

Women's Invisibility in Technology

By Deepa Kandaswamy

This article is an edited version of "Talibanism in Technology: Seven reasons why women in technology remain invisible..." first published in Data Quest (India) in 2003.

Most of us have heard of the Taj Mahal, one of the seven wonders of the modern world. We also know it was built in memory of Mumtaz Mahal. But how many of us know of her aunt, Nor Mahal? She invented the device to perform attar distillation from flowers to make perfumes.

Despite 4,000 years of contribution, we do not know about most pioneering women in technology—like Empress Shi Dun, who invented paper; Penthesilea, who invented the battle-axe; and Catherine Green, who invented the cotton gin (though Eli Whitney holds the patent).

When young girls see such images, they assume technology is not for them. While there has been much discussion about the social impact of media's depiction of a woman's body, virtually nothing has been said about the impact of the imaging of women on their careers and educational aspirations.

Florence Nightingale, the famous nurse, was also a brilliant mathematician, and her contribution as the inventor of the pie chart, which businesses, technologists, researchers and governments throughout the world use today, is virtually unknown.

This continues even in this 'Information Age' where we boast living in knowledge-based societies. How many of us know of Helen Greiner, a scientist and the only woman to run a robot company in the world, or of Vanitha Rangaraju, the only Indian woman to win an Oscar for her technical work for the movie "Shrek"?

A lot has been written about the Taliban's treatment of Afghan women, which resulted in the worldwide outcry against the full-length burkhas that rendered the women invisible and the denial of their fundamental rights. However, not even a whimper has been heard about the systematic Talibanism of women in technology, which made them invisible throughout the ages.

Despite a large number of talented and successful women in the field, why is it that society tends to associate only men with technology? This appears to be a global phenomenon, cutting across class, race, and the development of countries.

After elaborate research and having interviewed several women and men in the fields of education, business and technology, I found seven primary reasons why women in technology continue to remain invisible: social myths, conditioning, media, networking, deterrence, balance, and marketing.

Social Myths

Cutting across cultural differences, the patriarchal system has always defined the place and role of a woman. This has led to perpetuation of myths:

Myth #1: Women are emotional while technology is strictly logical. As a result, they do not match.

Myth #2: Men are good at math and machines while women have no clue about these.

Myth #3: Men are the providers while women are nurturers.

Myth #4: Technical women are unattractive, arrogant and abnormal.

Myth #5: Women cannot do it because they are made that way (the divine or the evolution arguments).

Myth #6: Women are not as good at visualising as men, and hence, do not make good engineers.

A lot of research exploring these myths is collecting dust in various organisations throughout the world. Anne Fausto-Sterling examines these issues in "Myths of Gender." In her book, she describes the research studies conducted to analyse adult brain differences. The common conclusion of these various studies is that verbal ability, visual spatial perception, and math ability have nothing to do with gender.

However, many males accept these myths readily. "To some degree it's society, but evolution also plays a role. Men and women are different," said Njin-Tsoe Chen, project leader from Schuitema, Netherlands. A recent survey conducted by search engine AltaVista found that the myth that men are being better in technology is alive on the Internet, with 80 percent of the men claiming to be better surfers than their female partners.

"I think that the number of women in science and technology is certainly larger than zero but it is a small percentage—5 percent or less," says Dr. Hemker, German physicist at Credit Suisse.

Aggressive women become labelled as "bitches." There is a programme in California for 'bossy broads,' women who, because their assertiveness scares men, are sent by their companies to learn how to 'temper' their behaviour. Implicit attitudes are difficult to change. When a woman shatters these myths and succeeds in the technical field, she is an arrogant feminist, or she slept her way through to the top. Instead of being accepted for their accomplishments, successful women are questioned as to how they became successful.

Conditioning

The social myths perpetuate stereotypes that lead to conditioning. The pressure on women to look and behave in certain ways is almost instinctive. Perception is everything, writer and educator Kate Millet said. "Many women do not recognise themselves as discriminated against; no better proof could be found of the totality of their conditioning."

Stereotypes based on social myths exist because of mass media. The socialisation starts at an early stage when parenting is done with the use of stereotypes—girls like dolls and boys like cars. "I think it does kids harm not to see what they gravitate towards and make toy selections appropriately. I was always jealous of my brother's radio-controlled cars and electronics sets," says Helen Greiner, president of iRobot.

According to Diana Bouchard, a graphic artist from Quebec, Canada, in thousands of photographs weekly, 95 percent of the time, women are depicted as 'beginners' with males standing behind them, pointing at the computer screen as if to say, 'Okay, now you click here.' "It's indicative of male mentality that women don't get it," she said.

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In an Internet survey where I polled over 2,557 women working in the technical field, 56 percent said they have never been able to wear a skirt to work in any tech-industry event because they are afraid of being perceived as unprofessional. Seventy percent said plain glasses, little or no make up, and a tight hair bun help them if they want their work taken seriously. Finally, the conditioning is so absolute that women are told they are automatically empowered by the design of the current high-technology environment known as the kitchen, with all its fancy gadgets. The kitchen is now so designed as to simply lure women to occupy their assigned place in society—the "gendering of space" propounded by Dr Radhika Gajjala of Bowling Green State University, Ohio.

Media

By not covering successful women in technology, the media denies the next generation role models. Today, if you flip through any popular technical magazine, you will rarely find an article written by or about a woman. Why? David Ball, editor of *Packet Magazine*, answers, "Out of my top five freelance writers, four of them are women. While our writers get by-lines, in many cases, the by-line goes to the content expert that was interviewed for the story."

Deterrence takes place in two places—school and home. According to a (United Nations Educational, Scientific and Cultural Organization) UNESCO study, girls consistently match or surpass boys' achievements in science and mathematics across the world. In developed countries, however, young women are discouraged from pursuing engineering. Often, there is even a refusal or reluctance to invest in a girl's technical education.

There appears to be more male engineers and technical product managers than female."

On this dearth of articles about or by women, Don Davis, editor of *Card Technology* magazine, says, "The majority of the executives in the industry we primarily cover are men. Thus, most of the knowledgeable sources are men. As for the audience, I'm sure it's mostly male."

The editors justify the lack of coverage with the argument that their readers (again assumed to be male) will not be interested in knowing about women in technology. It is up to the women's magazines to fill in the gap. This starts off the vicious cycle of nothingness as the typical woman's magazine tackles what are commonly considered "women" subjects such as fashion, beauty, and family, and invariably leaves IT to the techie magazines.

But Rodney Brooks, a professor at Massachusetts Institute of Technology, disagrees. "See the article in *Forbes* on iRobot, featuring Helen Greiner and the movie "Me & Isaac Newton" (which starred a former student, Maja Mataric). Or see the press coverage for another former student, Cynthia Brezeal. *Time* magazine featured the story, plus myriad TV appearances. None of my former male students have done as well in the press as these three."

"There should be a proper regulatory framework to ensure that the broadcasters' air programmes on successful women in technology," says Emily Khamula, Broadcasting Officer in Malawi, Africa.

Despite the social myth that women in technology are abnormal, why do they not get the limelight? Because only 'displayable' aggressiveness goes into the frame. For women in technology, one might seem aggressive from the outside, although they have to be because of the job. In any case, the particular circumstances do not make for good copy.

Networking

Lack of networking plays an enormous role in rendering women in technology invisible. It is hard for women, however, to hang out with their male colleagues after work. Two factors remain major obstacles to networking: the old boys' network and the male colleagues' wives or girlfriends.

"I find networking to be a major problem. I cannot have the same informal 'outside work' relationship with my peers and senior executives that my male 'competitors' might have without being concerned and some people's tongues wagging," a female senior manager at Intel said.

Usually, progress at work depends on having the same access to the co-workers after hours as the men do. This isolates women from the "old boys' network" and confidence-building occasions at the senior level that could lead to more opportunities.

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A National Science Foundation study found that despite the gains in girls' participation in advanced math in the nineties, 34 percent of the girls reported being discouraged from taking math in their senior year of high school.

According to another study, in Asia, most families are willing to invest in technical education for the girl child only because it improves her marriage prospects. After the marriage, however, over 50 percent of these women do not pursue a full-time career.

Balance

The working hours and the social setup in the technical industry are significantly different from the other sectors, which affects the socially defined role of a woman as a nurturer. As a result, most women in the field feel a lack of balance in their lives, which inevitably leads to guilt. In California law, pregnancy itself is considered a disability. Shazia Harris, a clinical psychologist and researcher in education in Pakistan, says, "My research indicates that even after marriage and even after having children, women will opt for fulltime jobs if the option is available, which is one of the major factors in losing the professional female workforce, i.e., home responsibilities before career."

Marketing

Generally, men market themselves better. In her book *What's Holding You Back?*, Linda Austin wrote that men tend to over-represent their abilities and qualifications by 30 to 40 percent, while women under-represent theirs by the same degree. This works to a 60 to 80 percent gap between what a man and a woman with similar qualifications claim. "Even in the 'soft' technical area (technical writing department), men seemed far more eager to make a name for themselves than the women did," said Jennifer Pikes, an engineer who worked for IBM.

Though social perceptions are slowly changing, women in the technical workplace remain behind the scenes because they tend to play down their contributions. This is because "feminism" has become a bad word in today's society. Many women in the technical field do not want to be labelled "feminist"; they would rather be 'dumbed down' than take credit

for their work. In addition, social conditioning tends to make the women the secondary, non-aggressive, non-risk-taking team players.

Recommendations

Dorothy Parker once said, "You can't teach an old dog new tricks." True, but why not create a new one? For starters, we could begin by asking the same questions that members of the civil rights movement did. This issue of invisibility of women in technology is currently hovering between intent and execution, with industry leaders wishing the whole issue would simply disappear. This is one area of intervention for government advocacy and media.

Technical workplaces founded on a male 'norm' need to be changed to ensure fair competition for jobs and promotions for women whose working style or strategies are different. Especially in offices where the norm includes weekend 'beer busts,' it is not for the woman to 'loosen up'; instead, the employer needs to identify appropriate venues for company meetings and encourage diversity.

Femininity as the culturally defined model of female behaviour enforced from the outside needs to be examined. One should reject any sort of artificial 'femininity' and teach society to embrace diversity, to allow girls to be 'technically' ambitious without labelling them 'tomboys,' and to allow boys to become sensitive without branding them 'sissies.' Generalisations based on myths should not be assumed of anyone, whether man or woman. Neither should these generalisations be used to discriminate against any particular woman.

While ignoring the contributions of a single individual is bad and ignoring the contributions of a minority is appalling, ignoring the potential contributions of half the population can be best explained in two words—plain stupid.

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Source: <<http://www.dqindia.com/content/special/103022602.asp>, 26 February 2003>