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# Assessing the Impact of Career and Family Choices in Mid-life: Striking the Right Balance for Women Engineers in Their 40s*

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*This paper examines the 20-year career paths of three women engineering graduates who took part in a larger quantitative/qualitative research study on the career mobility of engineers in the province of Manitoba, Canada. The results of in-depth interviews reveal that women graduates of the 1980s, while subject to discriminatory attitudes and practices at the beginning of their careers, have also been beneficiaries of societal, organizational and engineering-related improvements towards gender equity. Implications are drawn on the importance of mentoring strategies to women's career success in the field.*

**Keywords:** women; sociology; mentorship

## INTRODUCTION

WOMEN MADE UP only 0.5 per cent of registered professional engineers in Canada in 1980 [1]. Twenty-five years later in 2005, the number of women registered as professional engineers nationally had climbed to 9.5 per cent [2]. Nonetheless, they continue to be under-represented compared to the gender parity that has been achieved in other traditionally male-dominated fields such as law, business, medicine and dentistry. Many theories have been proposed to explain this phenomenon, ranging from the influence of societal forces and a lack of public awareness of what the engineering profession entails, to the psychological conflict that young women face in selecting a profession still seen as intimately connected with a masculine identity [3], [4], [5], [6].

This study attempts to move the knowledge base forward by profiling the careers of three women engineers in their 40s who were graduates of the mid to late 1980s and have been practicing in the profession for close to twenty years. As women, actively engaged in a male-dominated profession for two decades, they have a unique perspective on what barriers as well as opportunities exist for women in this field over time. In 2005, they took part in a larger two-phase, mixed method study, emphasizing collection of quantitative and qualitative data designed to explore the career mobility of Canadian women engineers in the province of Manitoba. The first phase consisted of an online survey administered to male and female engineers employed at four medium to large organizations, including a provincial power utility, two aerospace manufacturers and an international mining corporation. Six hundred and nine individuals were approached to take part and 344 men and 70 women participated, representing a 68 per cent overall response rate. The average age of respondents was 42 years and the average organizational tenure was 13 years.

Follow-up interviews took place as a result of an email invitation to all 86 women who were approached to participate in the online survey. Eighteen women replied, representing a 21 per cent response rate and interviews were conducted with them either at their or the researcher's office location. Nine women were represented in the interviews from the utility; six from the aerospace companies and three from the mining corporation. The interviews were tape-recorded and later transcribed for analysis. It is data collected from this latter, qualitative phase of the study that will be the primary focus of this paper.

Interview data were analysed using the grounded theory approach first formulated by Glaser and Strauss [7] which involves sorting textual data using a coding process and ultimately connecting data to higher level concepts and theories in an explanatory framework. In short, theory is gradually and inductively built up from the progressive stages of data analysis [8]. This progression requires increasingly higher levels of abstraction, and eventually, the study connects with both the theoretical and empirical knowledge base.

The age breakdown of the eighteen women interviewed falls into three distinct categories;

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under 30 years (5); between 30 and 35 years (5); and early to mid 40s (8). The eight women in their 40s can be further categorized into those who are working full-time and do not have children (3); those who are working full-time and have only one child (3); and those who are working part time and have two or more children (2). Many of the emerging themes uncovered through preliminary analysis of the data relate to the divergent career paths and perspectives of women engineers working full-time who are childless in comparison to those who are working a reduced schedule and have more than one child. Pseudonyms have been assigned to protect the identities of study participants who provided informed consent as part of the human subject approval process.

*Tanya: an engineering career shaped by adherence to the 'male' model*

Canadian women engineering graduates from the mid to late 1980s, unlike the scant few who preceded them in previous decades, were well positioned to take part in an emerging political and social climate that would be more receptive to their entrance into the engineering workplace. In August 1986, the Canadian government passed the Employment Equity Act which committed federally regulated employers and crown corporations to take steps toward employment equity for women, aboriginal peoples, racial minorities and people with disabilities. The legislation also affected provincially regulated employers bidding on federal government goods and services contracts worth at least C$200,000 to demonstrate a commitment to employment equity by complying with certain criteria. Fundamentally, the legislation was designed to increase not only the representation of these targeted groups in the workplace, but also the systems and culture that reinforce and perpetuate discriminatory practices [9]. Employment equity legislation also paved the way for the adoption of more liberal maternity and parental leave policies on the part of larger, bureaucratic employers—those identified by McIlwee and Robinson [3] as more amenable to the career paths of women engineers.

It was into this environment that many 1980s women graduates entered, as industries came under increasing pressure to meet new regulations on employment equity. Opportunities for employment beyond the consulting world suddenly exploded as regulated employers established quotas for hiring from within targeted groups. Many of the women profiled here and elsewhere by Ingram [10] recall that their fellow male engineering graduates and co-workers at the time were often critical of the initiative, arguing that women engineers were being hired over men on the basis of their gender and not demonstrated ability.

*The experience of Tanya as management tyro*

Tanya, a civil engineering graduate who joined the power utility back in the late 1980s remembers encountering some entrenched attitudes on behalf of the well established male engineers in the corporation at the time:

> There was a bit of affirmative action sort of policy at the time that I was being hired. There was opposition to that. The folks that were in charge when I started are now in their mid to late 70s to give you an idea of what generation. So, those were the people that were here when I entered, these are people who were born in the 20s. And all the attitudes that came with it. Some individuals were unpleasant but, by and large, people are just a product of their times, and they didn't know what to do. They didn't know how I fit in, this odd thing that's arrived, and [said] 'now what?'

She began her career working at one of the power generating stations being built in the 1980s. Most of these projects are located in the remotely inhabited Canadian north where temporary camps are set up to house utility staff and construction crews. Although she remembers being overwhelmed in the beginning when there were 1500 men on site and only four women in operational roles with Tanya as the only female engineer, she regards it as an enormously enriching experience. Over the years, her career progressed from supervising performance testing at all the generating stations, to becoming section head of water resources and responsible for licensing all hydro plants to eventually department manager of operations at the utility. As one of a handful of senior women engineers in a managerial role in the corporation, she had little to go on in terms of guidance twenty years earlier:

> Well, certainly I had individuals, meaning men who spent time explaining things to me, but I never had a role model, as a woman. I kind of made it up. I didn't know what a female engineer looked like. I didn't know how they behaved, so I'm probably very unorthodox as a manager. I just did what I thought, so it fused with my personality, rather than a role model that said 'okay, this is what this looks like.' So I didn't have any guidance, but I also didn't have any constraints.

Kerr [10], describes a mentor as not only a tutor or coach, but rather an individual who takes an abiding interest in an individual and their capabilities and who opens the critical network of power in professions. This latter aspect is essential for a young woman engineer to be able to excel and advance within the organization. Not only was there a lack of female mentorship in Tanya's case, but she also did not benefit from the utility's engineer-in-training programme because it did not exist at the time. This programme places newly hired engineers into a two year programme of rotations, so they can gain experience in different areas of the utility. The rotations last for six months and if at any point during the rotation, a permanent job is posted that an employee is interested in, he/she can apply for it. Such programmes have been shown to be pivotal in exposing the young female engineer to work situations that increasingly build confidence consistent

with becoming integrated into the 'culture of engineering.' [11], [12], [13], [14].

Despite lacking these career enhancements, Tanya throughout the years has made a concerted effort to encourage new engineers, even playing a central role in shaping the career path of another young female engineer profiled elsewhere by Ingram for this study [14]. She takes her responsibility as a mentor seriously:

> Regardless of whether it's women or young men, when I have an engineer in training come in here or for that matter, any new staff, I always like them to understand what's going on, as far as we fit into the bigger picture, because if you're doing some little activity and you don't know what the value of it is or why its important and it may seem menial, it helps to understand how you fit in. One of the stories I have is of John F. Kennedy walking through the NASA facility, and there's a guy sweeping the floor, and [Kennedy] asks him 'what are you doing?', and he says 'I'm helping to put a man on the moon'. And so, everybody's job is important, it's just a different role, and so I always want to make sure my staff know how they're putting that man on the moon, and how they fit into the picture. I think that's an important thing. And because I had a really, really bad boss once upon a time, I want to make sure that the young people have a better experience and particularly with the women. I've had a lot of the women come back here who've worked as engineers in training six terms ago or whatever. They'll come in and I've always said, 'come in anytime you want.' I don't mind doing that, because I didn't have that, and I figured it out, and that was okay, but why not give them something so they don't have to do that?

The 'bad boss' whom Tanya speaks of belonged to the older generation of men she referred to at the outset. While he exerted a powerful, negative influence, she maintains that the experience has likely shaped her into becoming the successful manager she is today:

> I've worked for a very bad boss, and excuse the language, I vowed I would never be that asshole. And that was very early in my career, and it could have finished my advancement. He had a very traditional idea of where women belonged, and certainly made an effort to make my life miserable. It was ugly. I mean, I contemplated leaving the corporation. This individual spent a lot of time undermining me. Like I tried to bid on jobs in other places and he would undermine them and my opportunity to go anywhere else. It was not a good scene. But what doesn't kill you makes you stronger. Subsequent to that I had a very good boss and this individual gave me all the opportunities in the world, and after that I've had nothing but positive experiences with supervisors.

Although she did not benefit from a mentor or participate in the rotational programme, and experienced overt resistance from her male supervisor early on in her career, Tanya invested in what has been identified as a cornerstone of engineering success, namely strong networking skills. Success at networking has been linked to increased visibility and promotional advancement and because male engineers are considered to have a 'cultural' advantage, women typically lose out in this regard [3]. Tanya's networking accomplishments are thus noteworthy given these constraints. Her networking has taken place at a formal level, in which she has served on a host of committees over the years and is currently represented on several boards. It has also taken place on a more personal and social level:

> The one thing I do is network well, and I think that's important, and being outgoing and friendly, being seen, serving on committees, so somebody knows who the hell you are, and get out of your cubicle, go talk to people. We have one of our young engineers, you give her an assignment, she'll get it done, doesn't go looking for extra work, doesn't talk to anybody else, and one of the things I always tell my staff is get noticed. Ask questions, be nosy, try and understand how it fits in and why it's important. I need to know everything, 'cause then you understand how things work, whether it be the technical side, or how people interact or how the process works.

As part of this study, Ingram [14] recently profiled women engineers under the age of thirty who attribute much of their emerging success to time invested in networking at both formal and informal levels. This more social and personal interactional style has formed a key part of Tanya's managerial approach:

> I attribute a lot of my success to my relationship with my staff. I have very good relationships with my staff; I spend a lot of time fostering that. Choosing the people, treating them well, giving them the resources they need, and getting the hell out of their way. And it's a formula that's worked very well for me. As I said, I have fostered my relationship with my staff, and not only made sure they had what they required for the work but that they are required as people. When I had a much larger group, I would make a conscious decision to go and talk to the staff, and see how they're doing with the work, but also ask them how their personal life is, and whether their daughter's getting married, or they're building a new house or their mom is sick or whatever it is. What things matter to them currently, and have an understanding of those things and ask them about them, and I find that that pays dividends, hugely, because if people feel that they are cared about, and when they have problems, or even a celebration, then the department will celebrate or mourn with them. They'll go out of their way to do more when you need them to. So it's a nice thing to do; it's also the smart thing to do.

Tanya does not describe herself as a workaholic, yet admits that her career success has involved a considerable investment of time and energy over the years. In her early forties and recently married, she has not had to make accommodations or adjustments for the sake of children and much of her career has evolved while still single. Although she perceives herself as having built a reputation as a fair and flexible manager, she also has a pragmatic view on the importance of a business approach to running the corporation and that work schedule alterations can only be accommodated to an extent:

> I think we can accommodate time shared jobs or half-time jobs and that's not unreasonable in certain environments. Certain jobs can do that, certain jobs can't. And you can't expect it because in the end, you have a business to run, and wherever possible, you should accommodate your staff, keep them happy, absolutely. But not to the detriment of the business. In the end this is a business. The ratepayer expects us to work efficiently, expects us to work appropriately. It may sound a little bit callous, but . . . we have to do things that are win-win, 'cause if it's win-lose then that's not a way to run a business. You can't have a part time manager. That's the reality of it. Somebody has to be running the ship all the time. But, having said that, I know some women who did the part time thing, came back when their kids were more independent, a little older. They're back full-time and they're just picking up where they left off. I don't think that the opportunities are not available to them; they might be available at a different time. You have to be able to evolve into things. You have to have enough background, enough experience, enough knowledge, and if you're working half-time, you're getting half as much experience, so it'll probably take you twice as long. Well, maybe not twice as long, but you should expect that it would take you longer.

In summary, Tanya's two decades of experience as a woman engineer in what remains a male-dominated profession are both insightful and compelling. While discriminatory attitudes and practices, as well as a lack of female role models are common barriers cited among women practicing in the field in the 1970s and '80s [3], [11], these constraints did not set her back in her pursuit of career advancement and managerial success. Equipped with a strong set of soft skill competencies and networking abilities, Tanya's career has evolved more in line with the traditional male engineering career path. Childless and without the attendant responsibility of raising children, her views on working for 'the corporate good' are also aligned with a more traditional, male managerial perspective. Tanya's career path closely parallels another participant in the study who works for an aerospace company. Monika, at 43 is married and childless, having received several management-related promotions with only one level, that of Chief Engineer remaining above her [13].

*Combining engineering and family roles: working less for more*

Danielle and Sunita are two women in their early 40s who have also worked for the power utility for close to twenty years and have more recently reduced their work schedules in an effort to achieve a better work/life balance. At the time of writing, both women were working at two-thirds of a full-time schedule, with Sunita having plans to return to full time. Danielle, a 1988 civil engineering graduate with two children recalls being the first engineer at the utility to pursue such a career track and some of the entrenched attitudes that prevailed at the time:

> One of the more frustrating experiences that I've had is that when I did ask to work part time—after my second child was born I was on maternity leave for a year. Before I left, I had broached the subject of coming back part time, and the manager of the department at the time basically said he thought that it was unprofessional to have people working part time. Now, he did arrange for me to have another position, a part time position, in another part of the company. So, you know I do have to be grateful to him in one way, because he did arrange that for me. But it was kind of stinging to hear him say, that he thought it was unprofessional because I don't think it's unprofessional. I don't think making the choice to spend more time with your family is an unprofessional thing do to. I wanted to work part time, I asked for it, in fact, I fought for it, and probably if I hadn't worked part time, I may have had more opportunities to move up a bit more, but working part time was very important to me because I wanted to have more time to spend with my kids, and I was willing to sacrifice the opportunity for promotion to have that.

While originally she met with resistance to the notion of an engineer working part time, Danielle has witnessed societal changes in recent years that place increasing responsibility on men to become more involved in family life. As a result, she has seen a corporate willingness to be more flexible and accommodating:

> My supervisor—he's roughly the same age as I am, he has three young children of his own, so he is totally in touch with any kind of issues that I have. When you come in and say 'gee the kid's been throwing up all night long', he knows what you're talking about. Those who were in management when I started, almost all of them had a spouse who stayed at home, or at the very most, had a small part-time job that they worked in the evening. Now the people that are getting into management, a lot, not all . . . but quite a few, have had to take a larger part in their family life, or maybe even they just made the realization that there's more to life than just your job. And a lot of them are more willing to be more flexible.

Within the last few years, the utility has introduced a family responsibility leave, entitling employees to five days a year to attend to family-related issues. Danielle speaks highly of the effect that this policy as well as paternity leave has had on leveling male/female inequities:

> Before if you had a sick kid, you were taking vacation [days]. Now you've got five days a year, you can take whether you're sick or your family is. And the good thing about it is that it's not just for the women with kids, it's for men with kids, and men or women with elderly parents . . . The key to making these situations successful, is to not have a policy just for the women with kids. The option to work part time has to be available to everyone. And the other thing is when I went on maternity leave, it would be unheard of for a male to take paternity leave, or some sort of parental leave. Now, we have started to see more of that. Interestingly enough, there was a gentleman last summer who took three months paternity leave, and there were some rude comments made about it. There were some people who referred to it as a vacation. 'Oh when do you start your vacation?' 'It's not vacation;

> I'm going on paternity leave.' And you know I couldn't help but recall back to when I was going on maternity leave, that's what people said to me. 'Oh, your year long vacation is starting soon.' And so, I guess even though I feel bad the men have to put up with this sort of stuff, in the beginning too, that's just how it is. You have to get over it, until finally it gets . . . more equitable and then it won't be said anymore.

Sunita, a 1985 graduate in electrical engineering made the decision to move onto a reduced work schedule when she became overwhelmed with the demands of her managerial role, family and health issues. Approximately ten years ago, she was promoted to section group leader in the Communications Department, which resulted in a significant increase in responsibility and salary. However, this also coincided with her and her husband's attempts to raise a family of three children, all under the age of six at the time. Even though her mother played a strong role in providing childcare, the conflicting demands placed upon her eventually took their toll. Sunita describes it as a cyclical process, involving physical, mental and emotional burnout:

> It was crazy, I was putting in like three hours a night. I was putting my kids to sleep and then working. I still remember, 1995 to 1998, that was when my boss was on secondment, and I was made boss, and they didn't replace me, so I was working understaffed, at a higher level. So for a long time I hardly slept. It was crazy, because it was also a time when at home, my children were small, my husband was working hard himself, and I was blindly doing both jobs . . . I worked for a workaholic. So when you work for a workaholic, it's putting in a lot of hours. So I did. You cut back on your kids, you cut back on your marriage, you cut back on your hobbies. We cut back on everything and it was too much. And I mean, I did become a section leader, and my boss was allowed to move on to something higher. So it worked professionally for us, but at a big price . . . that's why my back broke, literally. Every ailment that you have is related somehow, anyway. For sure, because you're always stressed, you're always pushing to have everything happen and everything had to happen well . . . not average . . . well.

Approximately four years ago, after taking a disability leave which ultimately resulted in back surgery, followed by a personal leave, Sunita made the decision to work a reduced work schedule. Recently separated from her husband, she now finds her work hours provide her with the necessary balance to attend to both her children and her own needs. Although she describes her current position as a demotion compared to her former job as section head and one that she did not plan for in her career, Sunita has gained an understanding of the importance of finding an effective work/life balance and asserts that other employees are increasingly coming to the same realization:

> I look at our technicians, and you know, the generation before them worked very hard, long hours, worked overtime where they could to make the money. This generation is different. They have enough money, so money is not a deciding factor, and they've had enough money for awhile, because their parents worked for it, and they were provided for. So there are other aspects of their life that are important now. And those other aspects could be girlfriend, boyfriend, the spouse or the children. The generation of my boss, was a generation that was workaholic. And I'm kind of the middle layer. There are a lot of us who are working, who were trained in the old tradition, but there are a lot of us who have consciously let go of all that.

## CONCLUSION

Women engineering graduates of the 1980s occupy a unique place in Canada's evolving political and social climate and correspondingly in the structural changes the engineering profession has witnessed in recent years. While discriminatory practices and attitudes remained, these women were the first to benefit from long-deserved legislation designed to increase their numbers in a male-dominated profession and help redress longstanding workplace inequities. Parental/paternity leave and family responsibility leave represent the most recent attempts by organizations to equalize the playing field for men and women employees. It is important to note, however, that it was the large-scale, bureaucratic organizations such as the provincially government-owned, power utility profiled here which began to institute such changes early on and should thus be regarded as more progressive in this regard. A 2002 national survey of professional engineers reports that while 90 per cent of women engineers claim that their employers offer them at least some flexibility to balance work and family, those working on a contract/intermittent basis and for firms with fewer than 100 employees report being offered less flexibility [1]. Thus, experiences of women in smaller, consulting companies may still not compare in 2007, and are worthy of further study.

Although beneficiaries of societal and organizational progress, the 1980s women graduates due in part, to their place in time, did not have the benefit of mentorship, either as engineering students or as young engineers. Whereas the younger women engineers in this study, particularly those who took part in cooperative education programmes, are beginning to reap the benefits of being mentored which will hopefully help pave the way to more informed and strategic career choices and ultimately greater mobility [15]. As Leggon [16] argues with respect to improving the representation of women and other under-represented groups in information technology in the US, whether on a formal or informal basis, mentorship should be an ongoing aspect of a student's career—from grade school to graduate school and beyond.

Finally, the profiles of women engineers presented here and the manner in which they have dealt with career and family issues are not

intended to be seen as an either/or dichotomy or in any way representative of Canadian women in engineering as a whole. The author is aware of women in the field in their 30s and 40s who are aggressively pursing their careers alongside families with two or more children; however, they were not participants in this study. The age group explored here has the uniqueness of being the first sizeable group of Canadian female graduates whose career trajectories span twenty years of legal, societal and organizational changes. At the same time, they are subjected to enduring and, at times resistant models of male-orientated career paths and traditional demands of motherhood and family life. Given the fact that in 2007, the engineering profession and classroom in Canada as with many other countries is still largely male-dominated, gaining an understanding of the social processes that underpin engineering remains a worthwhile endeavour.

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