinion of the ability of women engineers. No one had to be convinced that women engineers are as capable or talented as their male peers. We knew that women are technically equal to our male peers; that we tend to be good communicators and good managers, but often we don't use the same managerial style as men. We knew that there are differences between males and female engineers, but we attributed them to style, rather than substance.

Our hypothesis was that women tend possess certain traits, strengths and abilities, and that men possess certain beliefs about the traits, strengths and abilities of women. To the extent that the males' beliefs are accurate, you have harmony. But when the prevalent beliefs are completely different than reality, you have a glass ceiling, an impenetrable barrier to advancement.

Our hypothesis is stated in a macro form, as in "All women are good at..." and "All men believe that..." It would seem that there are not many profound characteristics or beliefs you could cite that would have universal application. But based on our research, we came to realize that there are several almost universal attitudes, as well as some nearly universal characteristics. I will share some of those "almost universal" attitudes with you in a few moments, but first I would like for you to consider our hypothesis on another level.

The hypothesis is at least more relevant, and I believe much more profound on a micro basis. Consider an example. Susan is an exceptionally good manager. People like working for her, and appreciate her egalitarian leadership style. But her boss, who adheres to a dictatorial managerial style, thinks that she is a poor manager because no one is afraid of her. When it comes to choosing someone to promote, which is likely to win out - the reality of her ability, or her boss' perception? The glass ceiling is not

an intentional effort on the part of The System to keep women out of the boardroom. Rather it is supported on the perceptions and misconceptions about women held by those in power.

The first order of business in learning how male engineers view their female counterparts was to establish a frame of reference. We knew we couldn't just ask "what is your opinion of women engineers?" and expect to get meaningful answers. The frame of reference we selected was ten factors of success in engineering that had been identified by senior executives in private practice, industry and government. The factors were such things as technical ability, communications, judgement, leadership qualities, integrity, teamwork, and commitment. We held focus groups in which we asked male engineers of all ages to tell us how they thought their male peers would rate women engineers "in general" against these ten success factors.

What we learned in our focus groups was that men rated women very favorably in nearly all of the factors. They thought women were better communicators, that they tend to use good judgement, and exhibit a high degree of integrity. With respect to technical ability, not a single negative comment was ever heard, rather women were consistently rated as superior in the area of technical ability.

On the down side, men did not hesitate to say that some men don't like to work with women because they aren't comfortable with them. And their examples tended to be something like "well, they don't hunt or watch sports - what can you talk to them about?" Many well-intentioned men indicated that they would not assign a woman to a field project or an assignment on the shop floor because they thought the woman would not like it. One of the most memorable comments was that women engineers wouldn't like being assigned to a bridge project, but that the structural design of a boutique would be much more up her alley.

To me, the most startling and widely held perception was that when a woman is married, her career will take second place. When she has a baby, she is expected to lose interest in her career altogether! This is in sharp contrast to the expectation that when a man becomes a father he will knuckle down and work harder because he has a family to support.

Of course no focus group was complete until someone suggested that our monthly cycles often render us emotional, irrational and/or unpredictable.

In short, I was astonished to learn that men of all ages, in a variety of practice areas, and from across the country hold what I consider to be a 1960s Ozzie and Harriet view of the world. We subsequently validated our focus group research through telephone interviews with over 800 practicing male engineers.

I could go on and on about what our focus group and survey participants said, but the point I want to make is that these perceptions, many of them based on acculturation and limited firsthand experience serve to reinforce the glass ceiling. The message that came through loud and clear was that you can't invest too heavily in women because they will make men uncomfortable, and eventually they will leave you high and dry. The corollary is of course that women in higher positions will make even more men uncomfortable, and leave you higher and drier.

The topic of this session is "The Glass Ceiling: Have We Broken Through," and

the question begs to be answered. I cannot deny that women are making strides every day, and that some are rising above the din to assume very high positions. Without a doubt, there are companies out there that have figured out that a mediocre male is no match for an outstanding female (or dare I say even a mediocre female) when you are in the game to win. But sadly, there are many more that feel it is their duty to create and maintain a corporate minefield to test the mettle of those women who want to make a go of it. And I am very sorry to say that many women will decide it just isn't worth it before they have the chance to really find out what they are made of.

For many reasons, I see the 1980s and 1990s as sort of a cusp in the integration of women into engineering. In the 1970s, women in engineering were exceptional. That is, we were so rare, we were the exception. Each one was unique, and representative of only herself. Beginning in the 1980's, we entered into the anecdotal phase. There were enough women in engineering that almost every engineer knew or had worked with or hired **one**. These unfortunate women took on the cloak of Everywoman.

In many ways, we have not moved out of the anecdotal phase, yet we are already in the "What do we do now" stage. Women still comprise a relatively small proportion of the engineering workforce, but many of us have been in practice long enough to see differences in how we are treated and to demand equal treatment. The demands for equal treatment that women and minorities are making are placing stress on the system. Those women that are unhappy are voting with their feet, and leaving the profession. They are moving into law and medicine, and while they are enriching those professions, they are depriving ours.

Clearly we must find a way to retain those women, to give encouragement to those still in the profession, and to prepare our future practitioners for a career that will test them at every step. I believe the first step is to forewarn young women about what they are likely to encounter on the job. We should talk frankly and openly about sexual harassment, and interpersonal relations and fitting in. We must mentor at all levels, from the college student to those women well into their professional careers. We must learn about, and encourage other women to learn about male and female communication styles, and we must learn how to speak so that we will be heard. And if I may risk what may be construed as a political statement, we must learn to support one another. Instead of trying to distance ourselves from those radical women who call themselves "feminists," we must find the common ground that makes it possible for us to embrace their cause. But the bottom line is that we must work together, and support one another, and we must learn to celebrate that which sets us apart from our male colleagues. When we do so, we will enrich the practice of engineering, and the world in which we practice.