# Book review -- Unlocking the Clubhouse: Women in Computing

Level: Introductory

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from The Rational Edge: Review of a book that contends we must change the way we educate our children to eliminate the technology world's gender divide; women are currently unable to exercise influence in this arena.

More dW content related to: **Unlocking the Clubhouse**

by Jane Margolis and Allan Fisher
MIT Press, 2002
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The information technology revolution is transforming almost every aspect of society in positive ways, but researchers Jane Margolis and Allan Fisher, authors of *Unlocking the Clubhouse: Women in Computing,* are still concerned. Girls and women, the authors contend, are largely left out of the loop. They participate in the dominant global industry primarily as guests, by invitation, or by compromising their own values, goals, and ethics.

It is a serious accusation, but one that is borne out through the authors' research. Their studies were based on interviews with more than one hundred computer science students of both genders from Carnegie Mellon University over a period of four years, and coupled with classroom observations and conversations with hundreds of high school and college faculty.

The conclusions? That unless we change the way that we educate our children, there will always be a gender divide in the most important area of 21st century life. And women will always be on the wrong side of that divide, the have-nots in the real power centers of our culture.

Consider the following observations made by Margolis and Fisher:

- Workplace systems are built around male cultural models;
- Entertainment software fulfills primarily male desires;
- Early voice-recognition systems were calibrated only to typical male voices;
- There is a tacit understanding that working in computer science involves giving up a balanced life.

This state of affairs isn't just detrimental to women: the authors make it clear that by excluding women, the computer culture is losing a healthy and vital source of contributions.

For me, these conclusions seemed obvious. But based on my experience, many men are not even aware of all the ways in which girls feel excluded from various computer-related experiences. After all, if one feels comfortable in a given environment, one doesn't typically wonder if everyone else there feels that way, too -- unless something jolts them out of their ordinary way of thinking. For example, as a Caucasian, I rarely stop to consider what it means to people of color to be consistently underrepresented in the entertainment media. But when I went to see *The Lord of the Rings* recently and happened to sit behind an African-American couple, suddenly, I became acutely aware that everyone on the screen in front of us was Caucasian -- even Tolkien's imaginary beings. I think

that men might have a similar "awakening" as they read this book; it provides an excellent opportunity to view the world of computing through another lens.

## In The Beginning...

The authors begin by focusing on the fundamental, ongoing debate about nature versus nurture. Are we the way that we are because gender-related characteristics are encoded in our DNA, or is it because we were taught by our parents, our culture, and our world how to be male and female?

Margolis and Fisher found that "as early as kindergarten, girls use the computer skillfully for writing their stories, but boys race to the computers for free time and play." It appears to the authors that, from the moment the computer is first introduced into children's lives, it is seen as a tool by girls and as an end in itself by boys.

And then there is the home environment. "Overall, the women we interviewed had done less hands-on exploration of the computer than the men. They gave fewer accounts of working beside their fathers and more stories of *watching* from the sidelines. Computing and tinkering had not been their main childhood activities or focus but one interest among several." In fact, the authors go so far as to describe what they call a "father-son internship," pointing to studies showing that fathers play with their sons 50 percent more than with their daughters, with the inevitable unfortunate results.

And the early years are just the beginning. By elementary school, the researchers say, adults -- both parents and teachers -- have developed unconscious expectations about boys' projected success in computer science. And as time goes by, those expectations deepen until they become self-fulfilling prophecies.

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## Adolescence: The Plot Thickens

At this point, the authors shift the blame almost completely onto the schools, and with apparent good reason. Computer science curricula reflect boys' interests and experience levels, and girls, it seems, may either adapt or leave.

In one school the authors studied, a group of boys developed an exclusive computer "recess club," during which they named the computers used in the school lab. The teacher allowed these names to be used even during computer classes, so that the boys ended up making references to which only they and the teacher were privy. The ability -- the *authority* -- to name is a clear indication of power and ownership, a point that was not lost on the girls.

In observing another high school, Margolis and Fisher noted that the computer lab became a sanctuary of sorts for "geeks," a place where they could belong. And yet, having been rejected by the appearance-oriented, "cool" majority of students, the geeks were themselves quick to reject others. The book tells of "several incidents when male African American students came into the lab. Usually these students were ignored, stood around, watched awhile, and then left. Neither the other students nor even the teacher invited them to join them at the computers."

Girls fared no better than did minorities.

> Girls were perpetually teased about their bodies, their appearance, and their competence. The male teacher did not intervene on behalf of the girls. One of the women students asked the teacher why he always used football examples; he replied that she could do the programming assignments on anything she wanted. At that cue, a male student turned to her and mockingly said, 'Do it on sewing,' which drew laughs from the other students. Another woman student used football statistics in her program (similar to everyone else's program). She was ridiculed because she used the name of a baseball team instead of a football team. Two male students were observed playing Concentration and trying to modify it. One of the new prizes was the services of a prostitute who charged $200.

> There was no teacher response to these incidents. None of the high school girls enrolled in Computer Science 2 went on to enroll in Computer Science 3.

"Now there's a surprise," I muttered to myself as I read the last sentence.

The authors go on to point out that this locker room atmosphere, coupled with the fact that, as noted earlier, boys get an "internship" with their fathers and spend their childhood playing computer games (whose usually aggressive and sometimes sexist themes are unattractive to girls), leads to the inevitable result that "girls in high school are often sitting shoulder to shoulder in classes with boys who have spent endless hours learning everything they can about computers and who have friends to turn to when they want to learn even more." Add the hormonal sea change of insecurity and fear experienced by girls in adolescence, the authors note, and it's a marvel that any emerge willing to take on computer science at all! Another strike against girls, the authors point out, is a gender difference surrounding the issue of competition. Whereas boys race to find solutions, girls take time out to help others get there as well. Boys want to play games with a clear winner and a clear loser; girls want to play games that leave everyone feeling good. Computer science classes in American public schools, they found, are geared to reward the former and punish the latter.

"Good grief," I thought to myself after getting through this section of the book. "It's no mystery that there are limited female enrollments in university computer science programs. The wonder may be that there are any at all."

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## College Days

So why do some girls hang in there to study computer science? Here's what Margolis and Fisher report:

> We have found that women decide to major in computer science based on a broad set of criteria. For many male students, in contrast, the decision to major in computer science barely reaches the level of conscious consideration; it is a natural extension of their lifelong passion for computing.

That broad set of criteria included, in many cases, a care for making positive contributions. One first-year student at Carnegie Mellon, Louise, describes a lecture:

> Everyone just said how boring it was: "Who cares that computers did not benefit anyone? We like computers! We love computers! We know computers! And who cares about the rest of the world?". And if you're trying to make something that's going to change the world, that's going to help the world, you have to have some sort of concern about what's your long-term goal. Not just to produce Word 8 or Excel or whatever. How is this helping? Or is it helping? Go see if that stuff is doing anything.

Sound familiar? Remember how the researchers found that in kindergarten, girls used computers to do or create something else, while boys used them simply for the act of using them? Louise clearly reflects that same theme: she wants to use the computer to make the world a better place, rather than to simply make a new version of Excel.

In fact, Margolis and Fisher heard many variations on this theme, which led them to conclude their discussion of educational issues with some suggestions for the future:

> Can a creative person, a "people person," care about the world and people and be happy in computer science? While the stereotype says no, a broader vision of what the field is and how it is best taught answers in the affirmative. Computing can be taught in an interdisciplinary setting, honoring the goal of 'solving the world's problems.' Furthermore, this does not require devaluing the single-minded

> pursuit of technical virtuosity that marks some of the best computer science students. Instead, it establishes multiple standards of excellence:

What they are urging the powers that be in our education system to consider, in other words, is that there is never just one way to do things -- as programmers, of all people, surely should know.

**Dreaming in Code**

One of the most interesting -- and to me discouraging -- parts of the book is a discussion of the dramatic differences in the way that men and women regard and *use* computers.

> When we asked students, during their first interview, to describe their computer science peers, both men and women responded with the same image. They described a person in love with computers, myopically focused on them to the neglect of all else, living and breathing the world of computing, 'at the computer 24/7.'

This "geek mythology," as the authors call it, has historical/cultural roots in the genesis of computer technology. They cite Steven Levy's book *Hackers: Heroes of the Computer Revolution*, which describes the founding fathers' lifestyles; Stephen Segaller's *Nerds 2.0.1: A Brief History of the Internet* provides a similar take. One can obviously understand the fierce commitment of these early pioneers and perhaps even envy the opportunity they had to be on the cutting edge of something entirely new and exciting, their drive to do more, discover more, create more. Unfortunately, however, as the researchers point out, all of this engendered a culture in which programmers continue to treat their work that same way now, even without the stimulus of being "the first ever" to do something. It has become a habit.

And what we have come to call "geek culture," they add, is essentially and unquestionably male. It is not, by and large, a woman's style of working.

> One-third of the male students we've interviewed say they differ from the stereotype, that they have a broader range of interests than just computing. But twice as many women (more than two-thirds of those we interviewed) feel different from the stereotype. And 20 percent of the women we interviewed question whether they belong in computer science because they feel they do not share the same intensity in focus and interest that they see in their male peers.

Donna, a junior at Carnegie Mellon, describes questioning whether she belongs in computer science: "In my free time I prefer to read a good fiction book or learn how to do photography or something different, whereas that's their hobby, it's their work, it's their one goal. I'm just not like that at all; I don't dream in code like they do."

Neither does my friend Karen, although she has been working in the high-tech arena for years. Donna's account reminded me that early in her career, that sense of not "fitting in" almost drove Karen, now a tech support manager, to become part of the "leaky pipeline," which sees women leaving the computer sciences each year, changing their majors, quitting their jobs, deciding that it is not for them. They are not leaving because women are genetically predisposed to giving up, but rather due to discouraging experiences with teachers, peers, curricula, and workplaces that cause them to doubt themselves and their fitness to pursue computing. In college, it becomes clear to many women that what they are experiencing there is but the tip of the iceberg.

So all you guys out there, turn now to any woman engineer you know and express respect and admiration for what she has survived. She has earned it!

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## To Boldly Go Where No Man Has Gone Before

In the last section of *Unlocking the Clubhouse*, the authors examine the tremendous societal implications of the absence of women in computer science. Just as the originators of *Star Trek* didn't see anything wrong with using *man* as a generic term, so too do we not notice that there is more to this issue than our easy assumptions that girls just don't like math and science and computers as much as boys do.

The absence of women in computer science is, as Margolis and Fisher point out, a social justice issue. Just as we are starting to understand the implications of the digital divide between those who have access to technology and those who do not, so too do we need to understand the implications of the hierarchy that exists within the technological framework and acknowledge that there is a clear gender divide there.

The authors suggest that we need to begin "changing the conversation in computer science." To challenge parents and teachers to reinvent the view of computing presented to children of both genders. To urge industry leaders to compete to enlist the talents of women as well as men in innovation and design.

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## Conclusions

My personal reactions to this book were overall very positive. First, I felt that the study the authors conducted was well done and long overdue. A cursory examination of Bowker's *Books in Print* revealed surprisingly few other books about women in computing. As a woman, I resonated with the authors' conclusions and identified with their examples. I found myself alternately shocked and energized by their findings, and my interest in the topic has been tremendously stimulated by reading this book.

If the book has a weakness, it is perhaps that it makes assumptions about the level of sensitivity among readers. When talking about it with male friends and colleagues, I encountered a surprising amount of resistance to the authors' findings and a reluctance to consider their premises. "So what -- maybe geeks are happy being single-minded about stuff!" was not an atypical response. The book might have been richer and able to reach more people if the authors had explained more about why this male/geek culture is in fact unhealthy, and why the presence of women in the computing workplace would make it a healthier environment.

A little-known song by Harry Chapin asks the question, "Why do little girls grow crooked, while little boys grow tall?"

> *Why were the little girls all frightened*
> *To be just what they are?*
> *The boys were told to ask themselves*
> *How high, how far*
> *The girls were told to reach the shelves*
> *While the boys were reaching stars*
> *That's why little girls were frightened*
> *To be just what they are.*

The hope inherent in *Unlocking the Clubhouse: Women in Computing* is that some day, if we keep working at it, the little girls won't be frightened anymore.

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## About the author

In addition to doing technical writing for Rational, Jeannette Angell Cézanne writes novels, nonfiction books, and journal and magazine articles. She is currently completing *Wicked*, a book about stepmothers. Visit her Web sites at www.jeannetteangell.com and www.customline.com/wordware.