

Becoming Inventors: Women Who Aspire to Invent

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Despite growing awareness of women's contributions to technological advances in the past, almost nothing is known about contemporary women inventors and the challenges they face. Although greater attention has been given recently to women's contributions to technology and innovation, understanding of women's technical creativity has lagged behind understanding of women's creativity in other realms.

Many fascinating examples of women's inventions in the past have been "discovered," as feminist scholars reclaim our past. Women invented food gathering; Catherine Littlefield Greene actually invented the cotton gin; Ellen Eglin, a black woman, invented the wringer washer, although the credit went to a white man. Nothing is known about women who aspire to become the inventors of tomorrow.

Innovators and creative thinkers are thought of in male terms — pioneers on the intellectual frontiers who have sufficient self-confidence and independence to criticise existing ideas and to work outside traditional boundaries. Women, not surprisingly, do not easily fit these cultural images. Yet, in Canada in the 1980s (as well as in other western countries), women comprise the fastest growing group of entrepreneurs, and their businesses more often survive than do those started by men. A contradiction is apparent between what women are *actually* doing and what they are seen to be capable of doing. The power of patriarchy is such that women come to accept prevalent myths and explanations as real, despite the contradictions between the myths and our own lived experiences.

Technology, perhaps even more than science, is a masculine pursuit. Technological change omits women. What women may contribute tends to be redefined as unimportant. Women's inventions and ideas are often usurped by men or given to them by women who believe that an invention by a woman will be taken less seriously. Is it a new world for women today, as so many people seem to think (or hope)? Or do barriers remain? We interviewed 26 women who aspired to be inventors to find out. The women were participants in a workshop on inventing sponsored by the Women Inventor's Project, held in Waterloo, Ontario, in May 1987.

The women interviewed were diverse, ranging in age from 24 to 61 and in occupations from woodworking to homemaking to real estate. A significant proportion (60 percent) reported some experience in small business. Although most had ideas only at the concept stage, some had working models, and one had done a patent search. Their ideas ranged from medical to educational, but the majority had a domestic component.

A significant percentage of the women we interviewed mentioned that people who are important and close to them tend to be very supportive of their ideas. Family members, especially husbands, become less encouraging when the inventing requires the women's increased commitment of time and money. More experienced women inventors more often report of husbands who are disinterested, unwilling to make prototypes, and withholding of financial support.

For aspiring inventors, the greatest challenge is financial. For more experienced inventors, interviewed in an earlier study (Cummins, McDaniel, Beauchamp, 1988; McDaniel, Cummins, Beauchamp, 1988), the most commonly cited challenge is lack of technical abilities. Lack of necessary information ranks as an important challenge for both aspiring and more experienced inventors.

Aspiring women inventors tend to downplay their ideas but take pride themselves:

I make excuses for never developing my ideas, but I believe very strongly in them.

I see my ideas as valid and accept them for what they are. I see them as services.

By contrast, the experienced women inventors more often report that people in positions of authority withhold information and money, and discourage them in developing their ideas. Aspiring women inventors may not yet have faced this sobering experience.

The technical world of invention, for the most part, does not seem daunting to aspiring women inventors:

If I go into a man's world, I do my homework. I learn the phrases and ask questions.

No, because silence is good to know. Women have to play a credibility game.

Most of the aspiring women inventors we interviewed had no difficulty in associating the word "inventor" with women:

No. I am aware that there are not many women inventors but that doesn't stop me from associating it [the label inventor] with women.

No, however, inventors are usually males or they are at least presented in that way.

No. Women are just as good as males but they have to try harder.

Aspiring women inventors, while recognising sexism, seek to conform, as do female engineering students, who are also a minority. This may be related to their optimism about women entering the male-dominated

field of invention. Some aspiring inventors mention that women or their ideas are not always welcome:

People laughed at us at first, a lot of people didn't take us seriously because we were four girls. The company that we approached also certainly didn't recognize us as aspiring women inventors. Also, my cousins who live in the country were surprised to see me succeed as a woman. If I succeed then I must be a male.

The complexity of the patent system is one of the largest hurdles to aspiring women inventors. Ninety-two percent of the women we interviewed report that patent and legal assistance was what they needed most. Eighty percent said that marketing assistance was needed. Technical advice, financial assistance and the identification of manufacturers were also mentioned as important.

The label "inventor" for themselves is less often viewed as unacceptable or inappropriate to the aspiring women inventors than it is to the more experienced women inventors:

Yes, I am an inventor.

Yes, I would say that I am an inventor, but also an educator/researcher.

I am becoming an inventor. I spur students on to invent, design, etc. I am not sure of the difference between designing and inventing.

Yes because it's my only claim to fame. It draws attention. I have had so many personal pressures that this is my time — this is for me!

I have qualms saying "yes," because I am not one right now. I do aspire to be one.

An equal number of aspiring women inventors, however, were reluctant to identify themselves as inventors:

No, I am an idea person. I am an innovator, but I haven't developed any of them.

[I am] someone who has the ideas but not the confidence to develop them.

No, because an inventor is someone very intelligent and someone with what it takes. I don't have what it takes!

No, because what I have is reworked process.

No, because it's too premature — I haven't done it yet. Thomas Edison I ain't.

Aspiring women inventors, like more experienced women inventors who do not label themselves "inventor," reveal apprehension about what the label entails:

Until this session I have never met an inventor. I think of an inventor as a man in a workshop — it's a preconceived idea.

I don't think people will think of me as an inventor.

"Entrepreneur" — sounds more special. Inventor reminds me of someone in a garage with glasses.

The aspiring women inventors do not, for the most part, have difficulty in associating the inventor label with women, yet they have doubts.

Personally, I do not have any problem with this association [women as inventors], but the concept in the brain is that men are usually inventors.

Yes, when I think of an inventor I think of Leonardo da Vinci. However, I do know that women can do [these same] things.

Yes, generally when you think of inventors there is a stigma of a male profession, a stigma of "far-out," not credible people, not profitable people.

Emphasis on inventors has been associated with science and technology. Yet someone invented the Melitta Coffee Maker — it's very practical.

No, I am aware that there are not many women inventors but, that doesn't stop me from associating it with women.

This is similar to the impostor syndrome, in which highly competent women feel as if they are impostors.

Aspiring women inventors tend to be enthusiastic and forward-looking about becoming inventors. They report experiencing few barriers but recognise difficulties in occupying a non-traditional role. For women more experienced with inventing, it is more readily acknowledged that doors are not, and will not, always be open for them, and that barriers take many forms.

The positive outlooks of the women we interviewed could be a result of their being involved in the inventors' workshop, likely their first experience in being acknowledged as inventors. This could elevate their hopes about the future.

The aspiring women inventors are also generally younger than the more experienced inventors, which could explain their greater self-confidence. Younger women may deny that there are social-structural challenges to women with high aspirations. The more experienced inventors have had more opportunities for negative encounters with these social-structural barriers.

That none of the aspiring women inventors mentioned a lack of confidence, whereas fourteen percent of the experienced women inventors did, is striking. Differences in labour force participation rates between the aspiring women inventors (48 percent) and the more experienced inventors (24 percent) could account for the difference. Increased self-confidence could come from daily task-oriented interaction with others in the workplace, from bringing home a paycheque of their own, and from the satisfaction of knowing they can do a job. Ninety-six percent of the aspiring women inventors intend to develop their ideas.

One of the most optimistic conclusions from our interviews is the support from other women with similar aspirations, challenges and interests. Contacts made with other women inventors and aspiring women inventors may be the key factor in these women's continuing self-confidence about their ideas and themselves as inventors. The practical and moral

support of other women working in similar areas may be more important than the emotional support of family and friends. Aspiring women inventors may feel less alone or deviant and, more importantly, may be validated as inventors.

The need for research about the experiences of women inventors seems clear, if for no reason other than to set the record right. Women involved in technical work and contributing to technological progress should be given due credit. The challenges and constraints women inventors experience must be better understood to encourage innovation and the development of new ideas.

In future, the challenge may be less of encouraging individual creativity, but overcoming societal shortsightedness about inventors and innovation. The woman inventor is an economic and intellectual resource, one not to be overlooked or underestimated.

Masks

They watch me
as we laugh, compare
a 'stars' bare whiteness to mine.
Word-sounds separate
me from them, my sons.
They look at me —
wonder, disapproval, fear —
search for the way back in
not sure how the separation
happened in the first place;
feeling different, mothered less perhaps.

Bluish light flickers T.V.
patterns onto supper evening
walls. Faces distort,
turn away,
edges of eyes never quite
attend. Masks we only
slightly recognize. Bits of
memory pasted over distance,
unfamiliar colours. Half exposed
pain taped up with smiles
and small talk. Who is she?

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REFERENCES

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