

# *Unlocking Your* **BRILLIANCE**

**SMART STRATEGIES** for **WOMEN** to **THRIVE**  
in **SCIENCE, TECHNOLOGY, ENGINEERING,** and **MATH**

**KAREN D. PURCELL, P.E.**



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First Edition



*To my husband, Jeff,  
and daughters, Alyssa and Sydney –  
Thank you for your endless support and love.*

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## PREFACE

After deliberating for many years about what I have to offer by sharing my story as a female electrical engineer, I was finally convinced, *by men*, to put my story in writing. I made this decision while attending, of all things, one of the largest gatherings of sports fanatics from across the world: the Winter Olympics. I found myself attending the men's hockey tournament of the 2010 Vancouver Winter Games with the other eight members in my Entrepreneurs' Organization (EO) forum—all men. The experience was surreal. I shared second row seats with the most successful business owners I know, some of the people I respect most in my life.

The Olympic environment was explosive. The camaraderie among the different countries lifted us. Each country's fans wore their location-specific colors, sang hearty chants, and exuded national pride. They were there to offer boundless support to the people they believed in. Through the common goals they shared, the various countries found common bonds and worked together. The environment and culture mirrored the philosophy of our forum and, ultimately, of EO. We support one another, help one another fulfill our life dreams, share common goals, and, most important, strongly believe in each of our members. Although

we have yet to paint our faces and strut through the streets wearing EO's flag as a cape, we hold every bit as much passion as the hockey fans we sat among.

That night, on our drive back to the American side of the border, we stopped at a restaurant just outside of Vancouver, British Columbia. Throughout that memorable dinner I kept marveling at how I had earned my spot at this table of successful entrepreneurs, and I felt extremely proud.

Let me roll the clock back a bit to show how I came to arrive at such a place and such a question. In 2006 I joined EO, a business network that spans the globe, with a membership of more than eight thousand business owners in forty countries. Committing to a solid network such as the one this organization supplies has been vital to my success as a business owner. And, although the network is not specific to women, it has helped me grow as a *female* electrical engineer and business owner, which is a major part of who I am.

When it came time for our forum to select a destination for our 2010 annual retreat, the group decided to give the responsibility to me and forum chair Dave Sinclair, who is the president and founder of a successful alarm company. Our forum was the sum of a recent merger between two smaller forums. When the two merged, we adopted a tradition that one of the smaller forums had of keeping the retreat destination a secret. So, when Dave and I first met in October, we kept our discussions confidential. The other members discussed possibilities with one another and pleaded with us for any details, but our lips were sealed.

When I brought to Dave's attention that the Winter Olympics would be in full force during the weekend designated for the retreat, he lit up. We agreed to look at the schedule of the games and pick something that would excite everyone. We went with the

national sport of the host country and the largest event: the men's hockey tournament.

As soon as tickets were available to Americans, we bought nine for a Friday afternoon game between reigning world champion Sweden and Belarus. After buying the tickets, we decided to plan the rest of the trip around the game. We booked airfare, lodging, and transportation—all without revealing anything to the other members.

As the trip approached, we gave the members all the information they needed to know: be at the airport Thursday morning at 10:00 a.m. and bring your passport. Up until we handed out the boarding passes, no one knew our destination for the weekend. Plus, because the tickets showed that we were flying into Seattle, the group believed our telling them to bring their passports had simply been a ruse. No one knew we would jaunt up to Vancouver, let alone attend an Olympic event.

Dave and I had rented a beautiful home right on the ocean in Seattle because we wanted to have quick access to all that the Emerald City has to offer: restaurants, entertainment, shopping, street markets, and ocean views. I remember Mike Kitson taking pictures of a whale breaching right outside the house, for example. After a day of discussing EO business and a relaxed dinner, Dave and I pulled out a box for the members to tear into. Inside were nine red and blue USA sweatshirts along with nine commemorative tickets with the iconic Olympic Rings printed on them. The men, shouting and cheering like boys, were clearly excited.

On Friday morning the limo we had reserved picked us up and drove the two hours north to Vancouver. Initially, Dave and I thought a limo ride would simply be a novelty, but the time together to and from Vancouver proved to have a huge impact on our forum. With no member having the responsibility of driving,

we were able to conduct necessary forum business and also socialize in a way the forum had never before done as a whole.

It was during the limo ride back to Seattle that the discussion focused on how I came to own the largest electrical engineering firm in northern Nevada. For the first half of the ride, I shared some of the milestones that elevated my career to where it is today. During dinner our conversation continued, and I concluded my story when I came to a point I was sure everyone in the forum was already familiar with. Almost immediately, John Coman and Mike Kitson said in unison, “You should write a book.”

Throughout that entire notable trip in the Pacific Northwest, I often reflected on how I would ever have survived in my career without the support of the men in my forum. I may not have found the confidence or gathered the knowledge to overcome the many obstacles that have presented themselves throughout my career as a female owner of an electrical engineering firm. Surrounding myself with their positive influence has helped me make crucial decisions when I’ve been faced with choices that had the potential to break my career. But, no matter how much credit I give to my EO forum, I know my venture as a businesswoman surrounded by men started long before I was introduced to the group. And that’s the story I want to share with you now.





## Chapter 4

### **DO THE WORK WELL AND RESPECT WILL FOLLOW**

**A**t last I had found an environment within which I was applying my skills and gaining real-world experience at a dizzying pace. I enjoyed working, but I was surprised that I continued to be challenged by some of the same biases I had encountered in college from my male classmates. I was taking on more responsibility at TJ Krob, but my male counterparts were not showing the level of respect I believed I was earning as a capable electrical engineer. They would second-guess my recommendations and opinions and ask another male for his opinion instead.

Challenges by no means disappear just because we find a STEM career that is the right fit for us. Once we find our places, we again have to accept that we will most likely be surrounded by men, and the skepticism or prejudice some of them still harbor toward women in math and science will affect our workdays. Those attitudes will feel even more frustrating because, having

battled them for four or five years at the university level, we must persist in the fight to prove that we belong in our fields.

In my situation, even as Tom Krob began to assign me additional responsibilities, I remember coming back from countless meetings in which people assumed I was his secretary or personal assistant, not one of the company's lead engineers. Of course it was aggravating; I had worked tirelessly to secure my place within a reputable engineering firm (and moved across the country to do so). But now, as I look back, I think the reactions I was garnering from others had as much to do with my behavior as it did my gender. In the strategies section that follows, I'll pinpoint what those behaviors were and offer you practical suggestions for how to avoid them in your own work environment.

## **THE HURDLE: EARNING THE RESPECT OF OUR MALE COLLEAGUES**

Gender bias still remains in the STEM fields: some of it is explicit, most of it implicit. And sometimes other females demonstrate the same bias that male colleagues do. As I will discuss in this chapter, we cannot allow every raised eyebrow or belittling comment to whittle away at our confidence or send us into a fit of anger or despair. Although we may remember the demeaning comments for years to come, we have to learn to shake them off and remain confident in our abilities.

As females with advanced positions in a male-dominated industry, we must focus on building relationships with our coworkers and developing support for our ideas. You will encounter male employees—whether in positions above or below you—who are

not comfortable working with women. Whatever their reason, you cannot afford to become consumed in trying to convince them their bias is unwarranted. Simply do your job to the best of your abilities and allow your actions to argue your point.

As I was collecting research for this book, many sister engineers openly shared with me their stories of the gender bias they continue to encounter. Some of them have been in the field for thirty years and some are not yet through their first year. Regardless of how long they've been working, they all had similar stories of gender bias.

Cindy, who is a civil engineer, took a job with a very conservative firm in Virginia early in her career. The few female employees were encouraged to dress "conservatively," which meant "in a dress." Even when visiting job sites, the women would wear dresses along with their bulky work boots. Cindy remembers arriving on a particular project site in North Carolina with her coworker, the firm's senior engineer (another female). Upon their arrival, the area's public works director greeted them. During introductions, Cindy remembers him saying, "Wow, look at that; two lady engineers."

At another time later in her career, she was working with a Nevada firm and visiting a job site in the eastern part of the state. She had been warned by other coworkers that she needed to "really know her stuff" because the contractors in that region would try and "put her in her place." Cindy said the contractors in eastern Nevada would tell her "not to worry her pretty little head" about certain aspects of the projects. Even though they would call her "sweetie," "darling," and "honey," Cindy noticed that she could always earn their respect by coming across as knowledgeable about the different jobs her firm was performing.

My colleagues shared with me numerous stories of being mistaken at meetings for secretaries or assistants or as the boss's wife

at a company party. Cindy told me a female secretary at one firm mistook her for a secretary and asked how long she'd been in the position. Cindy politely said she was an engineer, and the secretary's eyes lit up as she said, "You're an engineer? Imagine that." Cindy joked that she thought about saying, "Yep, and I can vote too," but she held her tongue.

I applaud Cindy's security in who she is as a woman and competent engineer, which frees her to tease, joke, and laugh off the narrow-minded thinking of others. More power to her!

## STRATEGIES FOR MAKING IT THROUGH

As females in male-dominated industries, we have to work harder to earn respect, and it all starts with our behaviors and how we carry and present ourselves. Males can walk onto a job site, into a lab, or into a meeting and immediately have others attribute to them some level of credibility simply because they are male; we don't have that luxury. So what's a girl to do? The following strategies are important for all women who wish to earn respect as they earn more responsibility in their careers.

### ✓ Be heard

When others would assume I was Tom's assistant, I believe it had a lot to do with my hesitancy to speak up, especially at project meetings. I had grown more assertive by my senior year in college, but I found myself reverting to being hesitant because I was in a

new workplace and was new to the level of leadership with which I had been entrusted.

Oftentimes, soft-spoken women are swallowed up in a meeting room filled with boisterous men. I was no exception. When I was surrounded at project meetings by men with type-A personalities, they were, by nature, very dominating, which made voicing my opinions a real struggle for me. The men were allowed to be themselves; their voices carried, and they could comfortably communicate without changing their inherent behavior. I, on the other hand, was forced to change my communication behavior in order to be heard. This became even more necessary when I was put in charge of controlling certain situations. I realized that I had to speak up to be heard. I had to talk louder and not be afraid to jump into a conversation. At times, when there are a bunch of loud men in a room, it's hard to get a word in edgewise. I think taking on new challenges outside of your comfort zone can help you overcome this and other obstacles. Even recently, by taking on the challenge of becoming the president of the Reno/Tahoe chapter of the Entrepreneurs' Organization (EO), I knew I would gain an opportunity to improve my speaking and interaction skills with men. My EO forum mates have noticed a huge improvement in both areas since my presidency. It is a continuous learning process.

Women who are strong communicators don't have to behave differently in the workplace. Because they have mastered communication skills in one-on-one and group settings, these women can behave just as they would in any other environment, regardless of the fact that they are in the minority. For women like me, who are more reserved and tend to withhold their opinions, they must

find resources to improve their communication skills, particularly if they strive to be in leadership positions.

Madhu Lal-Nag works for the National Institutes of Health and is the president-elect of a chapter of Graduate Women in Science. Evolution, she believes, plays a large part in the situation women scientists find themselves in today. “We’re wading the waters of a predominantly male terrain,” she observes, “fighting for a stronghold. We find ourselves fighting fire with fire, becoming ‘male-like’ in order to compete with men. This is our only and biggest mistake. In order to compete in a predominantly male arena, we must excel as women to achieve mutual understanding—and to earn anyone’s respect, male or female.”

Early in her scientific career, Madhu says she spent a lot of time doing what she was told to do, “in order to earn the respect of my male colleagues. A well-meaning male mentor finally told me that if I wanted to stand out in my field of research, I would first have to overcome the initial ‘stage fright’ that took hold of me every time I voiced an opinion.”

So Madhu found her inner strength. “I worked hard to ignore the hammering of my heart as I spoke at scientific conferences to a variety of audiences,” she says, “because the need for people to respect my science was greater than any fear I had of not being respected by my male colleagues. To my greatest surprise, the more I spoke of my science, the more confident I became, and the respect accorded to me as a scientist was automatic.”

There are a lot of ways to improve your communication skills. For example, Toastmasters is a great organization to help you improve your public speaking abilities. Joining and becoming active in a local professional or community organization is another way. Sitting on a board forces you to interact with board members

and talk publicly—at least in front of them. I have found this to be a tremendous help. One of the first boards I was part of was the local Society of Women Engineers (SWE) professional chapter. It gave me an opportunity to not only meet other people but also to express my opinion in front of others in a safe environment. I have also been asked to teach a college class for one day, explaining to students just what, exactly, an electrical engineer does. Take advantage of every opportunity you are given.

Some women may have internalized the view from an earlier era that it is out of place for them to be opinionated in a room filled with men. Such women may have to break out of their comfort zones, however, in order to be effective as team members or leaders. Because men dominate certain fields, they also control the communication environments in those fields. Men have had primary influence over what is perceived as effective communication in most STEM disciplines and industries, and that will not change solely because of a woman's presence. The communication context has been established in order to help men thrive. While women may feel out of place, we must adapt. It may be uncomfortable at first, but it gets easier.

I remember one of my first project meetings at TJ Krob. It was at an architect's office, and there were probably ten to twelve people in the room. I was so intimidated by the others that I don't think I said two words. I remember thinking, *What if I say something stupid and I get laughed at?* As the project progressed, I became more comfortable with the people on the team and eventually was able to speak with ease at the team meetings. Now I don't think anything of it. It is all a matter of practice: the more you do it, the more you develop a comfort level. I have a staff of eighteen that I have to speak in front of every Monday at our staff meetings. Each

speaking opportunity is a learning experience. Take every opportunity to learn and grow.

In the course of gathering information in order to make informed decisions, women naturally and automatically ask a lot of questions. As a minority in the typically male-dominated STEM fields, however, we can often feel that we will be judged as incompetent if we ask questions. We cannot let our gender get in the way of acquiring the knowledge we need to successfully do our jobs. As women in professional positions, we are overly aware when men outnumber us in our fields of work. This may make us feel as if we are constantly being scrutinized and evaluated, but this cannot force us to behave in ways that are counterproductive. By asking men questions, we are not putting them in a higher position. If, by title, they are in a higher position, then part of their job is to help their colleagues understand how to do their jobs better. If we do not know something, or we need clarification, we cannot be afraid to ask questions.

Being a woman who works in a male-dominated field is “an astonishing advantage,” according to Mary Fernandez, board chairman of MentorNet and assistant vice president of research at AT&T Labs. “I have never felt that it was, in fact, a disadvantage. When I talk to young women who are entering the computer science field, I remind them that their voice sounds different when they speak in a group of men, and this difference is a distinct advantage.”

Mary acknowledged the research that says women aren’t being heard in male-dominated environments, but stated, “The truth is, a woman who works in a male-dominated field brings a different dynamic to every group. I’ve found this to be an incredible advantage in every technical and business situation that I’ve been in.” She offered an example from a recent conflict in her work life.



“I was confronted by a much more senior person in my organization who was giving me a hard time about a fairly big technical problem. I got up close to him, looked him in the eye, and said, ‘I want to understand why you’re so upset. I respect your knowledge and expertise, and I need you to be a team player on this. I’m here to listen to you.’ And then I shut up.”

Mary said she thinks her approach disarmed him. “Often when there’s confrontation among males, there can be a little one-upmanship,” she explained. “Instead, I used the approach of recognizing that the other person knew something that I didn’t know, and then I said that aloud.”

As women, Mary added, “we are trained by society to listen. And if you listen sincerely, really hearing the other person and echoing back to him what he said, it can diffuse tense situations and bring people toward consensus much faster. I’ve been pretty successful at doing that through the years, and I do attribute that to the female dynamic. Genuinely being open to learning from others really levels the playing field.”

## ✓ **Produce accurate results**

Ruzena Bajcsy, professor of electrical engineering and computer sciences at University of California at Berkeley, says she has managed to earn the respect of male colleagues through the years by producing results. “You can’t just talk; you have to show what you can do. I’m an engineer, I have designed things, and I have demonstrated new ideas.”

Academia, Ruzena feels, “is traditionally very conservative. When you come up with a new idea, people tend to be skeptical—they want you to show them how it works, and what it really

means. So I had to build my own systems, and over the course of three years, I developed a special kind of camera. I was able to show everyone that it worked, which made it difficult to debate. Producing results is the only way I know of to satisfy the skeptics.”

Ruzena also described how producing results combats a subtle bias she sees in the STEM fields: “There is a general idea that women are not as tough or as persistent as men. But I think things are improving because there are now more of us—and more of us who are delivering. I think things are changing for the better for women in engineering. You have to believe in yourself; it’s as simple as that.”

I have always been self-conscious about giving the correct information when someone asks me a question. Early in my career, I was never afraid to tell anyone that I wanted to check with Tom before giving him or her a definitive answer. To me, my behavior resulted from the high value I put on providing accurate information, but I can now see how others could interpret it as my lacking confidence in myself as an engineer. Certain others may have seen this behavior as my inability to do anything without Tom’s permission.

Sometimes we may want to protect our image and confidence by spitting out the answers to questions right when they are posed, even if the information we have is not complete. In my experience, men are more apt to give information on the spot, whereas women are more likely to make sure their information is accurate before they offer it. Both men and women, though, can be guilty of giving inaccurate information for the perceived benefit of appearing credible. It is perfectly fine, however, to sacrifice the appearance of confident expertise in order to supply an answer that is accurate and complete. In the long run, giving *accurate* answers will do more

to boost our professional credibility than giving *quick* answers. No pride is lost in telling someone you will do the proper research and get back to them with an *accurate* answer shortly.

I stress the importance of being accurate because within most STEM disciplines there are ethical boundaries that can easily be crossed by giving out false information. Early on in my engineering career, the questions I was being asked while on a project site frequently dealt with safety. When handling a project in the health care industry, for instance, the code is very detailed. A lot of engineering firms do not handle health care work precisely because of how detailed the procedures are when dealing with human life. For example, electrical engineering firms must account for the hospital emergency power infrastructure system. In order to maintain the integrity of the emergency generator system, only certain pieces of equipment are permitted to be connected to it. If a piece of equipment is incorrectly connected to the generator system, it could literally mean the difference between life and death for a hospital's patients. The liability is huge. To this day, if I have any doubt about whether my answer is 100 percent accurate, I never hesitate to let the client know I will get back to them after I've checked and double-checked my answer. I'm willing to risk looking like an engineer who is unsure of herself in the short term for the long-term benefits of proving to clients and coworkers alike that my final answers are words they can trust.

### ✓ **Be reasonable**

As I mentioned earlier in this chapter, people—male and female—make mistakes. If someone assumes we hold a job title other than

the one we do, it probably was an honest mistake. Have you ever asked someone in a store for help only to find out that person didn't work there? Why did you ask them for help? Because of the way they were dressed? Because they "looked the part"? Mistakes happen. When it happens to us as females in a STEM workplace, we should simply inform the person that we are not who they believe us to be and ask if we can help by directing them to the right person. The majority of the time, their assumptions are not spiteful; there is no reason for a simple misunderstanding to damage our self-confidence or evoke a negative response.

One such story comes from Cecilia, an acquaintance who now works for a well-respected civil engineering firm in Carson City, Nevada. Cecilia, who has more degrees than I can count—including the second advanced geodesy degree ever earned by a woman from her native country—is an incredibly experienced and talented civil engineer. When she was a visiting scientist for six months at a jet propulsion lab in Pasadena, California, there were multiple times when she would be standing by a copy machine, a man would burst into the room and bark orders about how many copies he needed, and ask when she could get to it. Not only did this happen more than once, but it was the same man each time! Even though Cecelia politely explained each time that making copies was not part of her job description as a visiting scientist, she eventually felt compelled to avoid standing near photocopiers to resolve the situation.

### ✓ **Be realistic**

Just because a man chooses to pursue a STEM career does not make him radically different from other men, just as our choosing

to follow STEM careers does not make us radically different from the general female population. Therefore, most of the general attitudes and attributes displayed by men outside of STEM disciplines are mostly true of men within STEM disciplines, and we must come to accept that.

In my experience, men do not give as many compliments as women do; it's just not a dominant gene of theirs. Because of this we often feel unsupported in the workplace because our male coworkers rarely share their gratitude or their encouragement. We may not hear a lot of "atta girls." Therefore, we should be prepared for the likelihood that if a limited number of female coworkers are around, there could also be a limited number of encouraging words and actions.

In school, the high grades we earned reassured us that we were doing good work. As employees in a male-dominated workforce, not getting yelled at can sometimes be about the closest thing to encouragement we might find. Not all generalizations are always true, of course. We can get lucky and work in a firm where men feel comfortable giving compliments when they are due.

Hearing that we are doing a good job can boost our confidence, but it does not mean we are doing poorly if we don't often receive accolades. For me, the compliments and encouragements at TJ Krob were few and far between, which, sadly, fed into my self-doubt and damaged my confidence. True, without the reaffirmation of our peers, doubt can build inside of us. But we can learn to embrace the doubt and use it as motivation to make sure we take our jobs seriously and perform at our best.

Initially when I went to work for Tom, my confidence was damaged just by the numerous comments he made about the set of plans I had prepared. I thought that I had dotted all my i's and crossed all my t's. At first I took his critiques as a blow to my

ability as an engineer. Over time, however, my plans got better and Tom had less and less constructive criticism. For myself, I over-prepared for every project to ensure that I was equipped to do the best job possible. Tom's way of communicating that I was doing a good job was to increase my salary (which is always welcome) and to write what I consider high markings on my yearly review. When I am doing a plan review for one of my employees, I make sure to provide verbal positive affirmation as well. Always look for the positive and recognize and reward people accordingly.

Finding our confidence and maintaining it on the job is difficult, especially early in our careers. Chapter six explores the obstacles that can crush our confidence and highlights strategies to overcome them.

## **CONCLUSION**

When working with men, earning their respect takes hard work and, more important, patience. Just as all new employees have to prove to their coworkers that they belong and are capable, females in STEM fields have to prove they've earned their professional place among the men. Communication patterns in some environments, such as meetings, have been established to meet the needs of men, and we—being the minority—usually have to adapt. Even as we advance in our jobs, which I will discuss in the next chapter, we will likely continue to find pushback from our male coworkers, clients, or visitors. Whether that pushback is intended or not is unimportant. What is important is not allowing it to damage our self-confidence.



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