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“GIRL TALK”: GENDER, EQUITY, AND IDENTITY DISCOURSES IN A SCHOOL-BASED COMPUTER CULTURE

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Synopsis — This article describes how a feminist intervention project in Canada focused on girls' more equitable access to and use of computers created significant opportunities for girls to develop and experience new identities as technology 'experts' within their school. In addition to a significant increase in participants' own technological expertise, there was a marked shift in the ways in which they talked about and negotiated their own gender identities with teachers and other students. Most significantly, the participants in the project became increasingly vocal about what they saw as inequitable practices in the daily operation of the school as well as those they were subject to by their teachers. This created, within the otherwise resilient macro-culture of the school, a more supportive climate for the advancement of gender equity well beyond the confines of its computer labs. We suggest that while equity-oriented school-level change is notoriously difficult to sustain, its most enduring impact might rather be participants' initiation into a discourse to which they had not previously experienced school-sanctioned access: a discourse in which to give voice to gender-specific inequities too long quieted by complacent discourses of "equality for all." © 2003 Elsevier Ltd. All rights reserved.

INTRODUCTION: INCULPATORY SUGGESTIONS

For more than two decades, researchers have documented consistent differences in computer use by males and females (AAUW, 1998, 1999; Brosnan 1999; Collis, Kass, & Kieren, 1989; Dugdale, DeKoven, & Ju, 1998; Littleton & Bannert, 1999; Littleton & Hoyles, 2002; Light, 1997; Siann, Macleod, Glissov, & Durndell, 1990; Sutton, 1991; Taylor & Mounfield, 1994), and while administrators, teachers, parents, students, and university-based researchers alike have stressed the importance of the sciences and information technologies for the educational and vocational futures of all students, neither the number of girls enrolling in these subjects, nor the number of women who go on to work in them, has noticeably increased (AAUW, 1998, 1999). If there is, in fact, any increase to be noticed, it is in the opposite

direction, as girls' and women's participation in these fields appears to be diminishing (Kramarae, 2001; Stabiner, 2003).

While it has been argued that technologies are gendered (Cockburn, 1992) as a result of the context or culture of their production, they also embody particular assumptions about social relations. Writers such as Bryson and de Castell (1996), Cockburn (1992), and Wajcman (1991) outline ways in which women have not been alienated from technologies. Instead, they have sought to challenge what counts as "technology" and have pointed out that often, "technologies" are defined so as to exclude the technologies that women use such as cooking and household appliances or to "forget" women's contributions to technological innovation (for example, Ada Lovelace's construction of the "Analytical Engine") or both.¹

In particular, these writers explore how history and culture have shaped and continue to shape connections between masculinity and technology. For Wajcman, women's alienation from technology resulted from a gendered division of labor with the movement of manufacturing from private homes into factories. This movement, according to Wajcman

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(1991, p. 21), “laid the foundations for male dominance of technology,” by supporting the male domination of skilled trades. Cockburn (1985) argues that the existing power differences between men and women were used to exclude women from jobs that were viewed as “skilled.” Denying women opportunities for “skilled” work also meant that women were being denied access to the creation, use, and design of new technologies. For example, Wajcman (1991, p. 21) describes how women were actively constructed as “unskilled” by their placement in low-wage jobs: “Male craft workers could not prevent employers from drawing women into the new spheres of production. So instead they organized to retain certain rights over technology by actively resisting the entry of women into their trades.”

Masculinity can therefore be seen to be constructed, at least partially, through assumptions related to technological skills and competence: Technological competence, so seen, has less to do with actual skills and more to do with construction of a gendered identity—that is, women lack technological competence to the extent that they want to appropriately perform femininity; correlatively, men are technologically competent by virtue of their performance of masculinity.² Cockburn (1992), Schofield (1995), Turkle (1988), and Wajcman (1991), to name a few, argue that one of the reasons that many women actively resist participation in masculinized technologies like computers is because it directly “threatens their identities as feminine,” and because these are already categorized as activities that are appropriate for men. Schofield’s study of the impact of computer use on teachers and students in a high school, for instance, describes how isolating the perception of computers as masculine can be for girls: “. . .excelling in computer science had real cost for the girls that it did not entail for the boys. Specifically, excelling raised questions about their femininity, and in a situation which they were already isolated, teased, harassed, or marginalized” (Schofield, 1995, p. 179). Technology cannot, therefore, be assumed to be a value-neutral tool which women and men use indiscriminately or free from social constructions of identity that continually (re)position them through markers like gender, race, nationality, or class.

As with any attempt at a construction of a historical or cultural account for the purposes of a gendered analysis of technology, there is the risk of artificially promoting meanings that appear stable or self-evident. This is perhaps generated out of a focus on how male power structures, which are supported, self-perpetuated, and maintained over time, shape and control access to technologies (Benston, 1992; Cock-

burn, 1983, 1985; Hacker, 1990; Wajcman, 1991). If the focus is shifted from these seemingly rigid and ongoing hierarchical constructions, however, and placed instead on discursively constructed relations of gender, possibilities emerge for (re)imagining and renegotiating the gendered terms of technological practices in ways mindful of the multiplicity of men and women’s relationships and practices within technology. This could avoid the premature complacency of the “black-boxing” of technology that Ormrod (1995, p. 33) warns of: “. . .when society and power are described as patriarchal, gender is ‘black-boxed.’ By this I mean that the content and behavior of gender relations is assumed to be common knowledge, and their meanings are stabilized and no longer need to be considered.”

Althusser (1984) suggests that the creation of subjects is done through discursive acts of “interpellation” or “hailing,” whereby individuals generate meaning (interpretation) for particular practices. For Althusser, ideology generally “represents in its necessarily imaginary distortion not the existing relations of production. . . but above all the (imaginary) relationship of individuals to the relations of production” (Althusser, 1984, p. 245). In advertising, especially ads which suggest “people like you buy this or that,” the viewer/reader of the ad is interpellated both as an individual and as a member of the group, regardless of whether or not there is any correlation between the “you” in the ad and the real world. While women can be “hailed” by a computer, for example, it is very different than when they are “hailed” by a toaster—the “you” in the computer ad is ideologically misplaced as women are not necessarily “recruited” as subjects. In advertisement, as elsewhere, the individual is imagined within a larger system, in a material existence of lived practices and actions, which, more often than not for women, has placed them as very different subjects than men in relation to most technologies.

It is not our intent within this article to provide a detailed historical account of women’s relations to technologies, even though such an analysis is essential to creating an understanding of the complexities of the debates that have arisen around the gendered use of technologies. Instead, we will focus on how technologies, which continue to be “shaped by male power and interests” (Wajcman, 1991, p. 21), are marked by social relations, contexts, and biases within a school setting.

This article, more specifically, describes and critically investigates the social contexts of computer use within an elementary school in Canada and reports on a project whose goal was to enhance and sustain

“communities of practice” for girls to access and make use of computer technologies (Lave & Wenger, 1991).³ Crucial to this project was the question of how to realize transformative possibilities for restructuring what has traditionally been a masculinized community of computer-based practices, both within the school and across cultures more generally (Cockburn, 1985; Franklin, 1992; Noble, 1992, 1995; Wajcman, 1991). In particular, this meant describing the ways in which the project’s equity goals were alternately approached, then resisted, renamed, and finally embraced, and discussing the important distinction between changing the school “macro-culture” and creating a supportive “micro climate” where gender-based discourses and practices can flourish. We draw attention to how and why we exceeded our initial focus on technology, and we consider the complex question of the “sustainability” of equity-focused educational change which might appear not to outlast the intervention itself.

Conflicting Terms

The by-now familiar, yet typically disregarded distinction between “equity” and “equality” guides our understanding of “gender” and “technology” in a school-based setting. Gender “equity” practices are often constructed within a framework of “equality,” although equality, in practice, suggests equal access to resources, that is, the same quality of opportunity and experience which will not be differentiated by sex. Equity, often confused with equality, implies that what is fair is not necessarily equal, and further, that removing barriers to access for girls does not address inequitable treatment once they are given access, nor does it establish a means of restructuring the existing school culture. Bryson and de Castell (1996 p. 344) have argued that “equity” in education is a term that, more often than not, has meant, “the right to try but inevitably to fail to become white, male, and middle class.” They contend that policy often makes identity a prerequisite to equity, thereby paralyzing it even as it constructs normalized, essential categories for difference.

In general, attention to “gender equity” in education has meant asking questions about how gender, race, class, and sexual orientation are structured by a “system” of education (i.e., policies, curricula, and everyday practices), including covert processes of differentiation and discrimination (i.e., “hidden curriculum”). Posing such questions explicitly encourages attention to complex and seemingly contradictory issues about how identity is (re)shaped through stereotypes and social practices, the ways in

which teachers and students experience and construct “knowledges,” and the ways in which gendered experiences and interpretations of education shape and are shaped by economic, historical, and cultural tensions.⁴

This specifically means avoiding “answers” for inequity which are cast in concrete oppositional terms whether essential (natural) difference or in socioculturally constructed difference between males and females. Resisting “solutions” also invites far greater caution in ascribing “success” to intervention projects whose positive outcomes do not outlast the presence of the researcher. To embrace complexity, to attend to contradiction, to, in James Wertsch’s words, find a way to “live in the middle” is to be attentive to the “irreducible tensions between cultural tools and active agents” (Wertsch, 1998, p. 180). A conscious commitment to pursuing and interrogating, rather than overlooking, these complexities and contradictions of everyday “micro”-practices is essential to this process. Discourse, the explicit development and exchange of discussions which name gender (in)equity as a central and enduring obstacle to the advancement of social justice, may most often be compromised precisely because active and conscious participation in critical discourse about “gender” may well be the determining accomplishment upon which the success and survival of the rest finally depend.

A GENDER “EQUITY” INITIATIVE

Within the context of the research project we will here describe, restructuring access to computers for girls within “Brookwood”⁵ Elementary School was accomplished partially through the creation of a new computer center within the school and by shifting institutional practices to foster technological competence in female teachers and young girls through the provision of training for them on these new computers. While both boys and girls had access to the computers, by providing training first to female teachers and students (who then provided training to male teachers and students), it was hoped that the girls and women in the school would regulate the use, climate, and operation of a new computer lab, creating a supportive micro-climate for reconfiguring gender–technology relations at Brookwood.

The research reported here included a year-long girls’ only “pullout” program⁶ which provided broad-spectrum training on computers and peer-tutoring experience. Participants in the study, for example, received, most typically, an hour of “training” on a particular multimedia application (a web page crea-

tion program [Claris Home Page, 3.0]; Microsoft PowerPoint; and Hyperstudio), and they participated in a follow-up session in which they “practiced” and “played” with the software, before they began training their peers in their classes or their near-peers in younger grades. All “training” of female participants was implemented by Jenson and at times supported by de Castell or Bryson. The purpose of this program was to create a “critical mass” of female “experts” who, in the short term, provided a positive and greatly needed model for their peer and younger students, and whose prospects in the long term, for active and equal participation in science- and technology-related courses would be significantly improved.⁷

Participants in the program were aged 9–13 and in grades 4 through 7. Their numbers were limited by the number of computers (8) and by whether or not a classroom teacher had chosen to allow her students to participate in the project. Research methods included observational field notes, conversational field notes, and audio- and videotaped semistructured interviews. All participants were interviewed in small groups of four or five at the beginning, in the middle, and at the end of the school year. All of the participants were familiar with the research project through their teachers (who were participating in a parallel, professional development program which had begun with the installation of the computers the year prior to the intervention) and understood quite clearly its gender-equity objectives. All but one of the girls recognized Jenson from her presence in the school the year before, when she had helped their teachers learn to use the new computers and had observed weekly in the computer lab.

Once the training of the girls was completed, it was expected that these students would help to teach the rest of their class, both boys and girls, as well as younger students within the school. In total, 54 girls were trained specifically that they might train other students, and of those, only 16 were originally trained by Jenson—the rest received instructional help through peer or near-peer tutoring. In addition, three full classes of more than 20 students, both girls and boys, were trained by female “experts” to use the new computers and software to complete projects for their classes.

In the work which follows, we begin by providing a brief rationale for a marginally different stylistic reporting of the research in this piece. Following the rationale are two examples of the ways in which computers and their uses were viewed and characterized by the female project participants and their teachers as a masculinized domain. In the first exam-

ple, we describe both how the project participants viewed themselves and their roles as “computer experts” in relation to the boys that they trained in their classes and how they negotiated these relations with their peers and teachers. In the second example, we show the ways in which the project’s equity goals were often ignored or blatantly disregarded by its very participants. The initiative we describe here was premised on “equity,” rather than, as we indicate at the end of the article, on counting “equal numbers” of boys’ and girls’ computer use. We describe the ways in which school personnel and students themselves, initially resistant to discourses of equity, and insistently “translated” equity discourses into more generic talk about “equality” or “inclusion,” or other more palatable interpretations of the obviously gendered disparities in computer use, such as manners, discipline, or “behavior problems.” Students, in particular, and markedly more so than their teachers, developed over time through their participation in equity-oriented practices an increasing comfort in appropriating and extending the project’s equity goals in ways and for purposes the project had in no way anticipated. Indeed, we show how the participants’ “talk” of their own self-perceptions and self-confidence proved to be perhaps the most profound “benefit” of the project.

A STYLISTIC NOTE: TELLING STORIES

Interspersed throughout this text are “vignettes;” that is, comments, field notes, excerpts from interviews, and quotes. The vignettes are “separated” from the rest of the text, in order to suggest a subtext—that the documentation and presentation of “data,” in its insistence on linearity and formality of form, is guilty of elision of much that was spontaneous and tangential, and yet enormously important to this research: student and teacher “voices,” stories, and experiences (in and out of school).

Stories, of course, have hearers, who, even if inaudible themselves, invite and shape and steer their particular tellings. One of the more frequent challenges to researchers in the social sciences and humanities has been to make as explicit as possible their own positions within and impacts upon a social and cultural milieu.⁸ At best, this practice attempts to reveal how researchers’ assumptions, beliefs, and behaviors shape the entire research process, serves as a check to the presumption of a researcher speaking from an “objective” authorial position, and considers complex hierarchical relations between participants, the researcher, and institutions. Its move to critique the research process is partially reversed to

place (in principle) the researcher on the same ground as the researched—as one of its subjects. Sandra Harding (1987, p. 9) describes this process: “. . .it [feminist analysis] insists that the inquirer her/himself be placed in the same critical plane as the overt subject matter, thereby recovering the entire research process for scrutiny in the results of research.” Often termed “reflexive,” these practices are crucial to an interrogation of the research itself and can be helpful to a negotiation of meanings between researcher and researched (see, for example, Cook & Fonow, 1990; Fook, 1996; Reinhartz, 1992, 1997).

Feminist researchers, in particular, have often been concerned with research methodologies which minimize the objectification of those being researched, while considering the researcher’s subjectivity as mediated by class, race, nationality, gender, and sexual orientation.⁹ This means recognizing the researcher’s own place in the dynamics of social relations, both as a researcher and as a subject within the research. By locating herself within a web of social relations,¹⁰ a researcher identifies her vantage point and thereby attempts to show how her own social and cultural biases influence her hierarchical relations as a researcher to the subjects.¹¹ To be reflexive involves intense scrutiny of “what I know” and “how I know it” (Clifford & Marcus, 1986; Van Maanen, 1988). In the present context, ‘researcher notes’ also provide interpretative background for listening to participants’ stories.

As a doctoral student researcher, I (Jenson) was in the school twice a week and sometimes more, for either a morning through lunch or an afternoon, including lunch, for the duration of a school year. The students knew I was neither a “teacher” nor a “technician.” They saw my keen interest in and my capabilities with technology coexisting comfortably with many of the aspects of identity they characterized as “feminine”—long blonde hair, blue eyes, tattoos, “fashionable” clothing, a fluency with and appreciation for music and popular culture—in many respects, then, I served as a not-so-near “peer” who could teach them, support them, but would not “boss” them, and in no time, warmth, openness, and friendly bantering characterized all of our teaching, learning, and interviewing interactions. My ongoing presence in the weekly routines of the school and its inhabitants meant that teachers and students would frequently approach and talk to me about their classes or about particular problems they might be having on the computers, or about things that were happening in the school in general (e.g., sports, band, class projects, etc.). These conversations would often include observations that the female students were

making about their world—classroom, school, and home—and included their relating to me what I came to view as a specifically gendered ordering of their lives by themselves, their peers, and adults; that is the way in which they perceived themselves to be categorized and regulated by binary categories of male–female, masculine–feminine. These conversations, in which male and female students self-regulated and regulated others along stereotypical gendered patterns of behavior were especially important when considering that socialization is all too often portrayed as something that is “done” to children, with or without their knowledge or participation.

As we came to know one another better, many of the girls interviewed recounted ways in which they saw themselves not only as “targets” of particular socialization strategies by their friends and adults, but reported also numerous ways in which they actively participated in this process, for example, by chanting the Spice Girls motto (“Girl Power!”) or by, as one girl put it, “liking pink, boys, and to play with hair.” My reporting of these spontaneous accounts and reports as vignettes is designed to interrupt more traditional displays of research “findings” and, instead, give voice to multiple subtexts which might not otherwise be heard.

BEING HEARD

I’m sitting in the library at lunch today to give the girls I have been working with from grade five and six an opportunity to use the computers when the library is closed—the librarian gave us permission to use the computers during lunch as long as I am present, so I am sitting at a table away from the computers and three girls from the grade six group, all friends are working side-by-side on their projects. One of them, Lisa, turns around to talk to me.

- Hey, did you see the pictures on the back of the magazines?
- What magazines?
- Oh, just the ones we get here in the library; it’s one of the ones that publishes for both boys and girls, they’re for the younger kids, but Vic and I were looking through them the other day.
- You mean separate magazines?
- Yah it’s really bad. They have these two different pictures. . .

Lisa picked two magazines off the shelf and flipped them to their back covers, showing the

picture on the back of the magazine “for boys” first: a stereotypical image of a strong young man running with a gun in his hand and the caption “The Army: Be all that you can be!” was in bold underneath. Then she showed the “equivalent” magazine “for girls” which pictured a young woman in a naval uniform sitting behind a desk and to which she sarcastically added the caption: “Be all that you can be: A Naval Secretary!”

Observations of female project participants as they instructed girls-only and mixed-sex near-peer groups revealed a number of differences which could be at least partially accounted for by the presence of boys. When girls trained both boys and girls to use the computers, for example, these sessions tended to be significantly louder than all-girls groups. During these sessions, it was evident from audio and video transcripts that the female students doing the instruction seemed to be fighting to talk over the top of the boys, who chattered a lot more amongst themselves than the girls did. Few of the female student-instructors, moreover, sat down next to the boys to help them (they preferred to stand, even when training one-on-one), and these instructors behaved, in general, more helplessly than they usually did, asking for more help from their teachers or a research assistant. Girls were often not listened to by the boys they were trying to teach, and, notwithstanding the girls’ superior technical knowledge and skills, they became increasingly silent in mixed-sex instructional settings.

A number of studies which focus on gender and group composition using computers have shown that interactions between students differ between same-sex and mixed-sex groupings (e.g., Barbieri & Light, 1992; Healy, Pozzi, & Hoyles, 1995; Hoyles, Healy, & Pozzi, 1994; Lee, 1993; Pozzi, Healy, & Hoyles, 1993; Underwood, 1994; Underwood & Underwood, 1998; Watson, 1997). These studies emphasize the social aspects of group work, concluding that gender is a crucial factor when examining computer-mediated collaboration. Underwood and Underwood (1998), for example, found a low level of cooperation between mixed-sex groups on computers, a finding supported by other classroom observations which have reported that boys tend to occupy more physical space around a computer, often sitting closest to the mouse (Barbieri & Light, 1992; Beynon, 1993; Culley, 1988). In observations of mixed-sex groups at Brookwood, it was noted that the girls talked to and asked for help from each other less frequently when boys were present and also had to be reminded more frequently not to usurp control of the mouse and keyboard from the students being trained, but to

explain verbally and indicate directions on screen in order to provide this help. For instance, a grade five girl was giving a boy in her class instructions on how to use a new software program, when, in the midst of her explanation, another boy stepped in and grabbed the mouse from her to accomplish what she was describing. She refused his help by pushing his hands off the mouse and telling him that they could “do it themselves,” but this kind of behavior was unusual when girls worked in same-sex groups.

In interviews conducted at the end of the school year, participants were asked to reflect on the training that they gave to both boys and girls and to comment on whether they perceived any differences between the two groups. Participants’ accounts of their observations as computer instructors differed widely, though frequently, their first response was that they perceived no differences. Further questioning, however, revealed that most of them had perceived there were some differences in their own approaches and in their own instruction methods, depending on the sex of the students they were helping. One girl described, for example, how girls seemed to want to make more changes to their projects, to play with colors, sounds, and buttons more than boys:

Yah, it’s like [for the boys] I want to complete this, I don’t want to know anything, I just want to have fun. And I mean there are times when we are going over stuff like my links will not work. I mean we really wanted to get out of there but we [the girls] stuck it out because we knew we were going to have like an A+ project. But boys would be like I don’t care about my grades I just want to get out of here.

Some participants determined that training the girls was easier than training the boys, though when asked to explain why, they frequently answered with “I don’t know,” or “that’s just what I think.” One participant who was singled out by teachers and students to help troubleshoot on the computers described a situation that she frequently participated in—one in which she was singled out to provide directions to both boys and girls as a “computer expert.” When asked why she thought training and interacting with the boys was different than with the girls, she asserted that girls were more cooperative when receiving help than boys and less likely to challenge her expertise:

Some guys thought they could do it by themselves and they didn’t need any help. But the girls would just kind of let you show them. . . . They [the boys]

wouldn't come and ask me for help and then they'd go ask the teacher and then the teacher would come ask me and then they wouldn't want me to do it—to show them how things work... They wouldn't let me help them.

For this female student, the difference between helping boys and girls was profound—the boys would often refuse help from her even when they could not accomplish what they wanted to do without her help.

Not all of the female project participants, of course, had this kind of experience: A girl in the same class and grade as the student above describes how her development of skills on computers and the instruction she helped give her class helped change boys' understandings of a female computer user as someone who is competent and skilled: "...like the kids in our class. Like you'd never think like a boy would actually pay you a compliment when they think they are the computer gods."

Another group of girls suggested that instructing the boys in their class did not amount to helping them learn the program at all, the boys "knew it all before." This was not, in fact, the case, as not a single student had used the software that the students were being instructed on prior to the project, as one student recounted:

The boys mostly knew it all. They would understand it [the skill being taught] right away, but sometimes the girls would really ask a lot of questions. The boys were more like they wanted to go all these places and explore more and the girls just tried to stay where they were in case they messed up on something. ... It's like sports, they [the boys] all take over.

This characterization of boys as intuitively understanding of a software program that no one had used prior to the project indicates a stereotypical perception on the part of this and other female students, that boys inherently understand computer-related material, or that they acquire those skills more quickly than their female counterparts. For these girls, then, despite their increased competence using computers and their experience as peer tutors, technological expertise is still clearly constructed and demarcated along gender lines.

(Dis)interest

Research conducted in the mid-1980s and continued until the present day from [Beynon \(1993\)](#), [Culley \(1993\)](#), [Sanders and Stone \(1986\)](#), and

[Underwood and Underwood \(1998\)](#) clearly indicates that girls are as interested in computers as boys when space is created to give them access to computer labs, when labs are as free as possible from aggressive, competitive, dominant boys, and when they are able to use computers with their friends, especially in all-girl groups.

In interviews conducted both before and after the intervention project, students were asked to imagine how we might encourage girls to make more use of computers. On both occasions, girls' and boys' replies fell into two main categories: strictly stereotypical "points of entry" for girls, as in the creation and continued development of "girl games;" and their insistence that both boys and girls were free to "choose" computers or not.¹² This last view was somewhat altered by girls' participation in the project, as most responded to the question of how to encourage more girls to take computer courses in high school by suggesting that girls' choices are often mediated by whether or not they feel comfortable, supported, or self-reliant on the computers enough to choose to take those courses. In other words, they acknowledged that for girls, it is not just a matter of "choosing;" that choice for them was arbitrated by social factors like whether or not they perceived the "climate" of the computer lab or classes as being dominated by boys and by the presence of friends.

"TECHNO TALK"

—John is on it [the computer] all the time at home, and it's all he talks about—computers, computers, computers.

—Yah, 'did you see how many megabytes?' And, 'blah blah?'

—When he's talking about weird computer stuff we are like, 'yah, of course' and then he's like 'did you do blah blah on your computer?' and I'm like 'I'm not quite sure.'

—I just say I can't remember any more cuz I don't even have a computer.

—Still I think the difference is the guys still use like the technical terms but most of the girls are like, so I press this button, and then this one, and all the guys will have a big huge name for it, and we'll be like this thingy over here, do I swirl that or whatever.

—So it's about vocabulary?

—Yah.

—My friend, she just got a Nintendo 64 because she has a little brother, but also because she

wanted it. And so she'll explain it to me. She'll just be like yah, press that button, all that junk. But when I go over her brother is like this is how this works and this is a blah blah—all technical and everything—stuff I don't need to know. I think boys are more competitive [on computer games] and a little bit more violent.

—I think they want to sound cool.

—Cuz for us [girls], it's kind of like, who cares what we say, just how to do it. We don't spend all this time like talking about hard drives and Pentiums.

—Yah, they [the boys] don't even know what they're talking about most of the time—they just make up the number, I think.

Because this research began by specifically naming its gendered intentions—that female teachers and students would be taught first on the new computers in the library, and that they would then teach the rest of the school—the teachers who participated in the project, the librarian, female students, researchers, and the school's principal often were accused by colleagues, parents, other students, teachers, and administrators of “discrimination” in favor of the girls. Often, concerns of “reverse discrimination” would manifest themselves in some form of the question “what about the boys?” Initially, teachers and the principal at Brookwood had some difficulty fielding this question and would either divert it by saying that male students in the school would also make use of the computers, or couch their responses in “equity for all” terms, thereby deflecting attention away from gender as the basis for the affirmative action-oriented practices with which they themselves were involved. A typical response from the school principal, for example, when the computers were first placed in the school in the winter of 1996, was to argue that the main goal of the project was “equity, for everyone, not just *gender* equity.” The librarian, who seemed to field the most questions from parents on the topic, said that she would tell them that the boys would be trained on the computers, but that the girls were being trained first, without necessarily explaining why. Once the parents heard that boys were going to be able to use the computers, she said, they did not seem to care who was trained first. In these ways, the critical core of this project was evident: An intentional reversal of the gendered culture of computer expertise was early on de-legitimated. Discursively escorted backstage and denied a speaking part, the spectral presence of “gender” was manifested in only very occasional rustlings behind the curtain. And so, inquiries into the purposes of and justification for a gender

equity project in relation to computers within the school were not pursued over the long term by parents, teachers, or administrators, whether involved in the project or not, and even we as researchers accepted that talk of both gender and equity was to be sacrificed to the comfort of the participants, whose enthusiastic involvement we feared we might lose, if we insisted on discursively framing their work in ways they clearly found alienating.

Interestingly, the equity goals of the project seemed to resurface for its participants near its end. In informal interviews, teachers began to speak about what they saw as an “observable difference” in female participants. They commented that for many of the students, the project had resulted in the girls being more vocal about what they perceived as “inequities” by “sticking up for themselves more in class” and “talking more about what the boys were doing on the playground” (i.e., “hogging” resources like basketballs and basketball hoops). One teacher recounted, for example, how a female student in her class had noticed that the boys were always getting the best basketball court at lunch and had recommended that the school “set up a schedule” so boys and girls got to use the “good” basketball court every other day. Another teacher talked about how she felt the project gave a lot of the girls in her class more confidence in other areas—that they spent more time vocalizing their wants and needs in relation to the boys.

Students seemed to have acquired, by the end of this project, a framework in which they were now able to reflect on and analyze their gendered identities within the school in relation to computers, in relation to male students in the classroom and on the playground, and in relation to their teachers. Cassie, for example, noted how she observed the practices of teachers changing: “because like I said there are lots of girls who are never like really helping and how like the guys are always helping the teacher move stuff around and now the girls are helping the teachers with the computers.”

Naming “Gender”

Cuz for us, it's kind of like, who cares what we say, just how to do it. . .

What does it matter what we call something, just as long as we know “how to do it”? If we can create greater “equality” in technological access, use, and competence, as this project quite easily did, what is in a name, why worry about how we talk about it? All of the girls interviewed at the completion of the

project spoke of similar issues: (1) a consensus that the project had been beneficial in that it increased their competency with and confidence in using a variety of software applications and (2) that their learning was heightened in an all-girls context (there were no boys to usurp control of tools or to “know it all,” which some of the girls found especially intimidating). In this context, girls were able to ask and answer questions about computers generally without the risk of “feeling stupid” and without struggling for the attention of their teacher. More than increasing their general computer knowledge, in the groups of girls that participated in the project, there developed an ease, affection, and camaraderie among them that (according to their teachers and the principal) was unprecedented in that school, and which the students also acknowledged and spoke of. As one girl commented:

Like when you taught us, like it was simple. And I think one of the parts about like the thing you are teaching us is that it feels nice when people go ‘oh you are so smart, you know how to do this,’ like the kids in our class. Like you’d never think like a boy would actually pay you a compliment when they think they are the computer gods. . . . And well, this [project] gave us a little bit more of a chance to explore and get used to it. But like with other things if you ask like a boy, ‘oh, could I have some help here,’ they kind of laugh at you and say, ‘You don’t know that?’ And it’s like, you see, you are like giving us an opportunity where we can kind of know and then we can say ‘hey this is good maybe I will get into computers because all these other girls are here doing it too.’

It would be all too easy to indulge in self-congratulation at this project’s evident successes, were two important considerations to be overlooked: First, until this project was nearing its end, few girls and fewer teachers were able to see, let alone to name, gender inequities they experienced and oftentimes equally enforced in their everyday lives as teachers and learners, and second, on returning to the school the following year, it turned out that the gender inequities the intervention had managed to repress had returned, unnoticed and, therefore, quite without opposition or resistance from teachers and students who had been this project’s avid participants just months before. Looking closely at the invisibility of gender inequity prior to the project, then the acceptance during the project of practices promoting (and securing) greater equity for girls and female teachers without, however,

the ability actually to name, let alone to speak in any sustained way about gendered inequities, enables us to see that the ongoing use and presence of female computer users at Brookwood Elementary School resulted in what might best be described as a “short-term climatic event,” whereby the focus and culture of computer use shifted on a number of levels for teachers and students. Over the period of the research, those involved in the project began increasingly to think of and to use computers in new ways: Teachers who had used computers simply to teach their students how to type were now using them as an integral part of their curriculum; and students learned new skills as they developed research-related projects using multimedia software, and gender/technology relations were explicitly addressed and consciously reconfigured. Personally and professionally, female teachers received support from other female teachers who participated in the project as well as from the researchers. They also improved their own computer skills and established a network of support amongst themselves and the female students to help troubleshoot problems or questions (whereas before, they said their questions usually went unanswered, or they asked the male vice principal for help). Similar changes were observed for the girls, the most striking being an increase in their enthusiasm for using computers that seemed to correspond to their increase in competence and confidence, both on the computers and off, as well as their insistence that what was most important to them about using computers was that they were able to use them “with their friends” (i.e., in a supportive climate that welcomed rather than impeded girls’ participation). However, of these changes, which could not be spoken of in explicitly gendered terms until the project was completed, leaving the school to resume its gendered “business as usual,” what might we say? Success? Shall we then try to do the same again, only bigger, better this time around? Failure, because the changes were not sustained much beyond the life of the research project itself? Shall we, in that case, abandon this kind of self-consciously interventionist agenda for gender equity research?

CONCLUSION(S): “THE LIMITS OF THE EVERYDAY”

Some girls aren’t interested in computers. They just aren’t. They’ll never be interested in them. The girls in our class like to go outside and hang out with their friends and stuff and talk to them. You can’t really do that in a computer lab. . . . If you’re not sitting beside your friends it’s kind of

discouraging to be using computers if you can't talk to anybody. (A grade seven girl)

As the above quote indicates, it is sometimes difficult, if not impossible, to rework an order (in this case, a gendered one) whose structure permeates our daily lives in such a way that its effects are more often invisible than visible. When reporting on a project such as this one, then, researchers have been prone to offer suggestions which address questions like "Where do we go from here?" "What have we learned?" or even "What's next?"—questions which are answered predictably with a clarion call to "do better" and suggestions on how best to give girls unfettered, hands-on access to computers, in supportive environments (often in all girl groups) to encourage them to acquire the skills that might lead them to pursue educational and career choices in technological fields related to computing [especially as this represents one of the fastest growing job sectors for employment (Furger, 1998; Rathgeber, 1995)]. Instead of repeating these warnings or suggesting intervention strategies for change, the real challenge may be simply to find a place between inoculation and apathy; that is, to move beyond approaches which presume gender inequity is something that can easily be cured (providing a "shot" is administered or certain "curative" steps are followed) and without beating the democratic drum on already insensitive or apathetic ears.

Gender equity is a discourse that dare not name itself, until it is over, and then it can talk and talk and talk: of "findings" and "strategies" and prescriptions for "change". However, what we need to begin to understand is the astonishing resiliency of traditional gendered practices in schools and classrooms, in playgrounds and computer labs, in their very identities and the ease with which teachers and students alike can fail to see their own complicit practices in these places. When what they "do" submits to forces of change, they can lose any voice with which to speak about what it is they are now actively, and to their own advantage, managing successfully to do. It seems only when the ghost has left the room, can we safely speak about her; while she is present among us, something keeps us from speaking her name, lest we inadvertently summon a power we dare not confront. In an effort, then, to resist a descent into a multitude of suggestions, solutions, and tidy strategies based on this project, what might warrant greater emphasis is that this work helped to find a way, however temporarily, to circumvent the deterministic production of gendered identities in relation to computers for the participants in the project, and our ability to do this offers significant possibilities for imagining a context

for computer-use as other than masculinized. It shows how a focus on technological practices, de-contextualized from their general social relations, can mean failing to notice the possibility for more important resonances and repercussions of gender equity work that far exceed girls technology access and use and may greatly impact on girls and their teachers, even if they very soon leave computers and computing behind. It also, more importantly, shows how critical it is that gender equity researchers move out of the shadows (where they count numbers of students in a computer lab or administer computer use and interest surveys) to begin to work with administrators, teachers, students, and universities to initiate recognition of, and intervene to work to change practices which continue to disenfranchise, girls and women in technology-related fields, and above all to understand that teachers and students and parents and administrator's unease with gender equity discourses, rather than any refusal of specific equity-oriented practices, may be exactly where we most need to insist upon and work. As we have seen in other projects, gender-equitable practices are often relatively unproblematically accepted (Whyte, 1986). What seems to meet with greatest opposition are explicit interventionist practices, consciously and intentionally enacted within communities mediated by self-reflexive discourse. If we have, as Judith Whyte and her colleagues did 15 years ago, classroom visits by women scientists whose gendered identities and purposes for being there are never named as such, then boys can continue to dominate their workshops and elbow girls out of the way in labs and lectures to jockey themselves to the front, again.

In the end, perhaps the most compelling and cogent "finding," we would like to reemphasize here is that, however "short term" the changes were that occurred to daily computer practices in the school, the operational discourses (of equitable practices) that the participants could readily call upon and make use of a year after the completion of the project were still in use. Participants had intervened on four dramatic occasions, according to the school principal to change school policies on the playground (assignment of the "best" basketball court), in the gym (division of "best" equipment), and in relation to the day-to-day "workings" of the school, disrupting the taken-for-grantedness about who was chosen to lift tables and chairs, to shovel walks and move large bags of leaves, and who relegated to the role of admiring, if ineffectual, voyeur.

Educational research has long assumed a distanced role, from detached scientist at one extreme, to teacher's helper at the other. This interventionist

gender equity project presumes that educational research could itself be “educational,” that is, could itself contribute to the realization of educational goals for participants, teachers, and students alike. Moreover, in our focus, not only on computer use by female participants but also on the larger context of the culture of the school, we were able to more fully articulate what we saw, as something a bit more sustaining than the “short-term climatic event” of schoolwide technology use, and that was students’ internalization and mastery of a more fully developed discourse of gender equity within which, for a time, they developed communicative competence as fully enfranchised speaking subjects.

We would argue that gender equity researchers risk giving up too soon if they take sustainable school-level change as their touchstone for “success.” If school-based research can indeed be itself educational, then it can hope for as much, but likely not more, than any school-based educator hopes for: to initiate a small group of students into a “form of life,” a set of discourses and practices within which they may become more and less fluent and familiar but for whom that exposure and experience becomes an integral part of who they are, what they can now think about, listen, and give voice to. We may not have changed the school, but we may yet have expanded, in very significant ways, the range of choices students have, both in and beyond one school, one classroom, and one project.

ENDNOTES

1. Ada Lovelace is considered to be one of the founders of scientific computing. See Betty A. Toole's (1998) *Ada, the Enchantress of Numbers: Prophet of the Computer Age*.
2. This is not to say that relations to technological competence are only about “performing” some predetermined masculine/feminine binary, which would severely, of course, limit possibilities for challenging or changing gender–technology relations. We do, however, want to call attention to those practices or “performances” of masculinity and/or femininity which are familiar, as Benston (1992) strongly argues, “male use of technology communicates power and control.... The whole realm of technology and the communication around it reinforces ideas of women’s powerlessness” (p. 41).
3. This research was carried out within a larger research project, GenTech (Gender and Technology Research Project, <http://www.shecan.com>). Begun in 1994 and continuing today, the project’s goal has been to investigate gender, equity, and the uses of new technologies in both school-based and non-school-based contexts, with the explicit intention that GenTech not be a study of failure, disinterest, or inability, but one of success, interest, and competence (see Bryson & de Castell 1996, 1998; de Castell, Bryson, & Jenson, 2002).

4. See, for example, Britzman (1991), Ellsworth (1989), Lather (1991), and Walkerdine (1989).
5. All names of places and participants have been changed. Brookwood Elementary School is located in a suburb of a major Canadian city located in the province of British Columbia (BC). In Canada, education is a provincial jurisdiction. The GenTech project was structured as a partnership between the school district, university researchers, and Hewlett-Packard. HP provided the computer equipment as part of its “e-Inclusion” initiative (<http://www.hp.com/e-inclusion/en/index.html>). During the period when this project was implemented, the BC Ministry of Education implemented a Gender Equity policy, funded a wide range of equity-oriented pilot projects, and collected gender-disaggregated data on access to, and performance in, technology-intensive courses. In 1998, the Ministry stopped collecting gender-disaggregated data (BCTF Research Department, 2000). Recent research (Bryson, Petrina, Braundy, & de Castell, 2003) indicates that gender differences have remained unchanged in the relative participation of female and male students in technology-intensive courses in the BC education system over the past decade.
6. Female students who participated in the project were “pulled out” of regular class time to receive training on and to train other participants to use computers.
7. More recent research has called for the importance of examining the gendered relationship between expertise and computer use. See, for example, Littleton, Light, Joiner, Messer, and Barnes (1998).
8. See Pinar, Reynolds, Slattery, and Taubman (1995, p. 57).
9. A few examples: Abu-Lughod (1990), Code (1993), Lather (1991), Ng (1997), Roman (1993), Van Maanen (1988), Visweswaran (1994).
10. See Dorothy Smith’s (1987), *The Everyday World as Problematic: A Feminist Sociology*.
11. However, this is a simplistic distinction, and one that can easily fall into a trap that feminists might, in general, be more accommodating or more “sensitive” to issues of power in the world. The label of “feminism” has, on occasion, been used to make very “objective” claims about women in particular situations and locations (i.e., sex trade, abortion, university education, and so on). What is done in the name of “feminist research” is just as fraught with polar arguments for and against the merits of different kinds of research.
12. For a detailed discussion of student’s accounts of, and their surprisingly resourceful ways of accounting for, inequity and technology, see Anjos (1999).

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