

Succeeding in Sciences - a female perspective

Today in the 21st century there are **very** few women visible in sciences making a strong impact in their field and in society being at the top.

Gender equality in higher education has been one of the remarkable accomplishments of this century. In 2008 52% of undergraduate college degrees were awarded to women.

Yet, despite these gains in numbers, in science end engineering there are almost no women present at the top. In industry women occupy an incredible small number of the prestigious jobs. In academia less than 2 out of 100 graduating women are likely to become an associate professor and survive the tenor years.

If any of you have attended a DARPA meeting where only principal investigators (PIs) present their work, you know that there are almost no women present there. If I see a senior woman in one of those meetings I almost automatically bond with her!

So where do all these women go to?

Some leave completely the profession but these are very few. The majority end up in lower prestige and lower paid jobs such as soft money researcher in academia or lower paid engineer in a company. These are insecure, underpaid and undervalued positions. More importantly often there is no track to the top from these positions. The deans at universities, CEOs of large companies, and the full professors are almost always men. The jobs that these women give up are extremely prestigious and highly paid.

So Why? What do these women face today that make them leave?

One of the main reasons they leave is Subtle Discrimination. Discrimination exists today but in very different form than what it was 20 years ago. Today no one will ever say to you: We will not promote you because you are a woman or we will not hire you because you are a woman. But they might ignore you. They might talk to you differently. They might put you down. And in science this subtle discrimination can be very strong.

We all go through ups and downs. And in our downs we **all**, men **and** women, believe that we are not good enough but women get a negative reinforcement from their surroundings. It is not an intended reinforcement-people in general are good people. But it is there and it is strong.

We all sat in meetings where you say something and you are ignored.

But if you already feel lousy about yourself: your proposal got denied, your teaching evaluations are bad, the senior faculty who will decide your tenure case gave you a bad look that day. And then you get ignored in front of the whole faculty just before

while your male colleague says the same thing and does get ignored - that's a different story.

I cannot tell you how many times as a graduate student and as a young professor myself and a male colleague got introduced to someone and this someone only talked to my colleague... I can attest that at these moments your self esteem just plunge down...

It is critical that you know it has a name: subtle discrimination.

Things are getting better and in our kids generation it might not even be there. Meanwhile, there are ways to fight it.

If you put on a confident air, even if it is false (say-you are not confident at all) you are sending a message that you are not an easy target.

When you are in a lecture - always sit in front and ask a question.

When you meet someone new, introduce yourself and talk confidently.

Most importantly: Don't **ever** internalize this.

Don't ever think that the reason someone put you down is because you are not good enough

There is another type of subtle discrimination and unfortunately this one often comes from our very close surroundings - often from our loved ones.

It is the message that, career for us women is not as critical as it is for men since **we** also have the responsibility for child caring.

Child caring-yes. But Child caring?? Why only **OUR** responsibility?

This message comes from everywhere around us. My parents were the ones who supported me the most in my career. But I do remember when I was 17 a special conversation we had in the kitchen. I wanted to take a year off school, between high school and college, to go travel a bit. They said that I had no time-I had to build my career and get established before I had my kids. If I would be a man they would never have said that. They were sending me an implicit message that I was going to be the main caretaker of my kids.

This message -that we are sole care taker of our family - comes from even the brightest, most successful women:

Laura Betterly, CEO of In Touch Media Group, Inc., a couple of years ago had several articles online stating:

"every **woman** can develop the skills necessary to balance work and family".

I ask you: Where is her partner in all of this? She makes it very clear that it is HER responsibility to take care of the family. She goes on to say:

"For **women**, balancing a career and family ... just requires a bit of juggling,"

Science magazine published a survey in 2006 stating that: "male faculty members were 2.5 times more likely than female faculty members to have a spouse or partner available to assist with household and family responsibilities."

We are still in the traditional 1950's role playing situation. Men have the women helping them but women do it all. In fact I often joke with my male colleagues: " I want a wife like yours!"

In October last year, Time magazine published a wonderful article on this subject. The article ends with: "At times it seems as if the only women effortlessly balancing their jobs, kids, husbands and homes are the ones on TV."

I have news for you: There are no superwomen. All the women on TV-those that made a strong impact in their profession - shared the responsibilities for child caring with someone. They were not the one that always arranges for a babysitter, the one that who always serves dinner, who always arranges for play dates, or goes to teacher meetings.

A physicist friend of mine, working in industry, decided to quit her job and stay home after her baby was born. Her boss made it quite clear that leaving early or missing work because of her baby is unacceptable. When trying to explain to me why she quit altogether instead of perhaps looking for another job with a more reasonable boss, she said: "I was exhausted physically and emotionally - lack of sleep, hormones, crying baby in the middle of the night... I just didn't have the emotional strength to deal with this."

Don't try to be a superwoman-it just doesn't work.

Set your priorities right, and early.

Don't go with the flow - plan ahead!

Talk with your partner - decide the roles each one of you will take in raising a family. Very often men are simply not aware of these issues.

Talk about it at the time when you and your partner move in together, at the time when you and your partner decide to have kids.

Remember: the partner should not help the woman. Both partners should share their responsibilities for child caring equally.

When my kids were small, we had a plan - a strict schedule where we would alternate - each of us either stayed with the baby or stayed at work late to catch up. This pragmatic plan was critical for both our careers. Today we are an extremely close family. I have a 6 year old and 13 year old. Both are two very happy boys, doing wonderful in school and in their extra curriculum activities. They are also extremely proud of their parents.

I cannot tell you how much it meant to me to have my kids come home last month and tell me excitedly how everybody spoke in school about their mother receiving the MacArthur Genius award.

Planning ahead and putting your career as a top priority is also critical for overcoming the so called two-body problem. The two-body problem is a term from academia used for describing the problem where one (usually the man) is offered a position while the partner (usually the woman) is left jobless. Today, despite all the changes our society experienced, women are still following their partners ... in mass. In fact, in the small collegetown where I live today, most of the women I know are women that followed the men employed by Cornell. And a lot of them have Ph.D's.

The reason why the woman is usually the two body problem is because her career might not be equally important in hers or, in her partner's eyes. But not always. Often the career of a women is solidified much later in life than a man's.

My boys know that they will be engineers. But girls are more often more exploratory.

I cannot tell you how many couples I know where the man is in a dream job and the woman is not simply because when the couple was looking for a job she wasn't ready. She was either still finishing her studies and sometimes she was even still... sort of... finding herself.

It is critical to lay down your career plans very early. Even if you change them later. Walk in straight lines as opposed to curvy lines. Follow a path, complete it, and then if you wish change the plans.

When I was doing my Ph.D. in Physics and the experiment wasn't working, and I was down (which unfortunately was quite often), I used to call my father and tell him "Dad, why am I doing it anyway? I won't get a job... Maybe I should just do something else". He always said: "Work like a laser. Be the best at it. Finish it. And then shift. Don't look right and left too often – it's too distracting."

But even if you know what you want, and you are finishing your Ph.D and have your career track all set. The timing for job hunting - synchronization with your partner- is critical.

I know several couples where the partner looked first for a job and the woman looked later. In these situations, the woman usually ends up with very limited job opportunities since she is restricted to a very specific location.

My husband at the time delayed the end of his Ph.D. by 6 months so we could look for postdoc positions together. We ended up in Boston where he had a postdoc at Brandeis University and I had one in MIT.

If possible try to synchronize your career with your partner – it makes things much easier.

My message here is that there are concrete ways to address and fight against subtle discrimination that women, especially in science and engineering, face today. This discrimination comes in all forms, including the assumption that for women, career is just not as critical as for men. So for all of you women in the audience - stand tall and proud, don't let anyone put you down and remember that your career is as important and critical as anyone else's.