Women, History, and Information and Communications Technologies

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Abstract

While women are attending universities in such large numbers that serious consideration is being given to affirmative action for men, the number of women enrolling in information and communications technologies (ICTs) programs seems to have stalled and even declined over the last three decades. This paper explores the larger context of women's engagement in the new media and surveys the landscape of women's involvement in digital history initiatives in Canada.

Résumé

Tandis que les femmes s'inscrivent à l'université en si grand nombre que des considérations importantes sont données à l'action positive pour les hommes, le nombre de femmes qui s'inscrivent aux programmes en information et en technologies de communication (TIC) semble être arrivé à un point mort, même avoir diminuer au cours des trois dernières décennies. Cet article explore le contexte plus large de l'engagement des femmes dans les médias et étudie la participation des femmes aux initiatives numériques historiques au Canada.

Introduction

While women are attending universities in such large numbers that serious consideration is being given to affirmative action for men (Coates and Keen 2007; Overall 2009), their representation in information and communication technologies (ICTs) programs seems to have stalled and even declined over the last three decades. Writing in 2005, gender equity consultant Jo Sanders reported that the proportion of women graduating with undergraduate degrees in computer science in the United States had dropped from 34% to 25% between 1982 and 2002 (Sanders 2005). The twenty-first century offers no relief from the decline. In Europe the proportion of female graduates in computer science fell from 25% in 1998 to 22% in 2006 (Reding 2007), while the proportion of women enrolling in ICT programs in Australia dropped from 26% in 2000 to 20% in 2005. While overall ICT enrollments were declining, female enrollments fell more sharply than enrollments for men (Lewis *et al.* 2007).

With a few significant exceptions, Canadian trends are similar. What does this decline mean for the future place of women in ICTs and, more particularly, for women in a discipline such as history, where the impact of the new media is not always immediately apparent and where the resources, both financial and human, are often lacking to engage fully the potential of the Internet? The question that concerns us here is whether female historians, who have only recently begun to approach parity with men in university history departments, will be pushed aside as new technologies begin to dominate our teaching, research, and dissemination processes. In other words, will women in the history profession successfully triumph over the gendered digital divide that seems to be descending globally and locally?

By way of example, historians are especially concerned about the impact of the

new communications technology on archives, one of the basic institutional supports of our discipline. We all, of course, applaud when primary sources are digitized and made easily available via the Internet, but whose history will be digitized and what will historians of the future do for sources? Library and Archives Canada and its provincial counterparts are only now trying to create processes whereby constantly evolving web-based knowledge is regularly captured for researchers of the future. What will the new digital archives look like? Will women be found in it? Women were in little evidence when feminist historians began in the 1970s to take inventories of paper archival holdings. What conditions suggest that it will be any different when we search for sources on the early days of the Information Age? These are not trivial questions; they are at the very heart of how power and knowledge are resourced in our society. As Sheila Petty and Barbara Crow argue in their introduction to a special issue of *Atlantis* on "Digital Feminisms," the new technologies have "altered the way women think about time, space and ourselves" (Petty and Crow 2008). It is important that we pay attention to the implications of this altered reality.

The ICT Landscape

This paper explores the gendered context of training and employment in ICT fields and in the field of history in Canada, and surveys female participation in a sample of digital history projects. It is nested in several assumptions that we do not have space to explore fully here, but which need to be acknowledged.

First, we are convinced that ICTs are deeply transforming human existence. Like all transformative technologies, digital technology cuts a wide swath across the landscape and takes no prisoners (Franklin 1999; Menzies 2005). The planet is hurtling along in this latest stage of a globalization process that is compressing at a dizzying rate the time-space continuum, the basic unit of study for all historians. Everything we do or believe as historians is being called into question, including such fundamental concepts as authority, authorship, citation of sources, and peer review. Over the past two decades new fields of study have emerged which carry such names as "humanities computing" and "digital history," terms we could not have imagined two decades ago (Cohen and Rosenzweig, 2006; Kroker and Kroker 2008; Schreibman *et al.* 2004).

Second, we believe that the digital revolution and the stalling of political and social movements for women's equality, in Canada and elsewhere, are linked. One of the most remarkable findings of a study on women and ICTs in 21 countries, reported in 2006, is that women's representation in ICT fields tends to be relatively lower in countries that score high on liberal egalitarian value scales (Charles and Bradley 2008). We know that the gender divide exists for developing countries but, even in Norway, France, Germany, and the United Kingdom, women make up less than 40% of Internet users (Huyer 2005). In Canada, a 2002 study of 1400 students in the grades 7 and 10 revealed that more boys than girls used computers at home, boys were younger than girls when they began using computers, and that boys used computers and the Internet more than girls (Lupart and Cannon 2002). These trends are reflected in that well-recognized symbol of the digital age, Wikipedia, in which men account for 87% of the contributions (Conrad 2008; Lavalee 2009).

Third, we acknowledge that systemic barriers against women's engagement in ICTs are not new or unusual. They reflect similar structures of inequity that feminists note in other institutions: political, military, religious, professional, and familial. And we agree with those who suggest that the optimism surrounding the future for women in the "wired world" has been, at least to date, vastly overstated (Roan and Whitehouse 2007; Woodfield 2000). Sue Lewis, Catherine Lang, and Judy McKay, in their article "An Inconvenient Truth," summarize the "things we already know" about the particular situation of women and ICTs:

- Computer culture is masculine; technology and masculinity are a long-time coupling
- ICT specializations have different

cultures and gender compositions
- Women reach college with less programming experience than men
- Computing experience has a positive impact on confidence and grades
- Women have less confidence than men in their ability to do ICTs
- Differences in academic fitness do not have much bearing on women's under-representation

(Lewis *et al.* 2007)

The Information and Communication Technology Council (ICTC) lists the four major barriers to better gender representation in ICTs that specify the general observations of Lewis *et al.*, above (ICTC 2008). These barriers include:

- Negative perceptions of computing and related work: In popular media, the image is one of a male computer geek, working long hours, and sleeping under his desk - hardly a role model for most women.
- Systemic barriers in post-secondary institutions: The rising numbers of women in university classrooms notwithstanding, most fields associated with science, engineering, and technology are still male dominated.
- Misalignments of job descriptions and job requirements: Because ICT work ranges from the routine encoding to high level theorizing, it is not always clear when a "programmer" is being hired exactly what the job entails. Indeed, the pace of change in many ICT fields is so rapid that learning on the job takes on new meaning.
- Inadequate support in the workplace for women with young families: Although men are increasingly assuming child care responsibilities, it is still the case that family time and work time are more challenging for women.

Our discussion, then, is based on the understanding that the issue of women and ICTs is just another front in the on-going struggle for equality and power sharing with men. In a forum such as this one we do not feel the need to make the argument that it is important to normalize the presence of women in all fields of human endeavour so that a woman can be perceived not simply as representative of her sex but as who she is - a computer analyst, engineer, or administrative assistant (Overall 2009).

Finally, we are convinced that many nations are well ahead of Canada in taking up the issue of gender equity in ICTs, particularly as it applies to education and job opportunities. It is much easier, thanks in part to the initiative of the United Nations (UN), to find sources on women and ICTs in African countries than for Canada. The UN sponsored a World Summit on the Information Society (WSIS) in Geneva in 2003 and in Tunis in 2005. Although the final 20-page "Declaration of Principles and an Action Plan to Facilitate the Effective Growth of the Information Society and to Help Bridge the Digital Divide" was disappointing to the women who participated in the WSIS Gender Caucus and NGO Gender Strategies Working Group, it was a useful forum for making a major point - that technology and communication intersect with all other issues that affect women's rights on a daily basis, such as health, education, independence, and "the right to create our own narratives about the world we live in" (Jones 2006). Reporting on the summit, Rochelle Jones argues that:

> What happens next for gender and ICTs will hence depend on how women organize in the future, and how we further analyse the intersectionality of ICTs with rights. An information society does, after all, have stealthy, hidden tentacles. It is linked to food security in Africa via the application of technology to genetically modify living organisms in America, and it is linked to a Chinese woman's knowledge of her own rights to religious expression via the control of internet content in China. Bridging a digital divide and providing access to ICTs without focusing on a rights based approach will not result in greater equality. Making ICTs a central part of feminist organising and campaigning in the future can result in significant gains. (Jones 2006)

How will such feminist organizing get off the ground? The Information and

Communications Technology Council held national forums on Women and ICTs in Vancouver and Toronto in February 2008, but it was not well advertised and we hear little about the outcomes of such events (Information and Communication Technology Council 2008). In the United States the International Symposium on Women and ICTs held in 2005 decided not to establish a new organization to coordinate a strategy for greater gender inclusivity; instead, it opted to create a document that outlines shared goals and to develop a web hub that could communicate and coordinate existing global database links and support collaboration. Participants in the conference were encouraged to plan face-to-face strategy meetings for women and girls and ICTs during other conferences (Center for Women and Information Technology 2005). We are not sure how, if at all, these plans have been actualized. What is the structure that frames this discussion? Is there a structure at all or only a series of isolated happenings, mirroring the way that the ICTs decentre everything we do? Is there any reason to hope for an improvement on the discouraging statistics on gender and ICTs?

Claudia Morelle, executive director of the Centre for Women and Information Technology, argued in September 2007 that the situation for women in ICTs in the United States may be shifting for the better. She observed that the January 2005 statement by Harvard President Larry Summers (now President Barack Obama's Director of the White House's National Economic Council and a central figure in the government's response to the financial crisis) that women may not have the same innate abilities in science and math as men seems to have unlocked a determination to prove him wrong. She also offered encouraging evidence that programs aimed at female students work well. There are proven ways of addressing barriers in the classroom and society at large that are responsible for the dismal statistics on women in computer science and information technology programs, mainly by ensuring girls learn about ICTs in an environment that provides equal access and sets equal expectations for performance with boys (Burke 2007; Morelle 2007). In Canada and Europe the lack of people for the growing number of jobs in ICTs seems to be the catalyst - or at least an argument - for encouraging women to enter the field. Perhaps, as with telegraphy and telephone technology in the Industrial Age, women will eventually dominate the field pioneered by men. Of course, if we count the work of women in data processing centres, hospitals, and various service positions, all of which now require considerable skill in ICTs, they already do. Unfortunately, as with earlier technological innovations, they continue to earn lower wages and are a minority in management positions (Scott-Dixon 2004; 2008). Despite their presence in the digital work world, women are rarely found in the upper echelons of the ICT industries. In 2007 European Union Commissioner Viviane Reding cited figures that show the percentage of women on the boards of companies in the telecommunications sector in Europe was even lower (6%) than for major corporations overall (8.9%) (Reding 2007). Statistics compiled by Catalyst, a long-standing watchdog on women in corporate boardrooms, indicate that the situation in the United States and Canada is not much better (Catalyst Inc. 2008).

The Canadian Context

As elsewhere, women in Canada are a minority in fields associated with ICT training and in ICT jobs. According to statistics compiled by the Canadian Association of University Teachers (CAUT), the gender imbalances in undergraduate classes of the combined field of "mathematics, computer and information sciences" in 2006-07 (25.4% female out of a total of 21,449 students) was second only to "architecture, engineering, and related technologies" (19.9% women out of a total of 60,183) among university programs. The overall figures mask the small number of women in undergraduate programs in computer engineering (9.7%), computer and information sciences and support services (14.6%), computer science (13.4.%), computer software and media applications (16.2%), and computer systems analysis

(16.7%). These low enrollments compare unfavourably to programs in mathematics (42.8%), applied mathematics (43.8%), and statistics (51.7%), where the female participation rate is approaching parity (CAUT Almanac 2009; Robbins and Simpson 2009).

The proportion of women and men in graduate programs in mathematics and computer and information sciences was slightly better than in undergraduate programs in 2006-07 (master's 37.8% female; doctoral 26.9% female) but, again, the overall figures hide greater imbalances in sub-disciplines. In 2006-07 women represented less than 30% of the enrolments in the master's and doctoral programs in computer and information sciences and support services (master's 23.7%; doctoral 23.1%), computer science (master's 20.9%; doctoral 22.6%), and computer engineering (16.0% master's; 20% doctoral) (CAUT Almanac 2009). Since computer science programs have proliferated in recent years, it is difficult to chart change over time in particular graduate programs. It is nevertheless worth noting that women were 26.9% and 19.5% of the enrollment in master's and doctoral programs in computer science generally in 1998-1999, suggesting that female participation at the graduate level over the first half decade of the twenty-first century in Canada has improved, if at all, only slightly (CAUT Almanac 2002).

The proportion of men and women in ICT programs is reflected in the workforce, both outside and inside the university. According to figures produced by the Information and Communications Technology Council, the number of women in ICT jobs in Canada in December 2007 was 24.9%, down from 26.8% only six months earlier (Information and Communications Technology Council 2008). This figure is slightly higher than the number of women in the House of Commons, but dangerously close to the infamous glass ceiling limiting women's participation in anything deemed important to 30% or less. In Canadian computer science departments and faculties in 2006-07, women were only 16.6% of the professoriate and 8.3% of the full professors, which does not bode well for young women looking for role models behind the computer screen (CAUT Almanac 2009).

Female historians are no strangers to gender discrimination. In recent years, scholars have documented in grim detail the extent of women's exclusion from the field of academic history for much of the twentieth century (Boutilier and Prentice 1997; Wright 2005). Surveys conducted by the Canadian Historical Association in 1976-77 (Judith Fingard), in 1989 (Linda Kealey), and in 1998 (Ruby Heap) described women's experience of discrimination in the history profession in the last quarter of the twentieth century, including slower progress through the ranks, the conflict between family and career obligations, and the daily drip of disparagement by male colleagues (Dodd and Postolec 2000; Heap 2000; Kealey 1991). Nevertheless, women's representation in the field has steadily increased. In 2006-07 women made up a third (34.3% out of a total of 1,077) of the history faculty in Canada, a rise from 26.8% in 1998-99 (CAUT 2000). With women representing 42.6% of the assistant professors and 37.9% of the associate professors in 2006-7, the balance may right itself in time in a system where 79.3% of the full professors in history are men (CAUT Almanac 2009). One caution, however, needs to be noted. As mandatory retirement is swept away in many provincial jurisdictions, and hires in history are low on the agendas of most cash-strapped universities, the current template may be slower to change in the future than it has been in the past.

Female students are beginning to dominate most undergraduate programs in the Arts disciplines - economics, philosophy, and theological studies remain major exceptions. In 2006-07 history was exemplary in the gender balance that prevailed at all levels of study: women comprised 50.8% of the undergraduate, 49.6% of the master's, and 44.0% of the doctoral enrollments. History is still often perceived as a masculine field and the history shelves in our bookstores tend to perpetuate that perspective, displaying primarily books authored by men on military and political topics. As more female academic and public historians settle into the field, this narrow view of the range of historical inquiry

will, we hope, gradually change, but it will not do so without some effort to change the *status quo*. And, it is particularly important that, as women in the professoriate, we mentor our students, both male and female, in the processes that are commonly understood to be transforming the way historians work (Lutz 2009).

What To Do?

A degree in computer science and related fields is not a prerequisite for engaging new media either in the ICT industry itself or in history. Indeed, most of us in any field learn the digital skills we need on the job and most web-based projects are created by teams that include programmers, web designers, and other skilled technical staff. Does it matter whether these people are men or women? Both research and personal experience suggests that it does. If the technicians on our teams are accustomed to working in a male-dominated environment, they may have trouble adjusting to working with and especially under the supervision of women and may exhibit attitudes that are offensive or annoying to women on the team. In the worst case scenario, they will lack respect for women as co-workers and discount female approaches to work and self expression, which studies have shown are often defined by subtle differences (Barker and Aspray 2006; Cohoon and Aspray 2006).

It is highly unlikely that many historians wishing to engage ICTs in their work will take an additional degree in information and communications technology. Even if they did, it would take a superhuman effort to keep up in both fields. Instead, the intrepid among us will work with people in the computer support divisions of our universities to help us with our project, or we will seek a grant that allows us to buy computer equipment, software, and expertise to pursue our cyber dreams. Humanities computing requires only one basic skill: the ability to get along in a team environment. As in the sciences and medicine, engaging the new communications technology, or at least engaging it well, requires help. There has been a lot of criticism recently of SSHRC's efforts to encourage collaborative research at the expense of the individual standard grant, a move that has been interpreted as the "scientization" of the Arts. Upon reflection, it seems to us to be an important innovation and one that Chad Gaffield signaled in his 2001 presidential address to the Canadian Historical Association on the convergence of the Arts and Sciences (Gaffield 2001), a convergence he continues to promote as president of SSHRC (Gaffield 2009). Ideally, this convergence will not be just a one-way process. Many of us have long been hoping that the sciences would take up the critical, humanizing, and political values associated with the Arts. Moreover, interdisciplinary reciprocity might provide Arts faculties much-needed support in making the transition to the digital world, a transition that appears to be occurring faster in the sciences.

Such a transition would surely have positive results for everyone engaged in historical research and teaching. Since the Arts are all about communicating with a larger public and bringing a critical perspective to bear on the values that motivate human action, the Internet offers huge potential to increase the impact of scholarly and creative output from this sector of the campus. Research shows that women are more interested in practical applications of technology than in tinkering with the technology as an end in itself (Bartol and Aspray 2006). Because of this orientation, and because women are disproportionately concentrated in the Arts, the disciplines housed under this umbrella might well serve as a significant site for a feminist embrace of ICTs - but only if the Arts faculties get the financial resources that their student numbers warrant. Information technology is costly and, if we are to engage it effectively, we need the labs and support staff that until now have been largely restricted to the science and business sides of the campus. It is our job as academics to convince our university administrators that it is time to redress this imbalance. It is also incumbent upon women to incorporate ICTs into their research and dissemination processes.

To our knowledge, there are few female historians in Canada heading ambitious digital projects such as the

Canadian Century Research Infrastructure initiative (Principal Investigators Chad Gaffield and Peter Baskerville), designed to develop a set of interrelated databases relating to Canadian censuses (www.ccri.uottawa.ca/CCRI). In the field of literature, Susan Brown, Patricia Clements, and Isobel Grundy orchestrated the *Orlando* project on the history of women's writing in the British Isles, which is now hosted by Cambridge University Press (www.cup.cam.ac.uk/online/orlandoonline/). Other collaborative efforts include the *Atlantic Canada Portal* and *Atlantic Canada Virtual Archives* (http://atlanticportal.hil.ca) initiated by Margaret Conrad and a team based at the University of New Brunswick's Electronic Text Centre; the award-wining *Great Unsolved Mysteries in Canadian History* website (http://www.canadianmysteries.ca), in which Ruth Sandwell, along with John Lutz and Peter Gossage, played a leadership role; and *Women and Social Movements in the United States*, which now benefits from collections of digital essays and annotated online primary sources of Canadian content, written and produced by Canadian feminist historians Lara Campbell, Nancy Janovicek, Tamara Myers, and Joan Sangster (http://asp6new.alexanderstreet.com). An early, and one of the most enduring, feminist initiatives - one not linked particularly to history but which keeps an archive of its postings - is the PAR-L Research Network, established in 1995 by Wendy Robbins and Michelle Ollivier when they both worked at the Canadian Advisory Council on the Status of Women (Ollivier *et al.* 2006). We do not argue here that all female historians must take on big digital projects such as these, but we believe that it is desirable to incorporate ICTs into all research efforts, even to the point of creating, as Ronald Rudin has done, a website hosted by his own university (Concordia), to elaborate on his recent book *Remembering and Forgetting in Acadie* (Rudin 2009). We must face what has now become obvious: If we are not represented online in the twenty-first century, our research will remain largely unread and unacknowledged.

Female scholars are not, of course, entirely absent from the teams involved in most large digital enterprises, but they are distinctly in the minority of creators if not of the users of these ground-breaking initiatives. We worry that digital projects currently being planned will also lack gender balance. Will female scholars take up the *Digging into Data Challenge* (www.diggingintodata.org) funded by Canada, Great Britain, and the United States to promote innovative research techniques in large scale data analysis? Probably not, unless we make a concerted effort to insert ourselves.

Women's History, Female Historians, and ICTs

While our primary concern is about the representation of women in digital history projects of any kind, we need to acknowledge the importance of the Internet for showcasing women's history, a sub-field of the discipline that has come into its own but is still largely invisible outside of professional history circles (Conrad and Kealey 2000). The promise of digital history has motivated a few historians to use ICTs to promote and present women's history on the Web, but most of these pioneers come from outside universities. At the present time leadership in digitizing women's history seems to belong to public historians in the museum and archives sectors (Mullally forthcoming). Public history organizations, such as Parks Canada and Library and Archives Canada (LAC), have led the way in producing useful and popular historical repositories for learning about the role of women in Canada's past. LAC's site dedicated to *Celebrating Women's Achievements*, for instance, profiles "exceptional Canadian women who have made outstanding contributions to Canadian society and the world" (www.collectionscanada.ca/women/index-e.html). Similarly, Parks Canada has created a site on *Canadian Women's History* that encourages readers to join them in the discovery and commemoration of women in Canada's past. They are joined by private individuals, such as Merna Forster and Senator Nancy Ruth, both of whom have created high profile websites: *Heroines.ca* and *Section 15.ca*. Both have higher hit

counts on Google and other popular search engines than any scholarly productions on women's history in Canada.

These sites offer up history as part of overt feminist agendas. Forster's *Heroines.ca* webpage, built around biographical information on Canadian women achievers and an image archive, encourages web users not only to browse through the offerings for sale and for free, but also, like Parks Canada, to launch their own commemorative projects about women. Many students, teachers, and other history-minded individuals join her online, and together they create and maintain a digital version of Canadian women's history. Through funding from her own foundation, Nancy Ruth is responsible for creating and maintaining a website entitled *Section 15*, whose title refers to the section on equality and affirmative action in the Canadian Charter of Rights and Freedoms (Nancy's Very Own Foundation 2009). This site emerged from another project, CoolWomen (www.coolwomen.ca), which was launched in 1996 and, according to its creator, quickly became Canada's largest women's history website, featuring the inspirational stories of many women in Canadian history. *Section 15* also self-consciously identifies its historical contributions as feminist, in both orientation and content, and is designed to reclaim women's history and to profile activists "who fought passionately for better treatment and more opportunities." Like *Heroines.ca*, *Section 15* uses the online environment to make connections to other like-minded individuals and organizations, such as the LAC webpages on women's history and the Parks Canada initiative, which, in turn, link back to them.

The interconnectivity and hypertextual environment of the Internet enables historians to create a linked network where all of these important sites reinforce a community of content. By finding one website, interested researchers can eventually access a large digital library on Canadian women's history. Dianne Dodd has noted that women's history projects produced by Parks Canada often benefit from the collaboration of public and professional historians; certainly the women's history sites and virtual exhibits featured by Parks Canada online also illustrate how digital projects have the capacity to bring scholars and public history professionals together in the creation of popular and easily-accessible historical content. This content can be used in teaching and research, as well as provide general information for curious members of the public. This interconnectivity reinforces the importance of Canadian women's history in larger historical narratives. These websites provide models for how scholars might disseminate academic research beyond the academy, as public engagement is seen as increasingly important (Dodd 2003). The relative absence of female scholars in this linked environment of online feminist history might be seen as a missed opportunity to create, maintain, and raise the public profile of women's historical scholarship, and a missed opportunity for individual scholars to build a role as a public intellectual.

Since the importance of disseminating scholarly research, both in the academy and beyond, is increasingly emphasized by Canadian funding agencies, participating in public history initiatives also plays an important role in promoting history, more generally. In 2008, the American Institute of Museum and Library Services (IMLS) released the results of an extensive survey that delves into the use of libraries, museums, and the Internet. These results show that the use of the Internet and related technologies actually increased museum and library use in the United States (IMLS 2008), and that historical material posted online by libraries and museums is trusted by users above other sources of information. Perhaps more importantly, accessing online content seemed to encourage members of the public to learn more, and visit the real-world museum and public libraries. The power of ICTs to connect scholars to new and interested audiences and readerships for their material is significant, and its importance as a vehicle for knowledge sharing can scarcely be overstated.

Conclusion

Revolutions bring both endings and beginnings, both challenges and opportunities. The digital revolution

represented by ICTs brings, some argue, significant challenges for academic authority and the nature of authorship. ICTs may also provide greater opportunities to share authority, make scholarship meaningful to more audiences and readerships, and build teams that will help move marginalized histories - such as women's history - from the margins to interlinked, easily accessible websites where there is no hierarchy of narratives, but mutually reinforcing constellations of content. To fully embrace these opportunities, however, women scholars will have to apply themselves to building new media literacy. We will have to buck the discouraging gender trends that marginalize women in technological fields, start to see the possibilities inherent in humanities computing and digital publishing, and refuse to be made irrelevant as scholarship and intellectual life moves irrevocably online. Very recent trends indicate women historians are taking inspiration from several pioneers in the museum and archives sectors who have created important online resources and repositories of women in history. Like those of us involved with the Atlantic Canada Portal, they do their part to ensure accessibility of women's history by partnering in the creation of important virtual archives. And those seasoned new media literati can take it upon themselves to encourage other women scholars, particularly new women scholars, to resist the prevailing bias against women's full participation in ICTs and get involved in moving scholarship, history, and especially women's history, online.

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