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**Cyberfeminist technological practices: Exploring possibilities for a
women-centered design of technological environments**

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I. INTRODUCTION

The recent decade has seen an increased call to women to access and use new information and communications technologies (ICTs) as a means for their empowerment. However, ensuring that women are empowered by any kind of technology requires that we investigate issues that are much more complex than merely providing women with material access to the latest technologies. The technological practices surrounding the use and design of specific technologies as well as the gendering processes within the communities in which these technologies emerged, must be examined in detail in order for us to understand the empowering or disempowering potential of any particular technology and associated technological practices. Most models for the examination of empowerment via digital technologies are currently structured in such a way that the very framing of questions disallows the possibility of understanding the silence of others as a resistant refusal to make themselves visible within structures of power and socio-cultural environments not of their own making. There is thus a need to critically examine existing theoretical models for the design of egalitarian women-friendly and diversity-sensitive technological environments so as to develop new ones that are more appropriate for our increasingly complex and interdependent global world.

This paper, drawing from prior studies (Gajjala and Mamidipudi 1999, 2002; Gajjala 1999, 2000, 2001, 2002, forthcoming; Blair and Gajjala 2002; Enteen and Gajjala 2002) and on-going research and analysis that explore different socio-economic and cultural contexts where transferring of skills associated with the use of ICTs happens, aims to respond to the following questions: Are there “women-friendly” practices of ICT design and use? Do “women-friendly” strategies for access and use of ICTs necessarily allow entry to women from all backgrounds irrespective of race, class, caste, sexuality and geographic location? Is it possible to devise women-friendly and gender-sensitive strategies for the development of technological environments and practices that will be empowering and enabling for women and other marginalized groups, particularly those in the third world countries

The overall body of research that this paper draws on for its theoretical framework questions the specific cultural setting and world view that gives significance to available and prevailing practices of using and designing ICTs. It assumes that some of the specific cultural settings in which the design of modern technologies are situated, can be at odds with the local community needs and everyday practices of the people that we are attempting to “empower” and “bequeath” (see for instance Shiva 1994). It also argues for the re-designing of “new” technological environments in order to create enabling relationships between the use of ICTs and the everyday life of women and men within various communities, rather than a mere attempt at “transferring” so-called advanced technologies in the name of a notion of “Progress” that is in itself situated in socio-economic, historical and political contexts not necessarily empowering to all communities of the world (Gajjala 2000).

Technological environments are social environments shaped around the use of any type of “technology”. Such social environments are place-based and their structuring is shaped by local histories, geographical conditions, and everyday cultural practices within which specific technologies are put to use. It is important to emphasize the unequal power relations within which all the factors that shape such environments co-exist. In emphasizing such issues, the gender approach provides a framework for analysis that helps articulate the gendering processes in a way that refuses to essentialize the notion of “woman” across contexts. As Helen Gansmo pointed out during discussions at the UN/INSTRAW virtual seminars, the gender approach does not imply that “gender” equals “women.” She writes:

I would like to make a point about the term gender. Reading many of the messages it seems gender just as well could have been exchanged with the biological sex terms. This is a pitfall I think it is crucial but difficult to avoid. Seeing both gender and ICT rather as social constructs that are co-constructed opens up for more possibilities than treating gender as fixed to male/female and ICT as one given tool (See for instance Berg 1996, Bijker, Hughes and Pinch 1987, Lie and Sørensen 1996, Lohan 2000, MacKenzie and Wajcman 1985). When gender and technology are seen as co-constructed we can avoid the essentialistic notions both of gender and technology. Thus both can be seen as processes rather than given and fixed (Gansmo, post to ICTnet, 12 July 2002, INSTRAW, http://server778.dnslive.net/pipermail/ictnet_un-instraw.org/2002/000044.htm).

This paper attempts to respond to the above mentioned questions by emphasizing the relationship between processes of gendering in everyday life and the ways in which such gendering shapes technology design as well as the environments surrounding their use. Therefore it aims to closely examine multiple mediated contexts of technology design and use, in order to help us understand, the scope for empowerment of women through ICTs. By empowerment of women within technological environments it is understood that they would have better access to the power-structures and hierarchies that shape and control such technological environments.

Three different technological environments and their enabling and disabling for women characteristics are examined in this paper:

- 1) Urban technology-related work spaces and family environments in India ;
- 2) Higher education classroom environments in a Midwestern university in the United States; and
- 3) Two electronic lists specifically aimed to be women-friendly lists.

II. URBAN TECHNOLOGY WORK ENVIRONMENT IN INDIA

In this section, the case of urban work spaces and technology environments in India is discussed. As one of the participants of the UN-INSTRAW virtual seminars on Gender and ICTs pointed out,

In countries like India, especially in South India, there are more young women pursuing IT and Comp. Sc. The statistics for enrollment in technical institutions has changed dramatically in the last 20 years from a measly 5% to 45%. This works out to roughly 90,000 women engineers graduating in the ICT fields from colleges in the 4 southern states each year. In fact it is considered this field is considered to be more feminine than say, mechanical engineering(Kandaswamy, post to ICTNet, 1 July 2002, INSTRAW,

http://server778.dnslive.net/pipermail/ictnet_un-instraw.org/2002/000005.html).

Therefore the issue in such cases is not a lack of females with expertise in these areas, but rather the fact that the barriers they face are disabling socio-cultural and managerial environments at work and at home in relation to the expectations on them as women vs IT workers. Thus creating environments that are conducive to women IT workers’ upward mobility

is more of an issue in these cases than the mere question of access to ICTs or IT-related education and training.

In trying to see what might be enabling or disabling to women in such contexts, this section draws on some preliminary research¹ based on ethnographies of individual men and women working in technology-related fields, where questions were asked concerning both their work environments and home environments in relation to computer technologies and the Internet².

Relevant research by scholars such as Shobha Arun and Thankom Arun suggests that “social and cultural factors play a significant role in the progress of women into science and engineering, which includes software production” (Arun and Arun 2002:41). In their attempts at understanding “work practices within software production and their impact on gender roles, both in the workplace and household”, Arun and Arun conducted a study in Kerala, India. They classified their survey sample into three categories. Category A was comprised of respondents with more than five years of experience in software development; category B was comprised of respondents with two to five years of experience in the field; and category C was comprised of respondents who were beginners in software production. In category A, there were very few women. In category B, there were significantly more women than in category A, but most had entered the software profession after a break in their employment mostly “on account of childbirth and child care as well as change in residence of their spouses” (Arun and Arun 2002:43). Finally, in category C, most of the respondents (women and men) were between the ages of 23 and 25 and had recently graduated from college. While the men in this category tended to look for opportunities to gain work experience in the short run so as to build long-term career options in the global markets, most of the women reported that they were working in the particular firm until their parents arranged marriages for them with male software professionals who had found jobs in countries such as the USA. In other words, there was a reluctance on the part of the women software professionals to commit to an idea of a career because of familial and social pressures regarding their marriages. However, these women did aspire to work in the software industry after their marriage (Arun and Arun 2002:43).

Thus we see that these women working in software production were negotiating their professional upward mobility with family-related obligations. Implicit in these women’s choices there seems to be the fact that they would be expected to negotiate marriage, children and career in whatever professional choices they made, while their male colleagues could afford to focus solely on their own individual professional upward mobility.

Some of the in-depth interviews and ethnographic research (Gajjala 2001), conducted in Hyderabad, India, suggests that the latter is true to a large extent in such urban spaces. The stories that these women narrated with regard to their initiation into computer technologies in their home spaces and their work environments do not suggest that they were discouraged from working with technology or that they were in any way intimidated by such work. For instance, one of the women interviewed clearly stated that it was she who instigated the purchase of a computer in her home and in fact had it assembled by some of her friends, while another woman explained that a computer was first acquired in her home during her high school years, at the suggestion of an older (female) member of the family who felt it was necessary for the children in the family (irrespective of gender) to be familiar with computers in the present day and age. However, it is possible that young girls under the age of 13 do not find computer technologies as attractive as young boys do, since many of the computer-related activities such as computer-games are targeted towards male children all over the world. For instance, while conducting ethnographies of women using computers in India, it was possible to observe how, when the activities of male children tended to cluster around computer games, the female children began to lose interest in playing with their male siblings. Most computer games are implicitly and explicitly designed for a male player (Rabasca 2000).

¹ Conducted by scholars such as Arun and Arun and on my own continuing research in this area.

² However, it should be noted that this research is still in the beginning stages.

However, these women's entry into computer-related technology environments in the home space does suggest that their interest in computer technologies came from women-identified needs (such as using computer games to distract a nephew or niece while babysitting) and from a need to stay connected with close relatives (sisters, brothers, aunts and uncles) who had moved to Australia, Canada, Europe, U.S. and other parts of the world. Thus there were elements in their personal contexts that allowed them to experience ICTs as empowering (i.e., enabling). Further, as is evidenced through studies such as those by Arun and Arun (2002), for women, their gender is a visibly inhibiting factor in relation to upward mobility within technology-related professions when urban women are on the threshold of marriage or are married, have children and are obligated to negotiate their career in relation to that of their spouse and/or in-laws.

Through such studies, we can also see that in both the case of women and men software workers, their individual empowerment through ICT-related work is shaped by gendering processes mediated on at least two obvious levels. One is the level of personal familial expectations based on socio-cultural and economic structures within their geographical location. The second is the level of workplace expectations of what it means to be a productive worker within the global corporate environment that shapes software production processes and organizational cultures all over the world. Both these factors contribute to the creation of a work environment that is disabling for women. We then need to ask - what are the factors that shape this global corporate software work environment and how do gendering processes shape the hierarchies that contribute to the creation of enabling and disabling ICT related work environments?

Briefly stated it can be argued that much of the global/transnational corporate culture that is traveling into developing countries such as India, is based in a corporate culture mostly driven by the structuring of multinational corporations that have their physical and virtual power centers in Europe, Japan and North America. Scholars such Kerfoot and Knights (1993) have argued that organizational cultures are increasingly shifting managerial strategies from a paternalistic to a competitive masculine approach to management. This shift is most obviously visible in organizations within the technology sector. In their discussion of shifting masculinities within a bank in U.K., for instance, David Knights and Darren McCabe examine the contradictions that emerge in the process of reengineering. In this case, the organizational emphasis in the company was shifted to apparently less hierarchical modes of decision-making (informed, it would seem, by so-called female identified qualities - associated with women, such as nurturing - within a mostly post 19th century, Westernized definition of "woman"). They found that there were inherent contradictions in this discourse of reengineering - "contradictions of control versus cooperation, authoritarianism versus empathy, and competition and conquest versus creativity" (Knights and McCabe 2001:620-621). Their study indicates that it is as much the environment and management cultures within a globalized corporate climate which privileges specific types of westernized masculine behaviours in employes as much as the women's personal, familial and socio-cultural gender-role expectations that are responsible for disabling women's upward mobility within such sectors (Arun and Arun 2002).

II: COMPUTER-MEDIATED TEACHING AND LEARNING ENVIRONMENTS.

This section is informed by my attempts at using internet and other digital technologies in U.S. higher education classroom environments while attempting to foster an awareness of the potential for empowerment and disempowerment of various technological environments and the practices reproduced within them. Most of the assignments in the classes I discuss tend to engage technological production and use, shaped by an awareness of how power structures shape the design of technologies and the work and play environments around them. In such contexts how does gendering take place and how might female students be encouraged to use these environments to their advantage rather than allow themselves to be intimidated by such technological environments? It is evident through on-going research in classroom contexts in the U.S., that whenever new technologies are introduced, it is mostly male students who tend to take initiative and even control of the projects based in technology use (Blair and Takayoshi 1999). In my classroom engagement with various technologies, with a few exceptions, similar imbalances in how

women students initially approach technological environments have been visible. In the case of students in my classes, sometimes, when female students have worked within groups without any male members, they have shown a higher level of comfort and learning while also dealing with topics arising explicitly out of socio-economic, political and cultural problems of concern to them. Two particular cases will illustrate what I mean³.

A. MOO Project:

This was a project in which students were required to work in groups to examine the synchronous online environment known as “MOO” (Multi-user domain, Object-oriented). They were asked to choose a specific topic in relation to issues concerning cyberspace, and to use the on-line environment in conducting synchronous (Real Time) discussions on the topic. The purpose of the project therefore was for the students to practically learn how to work within the synchronous on-line environments while examining the potential for dialogue in this e-space as well as to engage in actual discussion of issues that emerge in relation to the socio-cultural space known as “cyberspace”.

The particular group whose assignment I discuss here, was comprised of three women who chose the topic of “Gender Gap in Cyberspace”. In justifying their choice of topic, they wrote that they chose the topic because the gender gap exists not only in relation to cyberspace, but also in relation to other aspects of society. They wrote:

As females, we also have a personal interest in narrowing this gap. It negatively affects us in ways that deserve in-depth exploration, although this exploration is sometimes difficult to conduct because of the denial of the gap ... It is sometimes difficult for one to admit that they feel uncomfortable toward computers or other types of technology because of the way that their parents or teachers treated them when they were children. Others may truly not recognize it until someone else brings it to their attention. Whether or not females are willing to admit or recognize the gap, it still affects them in negative ways. Studying the gender gap is important for males as well, although there are probably even fewer of them who are willing to admit that it exists. Some may even enjoy it and appreciate it as they grimace at the sight of female computer science majors and discourage their daughters and sisters from becoming part of ‘their’ field. But it should not be denied by either gender that insights and ideas that can be brought to the computer field by females are abundant and beneficial...

In the above paragraph, it is possible for us to see that this all-women group of students is making observations based in their own personal struggles in relation to gendering processes coming from their own contexts of everyday life and education. For instance, we see that they feel they have been denied access to technological environments through implicitly patriarchal definitions of femininity (note the fatherly “grimace at the sight of female computer science majors”). In addition, there seems to be a concern over the lack of acknowledgement of the existence of a gender gap. Later in the paper they wrote:

As we email and moo as activities for this class, the gender gap is prevalent in our discussions and in our selection of topics. How many males chose the gender gap as their discussion topic? How many males contributed to the discussion of the gender gap as it was occurring on the listproc? In answering these questions accurately and truthfully, it becomes evident that the gender gap exists in our own classroom.... The bottom line is that if we want anything to change, we must examine and explore it as well as inform others of its existence throughout our process.

There was further indication in their discussion of the assignment with me and in their paper, that they felt comfortable and free to investigate this topic because the group was an all-female group. Based on experience observing such group work in my classes over the past five years, I suspect that had they been a mixed gender group, even the choice of topic, let alone the control of technology use and design of the overall project, would have been different.

³ I thank the students from these classes for giving me permission to refer to their work in my research.

B. Photoshop Assignment:

In this assignment the focus was on the examination of the visual aspects of digitally mediated cultures i.e., the culture manifested online and enabled through digital technologies such as computers. Students were required both to learn how to build digital environments as well as to examine socio-cultural meaning-making processes within on-line visual cultures.

For this assignment, when women did individual projects, they often tended to be focused on body image issues, indicating that the dominance of sexually objectified female images were somehow bothersome to them. Women students also showed their concern over the portrayal of male images as more active – as agents – in comparison with images of women. Some of the women students also brought out issues related to racial representations of female bodies. For instance, one white female student concerned about the availability of positive images for women with full-figured or what is often categorized as overweight body-types, decided to put Britney Spears face to Oprah's body – thus disrupting both images in relation to categories such as age, body-types and race in multiple ways. There were other female students who showed a critical awareness of the portrayal of diversity of various other kinds. For instance, another student – a white female student - digitally manipulated an image of the statue of liberty by coloring it black and placing a dot on her forehead among other things. Some of the male students also exhibited an interest in gendering in on-line visual cultures – although they did not always express it as such. One white male student, for instance, was concerned with “normalizing” a particular on-line image of a man with multiple piercings, by digitally manipulating the image to remove the “abnormalities.” Another male student was more upfront in disrupting gender expectations, by inserting a female player into a picture of an all-male college football team. There were other male students who avoided gender issues altogether by focusing on pictures of animals and landscapes.

In these examples we see women and men learning to use available technologies to deconstruct available socio-cultural messages about what it means to be gendered in society. Especially in the case of the female students, they were able re-shape the category of “woman” in ways that enabled them to work towards more positive self-representations. At the same time as they are using the technologies to question existing representations of them as women, they are also creating for themselves and other women in the class, a learning environment that enables them to be comfortable with the computers and the software by making it more meaningful to their everyday experiences. In addition, as they share their assignments with classmates – both male and female – they are educating even the male members of the class about the issues that they may or may not have brought up for discussion in other social contexts. Thus the assignments in these classes are geared towards creating an enabling pedagogical space that allows students to think through various socio-cultural issues while simultaneously becoming comfortable with the use of computer and related digital technologies.

We can conclude from the above that the Internet as it is not necessarily an enabling environment for women, as many women do not feel comfortable with its content, both substantive and visual. This is the case even more so when we examine the case of rural women in developing regions. For instance, one of the participants on ICTNet raised the issue of relevant content being crucial to the participation of women in ICT-based networks. She described a case in the Dominican Republic :

This year I had the chance to spend some time in El Limon, a small community of 350 inhabitants in the Dominican Republic. The village is producing hydroelectric power and is running a telecentre. Since there are no telephone lines, a wireless Internet connection was set up, transmitting data to the next town. Now that the connectivity problems are solved, the efforts of the telecenter committee concentrate on how to make the technology useful for the community development. Women, especially when they are married and have children, hardly ever use the computers in the telecentre. The Women's Association organized a computer course, facing the following problems(among others):

- Only few women could afford the time to attend courses or practice their newly acquired skills
- The participants literacy skills were out of practice
- Locally specific and relevant information in Spanish on day-to-day issues (like healthcare, nutrition, agriculture) is hardly available in the Internet, especially not for a non-academic audience.

So the challenge is to turn ICTs into something useful for the women in El-Limon in order to motivate them to overcome the lack of time and other barriers. Building up useful ICT-based communication networks and locally specific, relevant and easy-to-scan web site content that is tailored to the needs of a rural female audience will be a big part of that.

As a conclusion, I would recommend to include needs assessments when starting ICT projects and telecenters and make needs-based content development an integral part of Telecenter and ICTs projects.

For more information on El Limon de Ocoa in English, see <http://www.sas.cornell.edu/cresp/ecopartners/project.htm>

(Landschulze, post to ICTNet, 13 Sept. 2002, INSTRAW, http://server7798.dnslive.net/pipermail/ictnet_un-instraw.org/2002/000149.html)

IV. DESIGNING AND MAINTAINING WOMEN-CENTERED E-SPACES

Experiences within a women-only south Asian e-mail discussion list (SAWnet) in summer 1995 (see Gajjala 2002) led to current and on-going research regarding the design and production aspect of interactive internet spaces such as e-mail discussion lists. Efforts to understand the technical and applied process of founding and maintaining a discussion list focused on women and creative expression led to the formation of some e-mail discussion lists with the help of the “spoon collective”.⁴ The third-world-women list (with approximately 100 subscribers) was started in winter 1995 and the women-writing-culture list (with about 90 subscribers) and sa-cyborgs (currently continuing with 82 subscribers) were started in summer 1996 (see <http://lists.village.virginia.edu/~spoons> for detailed information and archives of these lists). A central question behind these attempts was: Is it possible for women to find electronic space as a site for re-inventing and re-representing themselves or have the more traditional representations and structures of femininity--both textual and visual--found in mass culture simply found a new home in a new medium, leaving women both complicit and resistant to the more dominant, less subversive image of woman within mass culture?

Claims in this section are based on experiences of founding, moderating and shaping the third-world-women list and women-writing-culture list (both now often silent) and the continual framing and re-framing of the sa-cyborgs list. Contradictions emerged within these spaces even as the attempt was to frame them as e-spaces that would be enabling for dialogue and cooperation.

The third-world-women list was founded in Fall 1995 from my University of Pittsburgh email account as "Representing"⁵ and then moved to the spoon collective with the name of “third-world-women”. On this list, as is apparent by the name, we would be discussing issues related to women of the "third-world" from various interdisciplinary, academic and non-academic perspectives. The women-

⁴ The Spoon Collective is a group of “netizens” hosting several discussion lists. It is operated through the Institute for Advanced Technology in the Humanities at the University of Virginia. <http://lists.village.virginia.edu/~spoons>

⁵ See <http://www.cyberdiva.org/erniestuff/rpr.html> for archives

writing-culture was started in June 1996. This list was to focus more generally on issues related to women writing culture in relation to the dilemmas faced by feminist ethnographers and anthropologists.

The following two claims are based on research and analysis of these lists in prior publications (see Gajjala 2000b, 2001 and 2002b).

- 1) The exclusions implicit in the universalizing of the notion of a so-called “women’s way” of communicating within women-centered on-line contexts sometimes succeeds in silencing “Other” women and could lead to outbursts of what is perceived as flaming.
- 2) An examination of the subject that emerges in the interstices of flaming and lurking⁶, within so-called woman-centered online discussion contexts could lead to a better understanding of the socio-cultural as well as political and economic framing of social spaces online, because we could then try to focus on designing ICT based communication spaces more suited to these marginalized women’s needs.

The interactions that I look at in relation to the above two claims come from the women-writing-culture list and the third-world-women list. Each of these lists has a list culture co-constructed by the various participant members, as well as non-participant members of the lists (based on the argument that silence shapes discourse)⁷.

The discussion topics were chosen based on the fact that their content helps illustrate how the above-stated claims are relevant within the contexts of these lists. The on-going sets of interactions are available in the public archives of the two lists and are linked to the spoon collective website at <http://lists.village.virginia.edu/~spoons>.

1. The women-writing-culture list: Universalizing a situated Women’s Way of Communicating/Knowing?

Examining the initial clusters of interaction on women-writing-culture, it becomes apparent that members set up a pattern of interaction that is clearly based on what Herring (1996) has identified as women’s posting styles. Women and even some of the men sending out posts to the list adopted supportive styles of posting and maintained a level of respect for each other that is not the norm in a majority of e-spaces. This can be evidenced by an examination of the thread on “shall we have some brief intros for starters”(posted on 96-07-23 to the women-writing culture list), conversations on the list were sometimes continuous and sometimes sporadic. Posts tended to be generally friendly, very patient and tolerant, but not so tolerant of what some members might perceive as contentious responses. On this list, I was more often a lurker-moderator/technician, than an actively participating moderator/technician. As time progressed, a group of women and men on the list seemed to have formed a pleasant, cosy group of virtual friends and seemed to have formed an interesting “caucus” of their own in relation to the general list title of “women-writing-culture”.

The moderating style on women-writing-culture for the most part was non-intrusive and no active effort was made to direct conversations so that they explicitly tied back to what the information sheet promised members when they joined the list. Some of us were lulled into a sense of non-confrontational “sisterhood” and felt happy to occasionally contribute a creative piece related to the list focus, or just

⁶ Flaming: giving someone a verbal lashing in public. Lurking: very common practice of reading an on-line or e-mail discussion without taking part in the discussion. Definitions courtesy of searchWebManagement.com Definitions [<http://searchwebmanagement.techtarget.com/sDefinition>].

⁷ I have enjoyed the exchanges on each of these lists as participant and as lurker with respect to various topics, the analyses and claims made in this essay are not meant as personal attacks against any of the list members or as an expression of my personal preference for one list over and above the others. Neither do I necessarily endorse any of the opinions and statements made on these lists.

insert a comment or two into conversations every now and then. There was a self-conscious attempt to avoid asserting on-line moderator authority in what is often termed a “male” style. In an attempt to create a “woman-centered” e-space, then, I was actually being a passive moderator allowing an “anything goes” in the name of women writing culture situation.

However, as it turned out, the lack of assertion of any kind of authority on my part created problems for the maintaining of list focus in the long run. Some members began to see posts by the vocal members, who (sometimes “chattily”) exchanged personal stories on-list, as being irrelevant to the list focus. Around the end of 1998, however, a few new members who had joined based on what the information sheet described the list to be, as well as some older member-lurkers on the list began to make their restlessness apparent via back-channel communication with me, the moderator of the list. A few women expressed their opinion that they felt that they had no point of entry into the discussions, in addition to which, a couple others wondered what the present discussion on the list had to do with what the information sheet promised.

Part of the problem of asserting authority as moderator in women-centered spaces that get defined as “nurturing”, “supportive”, etc. is that authoritative statements and an emphasis on rules risks being associated with male modes of articulation. “[N]orms and rules” that need to be articulated are associated with male values that “generally have excluded females and values associated with the feminine” (Jones 1988:119). Therefore, asserting authority as moderator and cutting short some exchanges on the list would have alienated me from some very nice, gentle women who were actively participating on the list. Kathleen B. Jones argues that the “very definition of authority as a set of practices designed to institutionalize social hierarchies lies at the root of the separation of women qua women from the process of ‘authorizing’” (Jones 1988:120).

In the case of women-writing-culture, it appears that women-centeredness as performed by the women posting actively to the list was silencing women from other socio-cultural contexts. Women who were outside of the popular and everyday culture that the friendly caucus online had begun to share, did not feel free to interrupt and assert their opinions and presence. Being supportive on this list came to mean⁸ that participants could not express their dissent to the so-called (situated) “women’s way” of posting to the list.

2. The third-world-women list: In contrast to the women-writing-culture list⁹, an examination of some clusters of exchange on the third-world-women list reveals that contentiousness can sometimes lead to dialogue, even if the dialogue is not always visible online (i.e., the dialogue and collaborations between members may also happen off-list, in what is sometimes referred to as “back-channel” communication). It is also worth noting that, although discussions got heated at times, I did not need to actively intervene as moderator to “control” participants’ behaviour online. At that time in the history of the list, they did a fairly good job of countering each others’ arguments in ways that were productive enough to allow dialogue.

These clusters of exchanges occurred in October and November 1998. In these interactions, the subjects that emerged were men and women struggling with and against hegemonic framing of controversial topics related to women originally from non-western nations and in fact the second cluster can be seen as continuing to exchange with some of the same conflicts and issues in relation to patriarchy, western feminism and women from “third-world” contexts that the first exchange was concerned with.

⁸ Once again, I am not suggesting here that any individual member intentionally set up such a power structure. Just as I, with my “style” of moderating perpetuated a certain atmosphere on the list, the active participants in their well-meaning supportive style of dialogue unintentionally silenced women who were outside of the contexts represented by the participants’s posts.

⁹ It is interesting also to note that at least one of the participants in these clusters of exchanges on third-world-women was also an active member of women-writing-culture.

The cluster of exchanges taking place in October 1998 were mainly about the controversial topic of the Bangladeshi writer Tasleema Nasreen. The discussion touched on sensitive issues related to religion, westernization and elite women from third-world nations who speak for or appropriate the status of the oppressed “Other” in ways that are complicit with colonial discourses about the third-world “Other”. The cluster of exchanges that took place in November 1998 were triggered by an announcement regarding a conference on dowry and bride-burning in India. Both issues are highly complicated and sensitive topics for women from non-western areas of the world and for women who have emotional, religious and cultural ties to the non-western world. Both issues revolve around the positioning of “woman” within western and non-western discourses in relation to feminist struggles to help women overcome oppression at various levels.

In all of the above mentioned exchanges, the posts were mostly contentious. The posters did not spend very much time trying to frame their responses in sentences that would seem non-confrontational. In fact the nature of the disagreements sometimes was such that it might not have really been possible to construct a post that would fall within what has been described as a woman’s style of posting. There were flames and attacks made at each other, but the final result (if it can be called a “final result”) appears to be that most of the participants were willing to think through their individual opinions and come to an understanding of the situation based on the need for some kind of a common ground in their efforts to work against various forms of oppression.

In the above case, we see that on women-writing-culture list, the implicit universalizing of a certain notion of what it means to be “woman-centered,” lead to a exclusions and silences implicit in the limited assumptions behind what “women-centered” means within these spaces. Thus many others were not included in the very defining of the notion of “women-centered” – the result was not the creation of a democratic enabling environment. In the case of the third-world-women list, while there was some continued and intense dialogue that allowed multiple views to co-exist even in the contentiousness of the interactive environment there was no structure set in place for the list to continue to be a space that enabled a continuation of such discussions. Thus, the list vacillated between moments of contentious exchange and moments of absolute silence. How might we learn from these two cases in the designing of environments that might enable an exchange of diverse viewpoints while at the same maintaining a continued dialogue and sense of collaboration that began to happen with a select few members on the women-writing-culture list? If both environments had been shaped through guidelines and structure that somehow allowed for an environment that accommodated dissent as part of democratic engagement, while allowing for collaborations based on concrete projects based in participants everyday lives, would that have enabled a more dialogic space? I suggest that this might indeed be so, since when participants feel free to express dissent based in their knowledge of diverse real life contexts and feel validated by the fact of being allowed to share their difference of opinion, they are able to articulate solutions to problems. Solutions that emerge out of in-depth discussion that permits dissent at various level leads to solutions that tend to be based practically in their everyday practices. Therefore, these spaces would probably have worked as collaborative and dialogic spaces if they were based in collaborative efforts towards a concrete common goal meaningful to all members of the lists.

Implicit in the unquestioning celebration of women-centeredness and the discourses regarding the construction of woman as a subject rely too much on a “single-theme analysis” where the category “woman” can be separated from other intersecting categories of lived experience such as race, class, caste and geographical location. It is presumed that each of these categories is autonomous. Yet, as Norma Alarcon (1990) points out, such analyses ignore the fact that “one becomes a woman’ in ways that are more complex than in simple opposition to men. In cultures in which asymmetric race and class relations are a central organizing principle of society,’ one may also ‘become a woman’ in opposition to other women.”

VI. FINDINGS REGARDING ENABLING AND DISABLING TECHNOLOGICAL ENVIRONMENTS.

In light of all the complexities and contradictions associated with designing and inhabiting women-centered technological practices and women-centered e-spaces, how might we proceed with the task of producing ICT-related environments that are empowering and enabling for much of the underprivileged population of the world?

In this paper, I have touched upon and described some issues that arise in specific technological environments in relation to the production, reproduction and maintenance of enabling and disabling environments in relation to women and ICTs, while pointing specifically to gendering processes within such environments. My intention is to lay these out as issues and questions that we must engage in depth if we are to find real solutions to the problems of gender and other forms of inequity in relation to ICTs within our increasingly global world. We cannot limit our questions to mere access to technologies and technological environments as currently designed and structured, for these environments are not in and of themselves enabling. Instead, we must delve into multiple mediated and specific contexts in order to gain an understanding of how we might be able to re-design technological environments for the empowerment of the less privileged of the world – thus enabling women in relation to ICTs.

Such points of entry into the examination of gender in relation to ICTs as I have chosen in this essay could lead to further investigations into how gender is produced within different technological environments (“old” and “new”). For instance, what gendered practices and tasks within these environments are associated with what kinds of power or lack of power? When does the “feminization” of particular kinds of labour get perceived as a social and economic handicap? Within what larger everyday socio-cultural and political/economic hierarchies do processes of “masculinization” and “feminization” get equated with power, domination, low prestige or with oppression? In my examination of urban Indian technology workers, I have observed how socio-culturally and geographically (locally and globally) situated processes of masculinization and feminization feed into the creation of disabling or enabling environments for women in relation to ICTs. For instance, locally-situated processes of gendering that emphasize women’s responsibilities to their families over their own are disabling to women when aspiring towards a career in the software industry. However, it is also true that workplace expectations that privilege a western masculine style of management based in a global corporate climate are equally disabling to women seeking careers in the software industry.

Thus we see that ICTs and related environments can be enabling to women only when the overall socio-cultural, local and global contexts of ICT use and work are structured in ways that take into account women’s everyday contexts while engaging them as active producers of content. There mere objectified presence in on-line spaces or the mere availability of the actual technologies does not ensure that women are empowered through the use of ICTs. As we saw in the case of urban female technology workers in India, the social climate both at work and in the community at large contribute to making ICTs disabling to their personal achievements.

In the case of the women in India, then, we see that the mere transfer of ICTs from one context to another actually turns out to be disabling in such instances. In the case of the University students in the U.S. classroom, the women were faced with an online environment already in place, that was disabling to them because the portrayals of women were negative. However, in both cases, it is true that the women did feel enabled when they were placed in a position to be active producers of ICT design and online content, so that they were able to try and change the environments to their own advantage.

In light of the findings of the studies discussed in this paper, it is essential that ICTs be made to work for diverse members of the community - with varying material, linguistic and cultural access to computer based literacies - if women are to benefit from their availability. Thus it is necessary for us to

work on projects that theoretically and practically connect community needs and ICT based environments in order to make technological design work for women and their community-based needs.

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