

EXPLORING THE CORPORATE CLIMATE FOR WOMEN ENGINEERS

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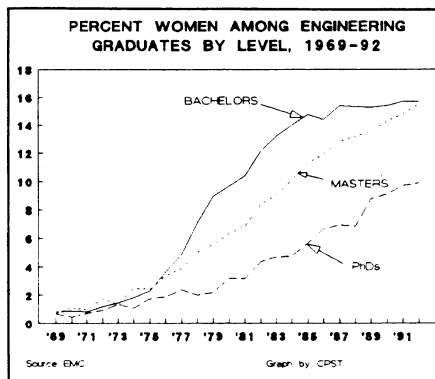
A significant feature of the corporate climate for women engineers is their scarcity. If there were more of them, some of the present patterns would change more easily. So before we look into the actual workplace, let's take a peak down the road to see how fast women are moving through the educational pipeline in preparation for joining the labor force.

The first thing to notice is that WEPAN is doing a great job, both in helping to recruit women, and in retaining their interest through the bachelor's degree. Although the number of freshmen dropped substantially with the dropping of the age group, there is less drop in the degree awards four years later, indicating better retention. The number of women BS graduates in engineering has averaged almost 10,000/year during the past decade. And most of those women are now in the workforce.

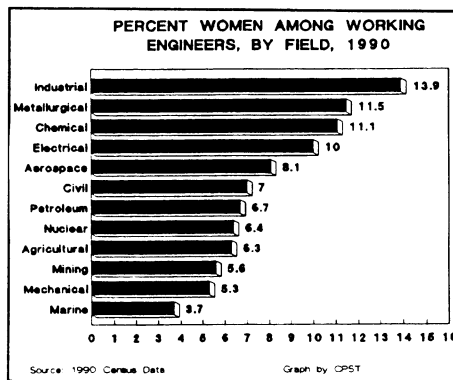
Looking ahead four more years, we see freshman enrollment of women rising after 1989, although the number of 18 year olds and of men was still dropping. WEPAN surely can take credit for some of that! If retention continues to increase, the numbers of graduates and work force entrants will rise also, increasing further the percentages of women among working engineers.

Some bachelor's graduates, of course, go on to graduate school, and women are now earning equal percentages of bachelor's and master's degrees - about 15%. They earned almost 10% of the doctorates awarded by American institutions in 1992, and if the foreign citizens are removed, women make up about 12% of the new American PhDs.

In 1980, the Bureau of the Census reported that women were 3.9% of working engineers - 56,241 women in an engineering workforce of 1,445,042.



The 1990 Census data show 156,283 women among 1,708,199 working engineers, for an overall representation of 9.1%. The increase of 100,000 matches quite well with the 97,000 women who earned BS degrees in engineering during the decade. Women are better represented among industrial, metallurgical, chemical and electrical engineers than among mining, mechanical and marine engineers. But their overall representation of 9.1%, more than doubling their presence, indicates substantial progress in a decade.



About three fourths of all employed engineers, both men and women, work in business or industry. Men are more likely than women to be self-employed; and women are somewhat more likely than men to be employed in an educational institution. But even among doctoral engineers, industry is the predominant employer. In 1989, only 33.6% of all employed doctoral engineers were employed in academic institutions; and only 3.1% of doctoral engineers employed in that year were women.

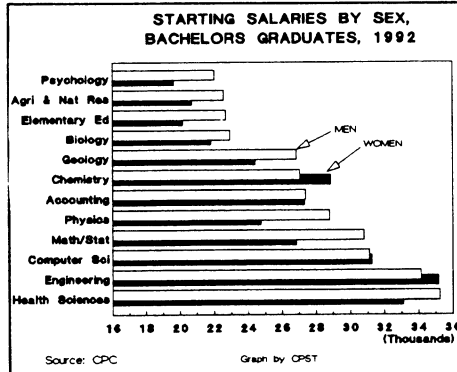
Women in Business and Industry

So how are women doing in industry? Most women would agree that the answer is "Not quite as well as their male cohorts." Several surveys emphasize some of the differences.

■ A pilot survey of employed men and women engineers carried out in 1990 by SWE found that the men expressed much more satisfaction with their work than women. On an index scale ranging from "Very Satisfied" (+2) to "Very Unsatisfied" (-2), women averaged +.46 compared to +.79 for men. By age groups, the men became more and more satisfied in older age groups while women's satisfaction lessened with age. Men saw their advancement opportunities much more positively than did women.

Salary satisfaction showed a similar pattern. In the younger age group, women were considerably more satisfied with their salaries than men. By the next age grouping, about six years later, men were leading both in salary and satisfaction, and in the oldest age group, male satisfaction and salary were well ahead. These reactions to salary were understandable, and based on correct perceptions. Although starting salaries for women in engineering are slightly higher than for men, women are promoted more slowly so that the men move ahead after about six years, and are substantially ahead after age 39.

Salary satisfaction precisely mirrors these variations in their actual compensation. Engineers not only have higher starting salaries than other graduates; but women's salaries are a bit higher than men's in most engineering fields - a situation that does not occur in most non-engineering fields. Later, although engineering salaries continue to be higher than salaries of most college graduates at the same experience level, women are promoted so much more slowly than men that their salaries soon lag behind.



A full-scale study by SWE, assisted by the Engineering Workforce Commission, followed this pilot study in 1992. Results are promised for next month, and may already be available to some of you. But theirs is not the only study.

■ In May, 1992, Catalyst published a report on the first in-depth **qualitative** study of the corporate environment for women engineers. It found that women in engineering are under-utilized, and that their career advancement is stymied by a number of remediable barriers. Catalyst found that women engineers in industry enjoy their work, but they face considerable obstacles, and often confront less than ideal working conditions.

They can expect their salaries to rise more slowly than those of their male peers as their careers progress. Positions held by women tend to be further from decision-making levels than those held by men, even when comparisons by sex are consistently matched for age. Women tend to be steered into staff positions rather than more advanced technical positions. New graduates entering the workforce do not see enough women in corporations to serve as beacons, and women already employed as engineers do not see female role models to indicate that advancement for women is possible. The corporate engineering culture is male-oriented, with intense pressure to conform to masculine styles and to deny issues specific to women, or even those seen to be specific to women when they are not, such as child care.

The Catalyst study was unique, but its findings are echoed again and again. For example:

■ An opinion survey of women attending a recent meeting of the International Network of Women in Technology found that only 27 percent of the respondents felt they had equal access to jobs that positioned them for advancement; and 84% reported encountering barriers, including blatant on-the-

job harassment. More than a third of the women surveyed at that meeting said they had left a company because they felt they would not be allowed to advance, and a significant number of women technologists are now choosing to leave the corporate structure and start their own businesses. Although this trend may be good for the economy, and for the entrepreneur, it represents a significant loss to established companies.

If projections regarding future jobs are correct, most new job creation will occur in small businesses. But such jobs will only increase the isolation women engineers already feel. Women are ancillary employees. They cannot advance without getting into corporation politics, but they are not always allowed to participate. Some women are leaving engineering, because they aren't allowed to succeed.

- The National Research Council's Committee on Women in Science and Engineering held a conference on *Women Scientists and Engineers Employed in Industry: Why So Few?* in January, 1993, over a 3-day holiday week-end. Some of the women engineers and scientists attending the meeting noted that they not only had come on their own, without corporate support, but that they would not want their employers to know they had attended. Networking and support groups for women are not encouraged. Because of the "macho" image of engineering in their companies, these women felt they had to be careful of what they said, including letting people within the company know they had attended a meeting such as this one, in order to avoid trouble with management.

Even some companies with the reputation of being "good companies for women" refuse to tell women professionals employed in the company how many women engineers or scientists they employ, or provide a listing so that an internal support group for women professionals might be established. They do **not** encourage women to form support groups or other networking practices. Companies **say** they want women engineers, but many of them won't give women professionals credits toward promotion for recruiting, speaking or advising women about engineering careers.

Companies have double standards for men and women, so that women and their contributions are perceived differently than if men had done them. For example:

- Companies often reward men and penalize women for the same action, whether it is parenthood or leadership. Having children indicates stability in men, but lack of dedication to the job for women. A confident woman is likely to be considered "too aggressive." Self-confident men get promoted. Women are promoted only **after** they have already proven that they can perform the tasks required in a new position, whereas men are promoted based on their perceived potential.

- Women do not understand what is needed for promotion, and assume that excellent work will be noted and rewarded. They must learn to point out to management their contributions, take the lead on projects, and create a visible role for themselves, both in their company and in their professional community. At the same time, of course, they must not be seen as aggressive, boastful or blowing their own horn, since these are "unfeminine" characteristics.

- A report by Russell Reynolds Associates found that two thirds of women leaders in line or staff positions perceive hostility from their superiors, while only two percent of the male leaders perceive any hostility to women in the workplace.

- One third of women leaders believe their company actively encourages their careers while three fourths of male leaders believe their companies encourage women's careers.

- More than half of the women believe that men have more opportunities to exercise power and authority, but two thirds of men believe women have equal opportunity for power and authority.

This study emphasizes once more that men and women do not see the same thing when they view their common workplace. And it doesn't matter whether that workplace is in industry, in academe, or in government. Sex discrimination is not unique to industrial employment.

Indeed, it is not even unique to employment! A new book by Sarah Whittelsey titled *Why Women Pay More*, shows that cultural bias causes women to pay a lot more for most things than men, although as a group, women earn only 74 cents for every dollar men earn. Dry cleaning a woman's suit, or laundering her white cotton shirt costs her almost a third more than if the buttons were on the right front instead of the left. My haircut costs \$4 more than a man's cut about the same way and with the same frequency. Health care costs women more than it would a man with the same illness. Cars typically cost white women \$150 more than white men would pay; and African American women pay about \$800 more, Whittelsey says. Women engineers should be able to counter some of these obvious cultural biases, but they continue to face bias on the job.

Conclusion

Women have made considerable strides into the engineering workforce in the last decade, but the climate remains generally inhospitable in most employment situations. Since women who battled through the barriers to earn an engineering degree are a highly filtered, valuable group of potential employees, employers would be well served to back up the efforts of their women engineers to recruit more women; provide mentoring systems and networking opportunities; and encourage their full participation in corporate activities.

