

Elsie Gregory MacGill: Engineer, Feminist and Advocate for Social Change

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Abstract

Elsie Gregory MacGill was a strong advocate for social change, and as a pioneering Canadian engineer and a feminist, her actions as a social activist during the 1960s and 1970s were influenced by and reflect this dual identity. Her actions also call into question the assumption that engineering and feminism are an unlikely combination.

Résumé

Elsie Gregory MacGill était une grande porte-parole pour le changement social, et en tant qu'ingénieure canadienne pionnière et féministe, ses actions d'activiste sociale durant les années 60 et les années 70 ont été influencées et reflètent cette dualité d'identité. Ses actions mettent aussi en question la supposition que l'ingénierie et le féminisme sont une combinaison improbable.

Introduction

Within the North American context, women engineers are normally seen as distancing themselves from feminism (Cowan 2000; Oldenziel 2000). American Nora Stanton Blatch (1883-1971), an engineer and feminist, is described as the exception, not the norm (Oldenziel 2000,12-13). Is this the case in the Canadian context? Did Canadian women engineers also largely avoid involvement and association with feminist organizations and activities? Through an analysis of Elsie Gregory MacGill, a Canadian pioneering engineer and feminist, this paper will argue that this was not necessarily the case.

In 1927, Elsie Gregory MacGill was the first woman to graduate from the University of Toronto in electrical engineering, and in 1929 she became the first woman in North America to obtain a Masters in aeronautical engineering, from the University of Michigan. She began work in Canada in the 1930s at Fairchild Aircraft Limited, and just before the Second World War she successfully bargained to relocate with a promotion to Chief Aeronautical Engineer at Canadian Car and Foundry's plant in Fort William, Ontario (presently Thunder Bay, Ontario) (Smith and Wakewich 1999; 2005). She held this position until 1943 when she was dismissed, along with the General Manager of Canadian Car and Foundry, William Soulsby. Much speculation surrounds the rationale for their dismissal, especially considering their subsequent marriage. However, the increasing production challenges at the plant and the war context must also be taken into consideration as it appears they both maintained a professional working relationship.¹ MacGill then relocated to Toronto to set up her own practice as an independent consulting engineer (Merritt 1999; Wakewich 2001).

After Elsie MacGill settled in Toronto she became highly involved with the Canadian Federation of Business and Professional

Women's Clubs (CFBPWC). She was well prepared for public activism as part of her family's feminist and social reform legacy, especially that of her mother, Helen Gregory MacGill, who was both a suffragist and the first woman judge appointed in British Columbia (MacGill 1981; Prentice *et al.* 1996, 227-28). Elsie MacGill's experience and training as an engineer also provided her with the skills of leadership, time management, large-project co-ordination, and organization. She applied these skills to her work with the CFBPWC, while at the same time further extending her knowledge about Canadian women's feminism and the means to work for legislative change. As a result, she was able to rise to the level of provincial (Ontario) and national president of the CFBPWC. Moreover, in 1967, she was selected as a Commissioner on the Royal Commission on the Status of Women in Canada (RCSW), which was established by the government led by Prime Minister Lester B. Pearson.

The Canadian historiography on women in science and engineering is small in comparison to similar American scholarship (Ambrose *et al.* 1997; Rossiter 1995 & 1982). Ruby Heap noted in a recent special issue of *Scientia Canadensis* entitled "Women and Gender in Canadian Science, Engineering and Medicine," that the analysis of women in engineering is still "largely unexplored" (Heap 2006a, 10). However, the new growth in studies within the field is beginning to alter this trend (Heap 2006b, 2003; Heap and Scheinberg 2005; Millar *et al.* 2005; Sissons 2008, 2006). Interest in the life and work of Elsie Gregory MacGill has also received renewed attention. New studies have moved beyond analyses of her pioneering role as a woman engineer to further examine her active role as an engineer and as a feminist (Bourgeois-Doyle 2008; Saxberg 1999; Sissons 2008, 2006).

The study of women in engineering owes much to groundbreaking Canadian studies of women in science and women in the professions. Marianne Gosztonyi Ainley's *Despite the Odds* established the foundations for the study of women in the sciences. It also identified some of the challenges in assessing these women due to the dearth of scholarship

and lack of policies and education fostering the retention of women's records for historical study (Ainley 1990, 18-19). In comparison, Mary Kinnear's pioneering work on Canadian women in the professions identifies the important role of feminism when considering women's pursuit of qualifications and subsequent practice as professionals (Kinnear 1995). Recent collective studies on women in the professions have built on her work in an attempt to better understand the goals, motives, successes and challenges of professional Canadian women (Heap *et al.* 2005; Smyth *et al.* 1999). It is within this context that a study of Elsie Gregory MacGill can be undertaken.

To what extent does a feminist case study of Elsie Gregory MacGill's public life enhance the historical record and aid our understanding of current realities? To what extent did her engineering affect her feminism, and vice versa? I will argue that this study allows for insight into the ways an individual can work towards social change in the seemingly unrelated areas of engineering and feminist activism. In order to illustrate how MacGill achieved this I will examine how her interest in the status of women influenced her public advocacy within engineering, and how her engineering skills and training influenced her feminist activism during the 1960s and 1970s. Specific examples will be drawn from her role as national president of the CFBPWC, her public support and defence of women in engineering, and her advocacy related to the RCSW.

Elsie Gregory MacGill's feminist consciousness developed during the 1950s (Bourgeois-Doyle 2008, 222-24; Sissons 2008, 98-100), and her feminism was acknowledged when she was appointed to the RCSW in 1967 (Black 1993, 160; Bourgeois-Doyle 2008, 224-25, 236; Sissons 2008, 98-100, 142-43).² MacGill's advocacy for women was tied to her mother's feminism. However, as she developed her own liberal equal rights agenda, she also included certain radical aspects, most notably her public stance during the RCSW on women's right to choice in regards to abortion (Sissons 2006, 96). Thus, as her feminism evolved, it developed into a unique blend that was all her own.

National President of the Canadian Federation of Business and Professional Women's Clubs

In 1963, during a cross-country tour as national president of the CFBPWC, MacGill focused on the impending impact of automation on Canadian society, and more specifically on women. She identified that recent concepts such as "self-serve" and "do-it-yourself" had become commonplace, as well as the increased labour-saving technologies in the home which allowed women more freedom from household work (LAC MG31-K7 Vol 7 File 21a, 1-2). She also pointed out that as industrialization continued, so would mechanization and further automation (LAC MG31-K7 Vol 7 File 21b,1; LAC MG31-K7 Vol 1 File 10). As a result, the need for trained, skilled, and professional workers with increased technical knowledge would only continue to rise, and re-training would become a requirement throughout an individual's working life (LAC MG31-K7 Vol 7 File 21d, 1). Work would also change in nature, as there would be fewer jobs requiring brute strength and more jobs requiring increased education. Thus, jobs formerly labeled as "men's work" would become accessible to women (LAC MG31-K7 Vol 7 File 21a, 1-2).

MacGill saw the changes in the home and industry as largely labour-saving and positive. Moreover, they could lead to a new conception of family life. She noted:

Industrialization is based on technology, and it is the rise of technology that - for the first time in human history - is freeing humanity from want and grinding toil, and bringing closer the age-old dream of abundance and leisure for all.

This is an awesome prospect which points to great changes in our daily life...the only life we know, or have ever heard of, is one in which most people face scarcity, and spend most of their lives working. So we would expect a society in which everyone enjoys abundance and leisure to be very different from any we know. (LAC MG31-K7 Vol 7 File 21c, 2)

However, she was realistic and noted that while the potential for positive change existed it was severely challenged by what John Kenneth Galbraith had coined "conventional wisdom" or, that is, established ideas which are

maintained as true despite having being dismissed on multiple occasions. She thus advocated that the members of the CFBPWC should not subscribe to this "wisdom," or allow it to orient their decisions (LAC MG31-K7 Vol 7 File 21d, 3). In her view, stereotypical and discriminatory views towards women in the workplace, including beliefs that women were not mechanically inclined and lacked mathematical and management abilities, were an impediment to social change. She argued:

What may be more difficult for us as Canadians to see is that social attitudes here must change before all-out industrialization becomes possible, and that actually Canada, too, has a "caste" system of a sort. Before our nation can marshal [sic] her full resources of ability and skill, Canadian traditional attitudes toward women must change, the present waste of womanpower must cease, the reservoir of knowledge, skill and ability in the female half of our population must be brought into full usefulness.

(LAC MG31-K7 Vol 7 File 21d, 3-4)

Ultimately, despite the challenges posed by technological change and social expectations, MacGill put her faith in the promise of technology and the potential for social reform to work towards an equitable and prosperous future, "It is only habit, custom and complacency that keep us chained to outwor[n] ideas and outmoded institutions. On[c]e we recognize the desirability of change we can readily find the way to accomplish it" (LAC MG31-K7 Vol 7 File 21c, 5).³ As the 1960s came to a close MacGill took an increasingly active stand for women in engineering and for women in Canadian society.

Women in Engineering

As a woman engineer, Elsie Gregory MacGill stood out in this highly male-dominated profession. In 1967, she argued that more women were needed in science and engineering to allow for increased equality within the profession, noting "[w]hat is needed to stabilize the position of women in science and engineering in Canada, is numbers - many, many more women to fill up the ranks of scientists and engineers" (MacGill 1967). Later, in 1972, more than 45 years since her graduation from the University of Toronto in

1927, she took it upon herself to compile a list of women engineers registered with the Association of Professional Engineers of Ontario (APEO). Her efforts revealed that there were 72 women, including herself, out of 31,000 registered members (LAC MG31-K7 Vol 23 File 10).

These numbers help account for many of MacGill's actions during this period. She was determined to increase the number of women in engineering and promote their full participation in the profession. For example, she served as a role model and mentor to new women students in engineering at the University of Toronto and worked to assist them financially through a bursary in her name with the CFBPWC.

MacGill struggled as well to dispel prevailing assumptions about women in engineering. In 1970, she took a public stand on behalf of women engineers in response to an article published by University of Toronto professor of engineering, Dr. F.P.J. Rimrott, in the *Canadian Aeronautics and Space Journal*. Rimrott called for the creation of an education program to train women as "engineering aides." He argued that, "A serious lack of adequately trained women in engineering offices on one hand and a surfeit of gifted young women in search of acceptable professional careers on the other call for the introduction of a degree course for Engineering Aides at universities, a step which would benefit young women, the engineering profession and the national economy in general" (Rimrott 1970).

He clung to several stereotypes concerning women's interests and abilities in engineering arguing,

If women are to participate more actively in the shaping of our future, those areas within the wide spectrum of engineering must be found and singled out which appeal to women and where they stand a good chance of competing successfully with men. Engineering means primarily design and synthesis, areas which are presumably the realm of men. Let us not argue this point here. But there are other aspects of engineering, such as analysis, experimentation, communication and documentation, phases of work where women are known to find appealing assignments.

Women favour jobs that do not involve certain duties of which some are, unfortunately, characteristic of engineering, such as design, risk projects, travel, field or shop work, physically and mentally demanding tasks, supervisory functions and major responsibilities.

(Rimrott 1970)

Upon reading the article, MacGill first thought that it was a spoof (LAC MG31-K7 Vol 24 File 13a). She then realized that she needed to respond by sending a letter to the journal. She clearly condemned the sex-typing of occupations in her letter stating:

I agree that in the "team" concept of today's activities there is ample room for talents other than the creative ones...of the professional engineer - but dont [sic] let's single out women as special candidates for the supportive role of engineering aide. To subject a new occupation to traditional sex-typing would, in my mind, be a retrograde step indeed.

Furthermore, she pointed out that the existing stereotypes were products of culture and tradition, not biology:

We are all aware that differences in the educational motivation of girls and boys are more likely to be rooted in our culture and in their upbringing than in their nature or biological characteristics. In the past our society typed certain occupations as being more appropriate to one sex than the other, and in many fields this trad[ition] lingers on despite economic and technological changes. Consequently, the selection of an occupation today often continues to be more a m[at]ter of what that individual has learned to consider appropriate than of what that individual would really prefer to do. This may explain why fewer men than women enter nursing, and why fewere [sic] women than men enter engineering.

(LAC MG31-K7 Vol 17 File 13a)

She thus urged engineers to work to ameliorate the situation, and not contribute to the retention of sex-typed beliefs, stating: "To my mind we in the engineering profession would serve Canada better by bending our energies toward reducing rather than augmenting sex-typing in our field" (LAC MG31-K7 Vol 17 File 13a). MacGill's concerns were well founded; female engineering aides had been trained in the United States during the

Second World War. These were subordinate and temporary positions which offered women few managerial opportunities. In fact, once the war ended, these "aides" were for the most part let go, with the men returning to their former employment (Bix 2004; Oldenziel 2000, 25-30).

In his response to MacGill, Mr. H.C. Luttmann, the journal's managing editor, indicated that he had received other letters and that the journal wanted to publish them all as the article had provoked an intense debate (LAC MG31-K7 Vol 17 File 13b). As a result, The American Society of Mechanical Engineers decided to stage a public debate on the issue. Ironically, the society held the debate about "Women in Engineering" on 18 March 1971, at its dinner meeting and Ladies Night (LAC MG31-K7 Vol 24 File 13b). Moderated by Richard J. Needham of the *Globe & Mail*, it included both MacGill and Dr. Rimrott. To add balance to the discussion the panel also included Miss Beryl Lake - Head of Guidance for William Lyon Mackenzie Collegiate Institute, and Dr. P.A. Lapp, author of *Ring of Iron: A Study of Engineering Education in Ontario*.

In preparation for the debate MacGill wrote detailed notes on the issue. She planned to expose glaring problems fostering women's inequality, but noted: "I can not [*sic*] look at this occasion as a confrontation, or a chance to win a black belt for women in engineering." She further wrote that the article exposed deeper societal problems noting: "Traditional attitudes about the kind of work that women should do, or can do, restricts their occupational alternatives. These attitudes affect not only the expectations of girls & hence their training...but also the kind of employment that is open to women." Indeed, she reflected that society still "persists in regarding the role of women as secondary & supportive, to that of men..." which in turn, served to discourage women from pursuing the path to professional engineering (LAC MG31-K7 Vol 24 File 13c).

MacGill also tried to understand the source of Rimrott's arguments. She wondered if his academic position was at play: "Maybe the difference in Prof Rimrotts [*sic*] point of view & mine is that he is in academic life and work while I am in practicing engineering, design and construction...theory vs practice." At the same

time, MacGill recalled that she did not find academia overtly discriminatory when she was a student. In the end, when the debate was held, MacGill elaborated on her belief that sex-typing was embedded in societal attitudes and beliefs. Ultimately, she argued,

The traditional attitud[e]s about the kind of work for women not only restricts their occupational choices, but it influences their expectations and hence the kind [*sic*] of training they look for. Where a job is sex-typed for men, the girl who is interested in that kind of work, is often discouraged from entering the field by the stories told her of the difficulties she will have getting a job, and the kind of ridicule she has to put up with.

(LAC MG31-K7 Vol 24 File 13c)

MacGill pressed universities and colleges, as well as the Department of Manpower, to target those companies whose job descriptions were sex-typed either for women or men. She also strongly urged the engineering profession to offer support to women colleagues, especially when family responsibilities required them to take a leave from their professional duties (LAC MG31-K7 Vol 24 File 13a). MacGill's comments were well received by the audience and by the American Society of Mechanical Engineers.

By the 1970s, some Canadian women engineers decided to form their own organization. With few women practising engineering in Canada, a national Canadian organization was needed to increase networking and support amongst women professionals and to encourage other women to engage in engineering. Such an organization could also serve as a place for women to seek mentors and role models such as Elsie Gregory MacGill.

The new organization, known as Women in Science and Engineering (WISE) (LAC MG31-K7 Vol 24 File 16b), was originally set up by ten women engineers at Ontario Hydro in 1977, who looked to organizations such as the American Society of Women Engineers (SWE) for their model. The founding president, Claudette Lassonde, wrote to MacGill on 19 February 1979 and outlined the goals and needs of the organization, stating:

We believe that such an organization can encourage young women to go into these fields and also increase our self-confidence in trying to achieve both at the educational level and in the industry. We also hope that we will be able to raise the awareness of the Canadian private industry to the presence of very qualified engineers who happen to be women. But we are a very small group, having only approximately 45 members. We need a lot of moral support and some role models to look up to.

(LAC MG31-K7 Vol 24 File 16a)

Lassonde reminded MacGill that she was "the Number One Canadian woman engineer to look up to," and hoped that she would consider coming to speak with them about her experiences and also offer advice to the group. MacGill responded positively, and arranged to speak to the group for about an hour and a half on 23 April 1979 (LAC MG31-K7 Vol 24 File 16a). The need for WISE was proven through its expansion, including local chapters in Ottawa, Sarnia, Kingston, Newfoundland and New Brunswick. It also attracted some members internationally. In addition to chapters reserved for professional women, others were set up at universities, specifically for women pursuing studies in science and engineering (PEO 1999).

The Royal Commission on the Status of Women, 1967-1970

Previous scholarship on Elsie Gregory MacGill's role as a Commissioner on the Royal Commission on the Status of Women in Canada (RCSW) has argued that her training as an engineer informed her actions as a feminist (Sissons 2006). For instance, she approached the Commission with the organizational skills of an engineer and presented her arguments in a logical and scientific manner through the use of tables and hypotheses (Sissons 2006, 83-90). MacGill also continued to be faithful to the views she had expressed as national president of the Canadian Federation of Business and Professional Women's Clubs (CFBPWC). She thus maintained her concern about the impact of technology on both women and men, and had high expectations for the Commission noting:

It is possible that the effects of this Commission will reach further than people think. When considering the status of women, it is important to realize that for both men and women technology is rapidly changing the existing Canadian patterns of employment, full-time and part-time work - and leisure, too - and the social and economic values upon which status is based. Insight gained there could drastically change Canada's social philosophy.

(LAC MG31-K7 Vol 5 File 25)

Well into the 1970s, MacGill carried the cause of the RCSW and urged women in the fields of science and engineering to consider the importance of advocating for social change as she had done herself. Speaking to the graduates of the St. Lawrence College of Arts and Applied Science, in Kingston, Ontario on 31 May 1975, MacGill challenged the next generation to continue this important work stating:

I take for granted that you will advance your particular discipline, and I hope that you see it as more than something that gains you a livelihood. I think that with your training you are well placed to promote social goals, to open opportunities for everyone and to free people from the stultifying attitudes and practices that hamper their development.

All of us, be we nine years old or fifty-five, have a stake in the future because we live in it. You who are young have the greatest stake for you have the longest time there HOW WILL YOU USE YOUR EXTRA TIME?⁴

(LAC MG31-K7 Vol 21 File 10)

MacGill continued to promote a positive view of the relationship between women and technology, but she also warned that since technologies produced rapid social change, constant vigilance was key with respect to the protection of women's rights. In an address to the University of Manitoba Student's Union, on 17 October 1972 she challenged her audience by asking:

But is the need for change generally accepted? Well, it had better be - for rapid change is all about us. Atomic energy, antibiotics, electronic controls, television, computers, jet flight, moon landings, space explorations, satellite communications have all become commonplace within the last thirty years. These new technologies bring new solutions to problems, and bring new problems, and

these can produce further social changes. Because of this the Commission stressed the point that its Report and its Recommendations were only a beginning, from which a start could be mad[e].

(LAC MG31-K7 Volume 21 File 9, 11)

Her views were clearly echoed in the RCSW Report, which argued that "Action that is appropriate today may become obsolete; new approaches may be needed. Moreover there is a need to keep a continuing watch in order that women's rights and freedoms are respected" (RCSW Report 1970, 387).

MacGill's overall faith in technology and the potential it held for improving women's role and place in society was shared by other women engineers during this period, including the American Nora Stanton Blatch, who believed that technological changes in the United States were ultimately linked to positive political change (Oldenziel 2000, 12; 17-18). Like MacGill, Blatch was also a third-generation feminist; her mother, Harriot S. Blatch (1856-1940), and her grandmother, Elizabeth Cady Stanton (1815-1902), were both prominent American feminists, and she felt that technology fostered women's political and social advancement (Oldenziel 2000, 18). This positive view of science and technology would eventually be contested both in Canada and the United States, with the emergence of a feminist critique of science in the 1970s (Fox Keller 1995; Harding 1986; Heap 2003, 53).

Conclusion

Elsie Gregory MacGill died at age 75, on 4 November 1980 in Cambridge, Massachusetts while visiting her sister, Helen MacGill Hughes, and brother-in-law, Everett Hughes.⁵ She was remembered most appropriately by the creation of the Elsie Gregory MacGill Memorial Foundation in 1984, established jointly by her engineering and feminist colleagues - a testimony to the strong connections she had established with the two groups. The award of five thousand dollars was to be given "to a person of exceptional achievement, who may direct it toward improving the physical environment and/or equality of opportunity for women, men and disabled persons in legal, educational, social or

economic spheres." The monetary award could be bestowed upon a Canadian university to advance studies in the disciplines of engineering and applied science, women's studies, and methods of education pertaining to these disciplines, or to provide educational training at the post-graduate level for the recipient⁶ (LAC R/E 2007-0703 Vol 1. File EGMMF: Honorary Selection). A sculpture by Canadian artist Maryon Kantaroff was presented along with the monetary award. The sculpture itself symbolized MacGill's life, with one section representing the "flowing creativity and logical structured thought and action" and the other "representing the ancient female relationship of wise grandmother, mother and daughter." Parallel ridges linked the two sections to one another⁷ (LAC R/E 2007-0703 Volume 1. File EGMMF: 1986 Selection CMTTEE).

MacGill's example is reflective of her training as an engineer, which influenced her views and arguments as a feminist in relation to her presidency with the CFBPWC, and her work as a Commissioner on the RCSW. In both these positions she advocated that technology could make positive contributions to society and had the potential to revolutionize the lives of women for the better. She also urged her colleagues and the next generation to engage with the issues surrounding technological change and take the necessary steps for positive social change. At the same time, her feminism led to her leadership and active defence of women in the engineering profession where she served as an advocate and mentor. To this end she worked to increase the number of women in engineering, used her feminist connections to provide financial support to young women students, defended women's abilities as engineers, and aided new organizations established to assist women in the engineering profession.

A case study of Elsie Gregory MacGill enhances the historical record by providing new insights on the role of Canadian women engineers. Additional research is necessary to determine if other women acted in similar ways to MacGill. Ultimately, her example challenges the existing view that women engineers in North America remained aloof from feminism and

demonstrates one way that engineering and feminism can be merged to effect social change.

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Endnotes

1. Richard Bourgeois-Doyle discusses this topic at length (Bourgeois-Doyle 2008). To date, I have not been able to locate specific documentation outlining the exact reason for their dismissal.
2. For additional studies on the RCSW see: (Arscott 1995; Morris 1982)
3. For an in depth study of mechanization and automation in the American context see: (Bix 2000).
4. Emphasis MacGill.
5. MacGill had been suffering from a cough and had resisted consulting a doctor. During her visit she was hospitalized and later passed away - personal interview with MacGill's step-daughter Ann Soulsby (Soulsby 2006). Helen MacGill Hughes and Everett Hughes were both known sociologists and trained at the Chicago School of Sociology with sociologist Robert Park (Hughes 1977).
6. The first recipients of the award were: Professor Jeanne Lapointe, Laval University (1986), Professor Ursula Franklin, University of Toronto (1987), and Professor Dormer Ellis, Ontario Institute for Studies in Education (1988).
7. In 1995, it was transferred to the University of Toronto's Faculty of Arts and Science to oversee and administer.

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- b. "Spotlight on Women Who Work"
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- b. Letter from Mr. Luttman to MacGill, 1970.

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- b. Letter to MacGill from AMEC, 3 March, 1971.
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- a. Newsletters, 1978-1980. Letter to MacGill from Claudette Lassonde, President of WISE - 19 February 1979.
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