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3 Agency and ICT among Singaporean-Chinese Women

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Introduction

While enthusiasm for the social and economic potential of information and communication technologies (ICT) in the many countries that constitute 'Asia' is high, it has not led to access for a substantial number of people (Ang 2001; Castells 2001; Johnson 2003; Lee & Khatri 2003). Access to ICT in Asia is often limited to private individuals from the higher income bracket working in universities, government, financial institutions, and businesses. Some scholars, in recent works, have commented on the relationship between 'development' and ICT as well as the perception that ICT automatically empowers women (Ng & Mitter 2005; Ong & Collier 2005; Reddy 2007). There is also growing evidence of de-skilling, commodification of creativity, and co-implication into established labour relations amongst knowledge workers in information societies (Day 2007; McLaughlin & Johnson 2007; Sullivan 2007).

However, Singapore provides a contrast to many Asian countries due to the diffusion of ICT access throughout its society, which is seen as resulting from strong infrastructure, education, political and commercial leadership of its centrally planned society, and the pragmatic-idealist ideology of many of its Singaporean-Chinese citizens. In the 1990s the government launched programmes for the majority of its citizens to train office workers, to make computers available to those who did not have them in their home, and to provide computers at community clubs and via school-based programs (Gan 1997: 147; Johnson 2003). No programmes were targeted exclusively at women, men, or at minority groups. Rather, via budget allowances of SGD 600 million per year, they were designed to be available for all who wished to participate (Gan 1997).

Singapore is seen in the region as providing a particularly constructive model of the ways that ICT can be integrated into a large community to create an information society. But when gender is used as an analytical prism can mere access to ICT actively challenge and change women's status and socioeconomic opportunities? And what opportunities are open to women to actively create social change via access to

ICT? A case study of Singaporean-Chinese female employees' engagement with ICT via online resources in their workplace and at home, and how they assessed the benefits and dilemmas of ICT in their professional and personal lives, is presented here to explore these questions. The focus on female employees in one commercial enterprise is not to argue that 'Singaporean-Chinese women' should be considered a homogenous group but to investigate the interrelationship between ICT and Singaporean-Chinese women's practices. While Singaporean women do not necessarily self-identify as 'Chinese', and Singapore has a multicultural population, it is nonetheless numerically and politically dominated by people who recognize familial ancestry from 'mainland China'; hence, my informants are termed 'Singaporean-Chinese'.

Data from the case study suggested that the two key modes of engagement with ICT were word processing to create documents and reports, and access to the Internet to send electronic mail (email), pay bills, and to surf to gather information. The Internet in particular has gained considerable magnitude as a communicative and adaptive means of sharing and disseminating information (Castells 2004, 2007; Castells & Cardoso 2006) via which many subject-specific networks of individuals and organizations, rallying around shared expertise and ideals, have grown. Hari Srinivas has argued that, due to the design and technology upon which computer networks function, they 'are fundamentally different from the current mass media of television, radio, newspapers and magazines. Computer networks encourage the active participation of individuals rather than the passive non-participation induced by television' (2004: 1). Examples of the first generation of computer-mediated communications that have changed people's sociality are email, the World Wide Web, bulletin boards, and search engines. In the next generation, encompassing webcams, blogs and YouTube, people target their activities to avoid the excess information the Internet can provide; rather than 'surfing' for information their engagement is specific and structured (Ward in Silverstone 2005).

Past analyzes of gendered access to ICT in the United States (US) (MacKinnon 1995; Miller 1995; Wolf 1998) have stirred debate in Asian nation-states about whether the Internet perpetuates regressive social structures or enables progressive female agency, have detailed the time and financial constraints that hinder women's access to ICT, and have argued that providing access to ICT is fundamental for women. Other studies have noted that because technological literacy has been defined generally as not being a part of women's daily competencies, vital questions need to be asked about whether ICT is yet another tool of masculinized social, economic and political power (Ghosh 2004; Hirose 1997; Joshi 1997; Lumby 1997). Post-2005 work has problematized women's access to and engagement with ICT (Barak in

O'Toole et al 2007; Mazarella 2005; McKercher & Mosco 2007), contending that 'ICTs in and of themselves will not necessarily transform gender relations, nor automatically empower women, as much also depends on the socio-cultural and political context in which they are being introduced' (Ng & Mitter 2005: 15). In Singapore, despite the government's vigorous programme to place ICT in the hands of all citizens in the 1990s, Su-Lin Gan (1997) asserts that the gender-marking of ICT as a male domain has been transferred to the Internet via gender-coded societal conditions. Hence, cultural ideologies and social attitudes about women's roles and capabilities also need to change in order for women to receive the full range of benefits accompanying ICT development.

Singapore and ICT

There are powerful local and regional discourses about Singapore's strength as a key component of the global knowledge-economy and as an example to which other nations in the region should aspire (Shamsul 2004: pers. comm.). With a population of 4,108,000 and 2,247,000 Internet users, Singapore is a densely 'wired' Asian nation-state. Despite early strategies to censor ICT, with the support of Singaporeans (Ang & Nadarajan 1995), Open Net Initiative in 2007 proposes:

'Singapore's Internet content regulation depends primarily on access controls (such as requiring political sites to register for a license) and legal pressures (such as defamation lawsuits and the threat of imprisonment) to prevent people from posting objectionable content rather than technological methods to block it. Compared to other countries that implement mandatory filtering regimes that ONI has studied closely, Singapore's technical filtering system is one of the most limited.'
(<http://www.opennetinitiative.net/studies/singapore>, retrieved 21 November 2007)

The number of websites in the country's .sg domain has risen from 900 in 1996 to more than 17,000. More than 40.8 per cent of adult Singaporeans are Internet users (NTU Singapore Internet Project Adult Survey 2001), and Internet use among women in Singapore has risen from a baseline of 46 per cent (<http://unification.women.or.kr/ehome/singapore.html>, retrieved 21 November 2007). Singaporean women are generally at ease with the notion and practice of living, working, and playing in a highly technological society, and government poli-

cies link to education strategies through the Ministry of Education and local community groups to ensure that technology remains a vital element of modernizing processes (Johnson 2003: 61, 2007). Nonetheless, according to a South East Asia Regional Computer Confederation (SEARCC) survey, the rate of ICT specialization by gender is unbalanced, with men at 81.6 per cent and women at 18.4 per cent (www.scs.org.sg, retrieved 9 August 2004).

Women comprise almost 50 per cent of Singapore's population, were given suffrage at the same time as men, and are supported by Article Twelve of the Constitution which addresses equality of the sexes, wherein 'all persons are equal before the law and entitled to the equal protection of the law'. The Singaporean Government also endorsed the ASEAN Declaration on the Advancement of Women in 1988, the Seven-Point Plan of Action in the Ottawa Declaration on Women and Structural Adjustment in 1990, and the 11-point Jakarta Declaration on Women in Development in 1994. The *Employment Act*, *Industrial Relations Act*, and *Trade Unions Act* also accord equal employment rights to women and men. Indeed, the Singaporean Civil Service is one of the island-nation's largest employers of women at 51 per cent, while 20 per cent of the Civil Service's super scale officers are female.

Despite these positive steps towards gender equality, for which Singapore should be applauded, early studies of women's use of ICT noted that although women believed they enjoyed as much access to ICT as men, women did not agree they had access to equal training. Their perception was supported by the Asian Media and Information Communication Centre, which showed that 'although enrolment of female students had increased at most mass communication programmes, very few women had broken through to the ranks of senior management in media organizations' (Gan 1997: 153). Gan contended that this occurs because the messages conveyed via ICT hardware and its use was not changing social values and attitudes about women (1997: 154-155). As a consequence, she called for government initiatives that assisted in the democratization of women, provided greater educational opportunities, flexible working hours and sponsored day-care, and supported the benefits of telecommuting (Gan 1997: 155), none of which have occurred. As a consequence, despite official claims that a cyberutopia exists in Singapore, specific issues arise in relation to women's place within it.

Notwithstanding the creation of an enabling infrastructure for its citizenry and educational policies that place Singapore at the forefront of ICT development and practice in Asia, Singapore's official culture has been judged as 'masculine'. The government is seen to reinforce patriarchal modes of thinking and practices, the official and dominant ideology is perceived to give primacy to economic productivity, and the patriarchal ideological bias honours cultural values of masculinity such

as power, conflict, success, respect, and self-reliance. Although feminist values compete with the dominant patriarchal ideology and implicitly challenge its prevalence, in their struggle for equality women's groups are perceived as occasionally acting in ways that support the dominant ideology. For example, the mass media have established an image of the aggressive feminist but most women's groups have not tried to reclaim the ideals, image, and range of feminisms now open to women in modernizing societies. Also, specific government programmes designed to benefit women are often justified more broadly as contributing to economic growth, thereby muting the concept of women's specific and different needs and the ensuing political requirement to address them. In these ways feminist culture in Singapore challenges yet accommodates the dominant ideology via a strategy that Berlinda Nardarajan terms 'pragmatic feminism' (1997: 169).

Conceptual Approach

Social structures, institutions, and values such as norms, customs, rights, and laws link with economic institutions such as markets to shape relationships between 'women' and 'men', to form their socially expected roles, and to influence the resources to which women and men have access, what activities they can or cannot undertake, how they may participate in broader society and the economy, and their perceived status. Hence, social scientists have examined the ways that ICT may change modes of thinking as well as social practices. Annette Wong (2000), for example, shows how new ICT changes not only material reality but also the ways people think about reality, arguing that cyberspace not only connotes the possibility of transcending one's body but also provides a utopian space for transcendence to a higher state of being. Rohani Razak (1997) explores changes to modes of thinking via the creation of an index to Malay women's social consciousness, ascertaining how media technologies act to reinforce women's concepts of identity. Jayant Joshi (2004) examines the difficulties of ensuring that a range of people participate in digitally empowered development in India, and Rajora Rajesh (2002) concentrates on issues of access when considering the potential for social disadvantage that is exacerbated by ICT development. In the US, Susan Walsh (2005) explores how the Internet site, Blue Jeans Online, provides young girls with opportunities to negotiate, resist and/or reject dominant meanings relating to gender roles in societies, and Lynn Clark notes that teenage girls with access to message technology 'experience themselves as active agents in control of their environments and of their relationships with those who are important to them' (2005: 218).

A focus on women and ICT has produced research that has assessed changes to women's status and their socioeconomic opportunities via the participation of women in computer science as a profession (Klawe & Leveson 1995; Spender 1995), issues of access analyzed through the prisms of race, class and gender (Balka 1996; Consalvo & Paasonen 2002; Ebo 1998; Light 1995; Taylor, Kramarae & Ebben 1993), the diversity of social interactions and their potential for the constitution of multiple identities (Cherny & Weise 1996; Consalvo & Paasonen 2002; Kendall 2000; Winter & Huff 1996), the gendering of information systems (Adam 2005; Balka 1997), issues of sexual harassment and on-line pornography (Cebulko 2007; MacKinnon 1995; Miller 1995; O'Toole et al 2007; Waskul 2004), and feminist historical analyses that have illuminated a range of concepts and actions missing from mainstream social studies of ICT (Cockburn & Ormrod 1993). Leslie Shade notes that a focus on women can pinpoint the relevant social actors and the gendered assumptions in the design, diffusion, and consumption stages of an ICT's life cycle (2002: 6) and highlights various women's active use of ICT for social change, support networks, and 'as a means of self-expression' (2002: 10).

Allucquère Stone (1995) and Sherry Turkle's (1995) work has focused on women's engagement with the Internet to consider how women experiment with identity, arguing they have a wider latitude to explore traditional or multiple identities than in 'traditional spaces'. Their approach suggests that the Internet can be understood 'as transformative spatiality where gender categories become reconfigured' (Consalvo & Paasonen 2002: 2). Conversely, technologically neutral or determinist positions that do not critically assess the social structures and cultures framing ICT have been critiqued for not analyzing differences between women and the particular sociocultural histories of women's daily practices. Mia Consalvo and Susanna Paasonen's edited collection (2002) is vital to questioning whether the Internet facilitates masculinized social, economic and political power. Alecia Wolf has highlighted how time and financial constraints for women in the US may hinder their ability to access the net outside working hours due to the double burden of women's domestic tasks and, if single mothers, the financial hurdles of hardware, software, and ongoing telecommunications charges (1998: 22). And Dorer (2002) has argued that because concepts of access are anchored in notions that men and women may become empowered in and through cyberspace, access is fundamental. Yet the gender marking of ICT as a male domain has been seen to have 'unconditionally transferred to the Internet' (Dorer 2002: 63) via gender-coded social conditions that 'gender' ICT and create gendered employment options that produce gender-differentiated 'access to the Internet' (Dorer 2002: 68). Recent literature suggests that detailed, con-

text-specific analyses of women as 'empowered knowledge workers' in information societies are required (McKercher & Mosco 2007). As a consequence, it is necessary to question whether access to ICT is sufficient for women to actively challenge and change their status and socioeconomic opportunities, and to enable women to create social change, in Singapore.

The Research

The case study was created from field work with a commercial organization in Singapore. The research examined what work practices involving ICT were required by the employing company; the ways female Singaporean-Chinese employees engaged with ICT for work and non-work related issues in the workplace, and for work and non-work related issues at home; and whether and, if so, how they perceived their work status to have benefited by knowledge about and engagement with ICT.

A qualitative research methodology was employed using multiple methods such as in-depth interviews, informal conversations, short questionnaires, and 'quick ethnography' (Denzin & Lincoln 2000; Handwerker 2001) in order to access as many informants in the time available for the research and to build a complex portrayal within the case study format. I conducted ten in-depth interviews using open-ended questions while five informal conversations eventuated from short-term friendly relationships that developed during the research and were conducted during coffee breaks, observing Chinese New Year celebrations, and enjoying lunch outside the work environment. The short questionnaires were designed for informants who wished to add further information, were not available to be interviewed during my field trip, or preferred not to take part in the discussions but wished to contribute unobtrusively in their own time. Of 35 distributed, eleven were returned.

The research was conducted with the Singaporean branch of an international public relations company. Although the company was originally a Singaporean company established by an Australian male, it had been purchased three years earlier by a transnational corporation. The company worked to retain a local identity however. It was located in a group of renovated shop-houses in Chinatown, retained much of the original façade, employed many Singaporean-Chinese staff, and engaged vigorously in the practices that were part of the Chinese New Year festivities being conducted at that time. Indeed, one day's interviews were delayed for three hours as we waited for the dragon that

was bringing good luck to complete its dance outside the building and to wind its way through the numerous conjoined shop-houses.

All 26 informants were Singaporean-Chinese women and had access to ICT at their workplace and all, besides two, had access to ICT at home. The informants were predominantly aged between 20 and 35. Of the 26 informants, five were paraprofessional in that they were skilled administrative assistants; 21 were educated to the tertiary level.

At work all the informants accessed ICT for word processing purposes to compile documents, reports and letters. While half the informants accessed the Internet up to fifteen times per day, one informant noted she accessed the Internet 'all the time' in short necessary bursts to access sites for information, images and statistics around which a marketing campaign could be built, but only spent approximately fifteen minutes per day on the Internet. The balance of the informants accessed the Internet less than ten times per day, but spent significantly longer in the Internet, researching up to two hours at a time. All tasks performed in the workplace were for the purpose of marketing research, and obtaining and retrieving information.

Personal access to the Internet also reflected the task orientation of the workplace. Informants surfed for consumer product promotions, travel information, to pay bills, to check account statements, to research information for personal use such as holiday destinations and hotels (often referred to as 'just surfing'), to check emails, to redeem purchases, and to obtain cinema and theatre tickets, and medical and pharmaceutical information. When, during interviews, I pressed for further details about what information they were researching, my informants told me it was issue specific, depending on what they needed to know at any particular moment. No informants told me in person, or via the questionnaire, that they had altered their gendered identity online during their work duties in order to achieve a more efficient outcome by self-presenting as male, nor had they altered their gendered identity online while accessing the Internet at home. This is significant as many US studies have investigated the way informants access the Internet to explore the cybersocial behaviours expected of a different gender, and/or to explore a different mode of sexual expression online to that usually presented in the informant's daily life (Campbell 2004; Millar 1998; O'Riordan & Phillips 2007).

Preference was a significant factor in accessing ICT, and particularly the Internet, at home. For example, four informants stated they preferred their husband or sons to access ICT at home to pay bills and obtain general information in a time efficient manner. Many informants articulated their capacity for active human agency, stating they preferred alternative tasks to 'working on the computer'. Three stated they were 'too tired' to access ICT and wished to embark on other tasks; as

one informant averred, 'I do not arrive home until after 7pm. We are all tired. It is easier for me to prepare dinner while my husband spends time on the computer. Also, I have not seen my children all day, and I want to spend some time playing with them'.

When asked whether my informants perceived their work status to have benefited from their access to ICT and particularly to the Internet, they were evenly split in their responses. Of the questionnaires four responded 'No', of the in-depth interviews four responded 'No', and in the informal conversations two responded 'No'. They perceived the Internet to be merely another information retrieval tool that was incorporated into their daily tasks. One informant in the questionnaire responded 'Not applicable' to the question.

The six informants who responded 'Yes' on the questionnaires wrote that their work status had benefited from access to ICT because they were learning about new things during their research, it was faster to obtain data on the Internet than to check it manually in a book, the Internet was an excellent tool for increasing knowledge and a great source of information, the Internet enabled a person to obtain up-to-date data very quickly, and it allowed speedier access and promoted the accumulation of knowledge. The interviews portrayed how my informants were pragmatic in their perceptions of and access to ICT. They told me how access to ICT knowledge and hardware in their office space enabled them to upgrade their skills, which they perceived as beneficial for themselves and for the clients who enabled them to remain employed in a highly competitive commercial market. They did not access ICT to produce broader social and political change, nor did they network with other women. Primarily they accessed ICT for easily concluding domestic, personal and professional tasks, and as an extension of their professional capabilities. While my informants did not tell me that non-use of ICT was a deliberate 'choice' to resist the ways that new technology could encroach upon their personal space and time, they described their preference for activities they considered to be more important and enjoyable because they were conducted away from a computer screen and keyboard. For example, while younger informants engaged in many of the same activities as those described by Sharon Mazzarella for US teenagers (2005: 1), those who lived in an apartment with their parents told me they preferred to watch television, attend the cinema, or go shopping - pastimes outside the work environment involving face-to-face social activities. Older women with children described how they preferred to prepare dinner if they did not have a maid, to play with their children if a maid was taking care of the domestic tasks, or to talk on the telephone with other family members such as parents and siblings, rather than 'sit in front of the computer'.

Overall, the informants stated that the wealth of information that is easily accessible is the greatest benefit of access to ICT at work; ICT was perceived primarily as framing an information retrieval tool. While informants chose the Internet as a key mode to access information they were aware of its problems, judging that data are difficult to verify, that paradoxically the Internet's linking capabilities enable viruses to be fast-tracked through personal computers, that the Internet creates a dependence in the user as an 'effortless' source of information, and that it can be an intrusion into their personal space and time.

What Insights Can Be Gained from the Data?

The data provided insights into some Singaporean-Chinese women's access to ICT and specifically their engagement with the Internet. Despite the problematization of received ideas about the empowering nature of ICT, this group of Singaporean-Chinese women demonstrated that they are primarily pragmatic in their access to ICT. In contrast to US studies my informants did not suffer problems of access to ICT either at work or at home. Neither did they disclose that when engaging with the Internet they had made any changes to their gendered identity in order to achieve goals at work or home, to explore traditional or multiple identities, or to place their sexuality in play in the physically non-threatening arena of cyberspace. The Singaporean-Chinese women in this case study contrast with US studies in which informants face difficulties accessing ICT and, when they so do, (many work to transform their identity on the Internet.?) My informants' statements suggest they did not perceive the Internet to be an arena of 'transformative spatiality', as Stone's (1995) and Turkle's (1995) work proposes.

The case study did, however, generate three important issues. The first links to whether and how access to ICT and engagement with the Internet may challenge and change Singaporean-Chinese women's status and socioeconomic opportunities. Certainly there were limitations on online creativity generated by the women's predominantly paraprofessional status and the focused practicality of their tasks on the Internet at work. But my informants generally did not perceive access to ICT and engagement with the Internet to radically alter their status in the workplace. All informants focused on their workplace responsibilities and interwove personal use of ICT into their daily tasks. Although supervision was not overt they were aware that tasks needed to be completed by deadlines and those working in a direct relationship with a manager had to account for their time. However, although information-seeking is the most popular online activity for Singaporean users

of the Internet generally, at 5.8 hours per week, with email second at 4.6 hours per week, and the majority of users content not to make any online transactions at home (<http://www.ntu.edu.sg/sci/SIP/Summary>, retrieved 21 November 2007), the in-depth interviews also suggested that women should not necessarily be categorized as 'victims' if they preferred not to access ICT in their home environment. Many informants preferred not to 'work on the computer' and strategically positioned themselves to gain the benefits of leaving computer tasks to their husband. The statement 'sometimes he'll pay my credit card charges' was followed by good-natured laughter, and supports Wazir Karim's contention that in Southeast Asia women use 'strategic bases for establishing human relations' and operationalize their culture in constructive, productive, complementary and nonconfrontational forms (1995: 20). The case study suggests that sociocultural factors such as active human agency, and the women's stated preference not to engage with ICT but to engage in more pleasurable social interactions, are crucial to women's ways of thinking about ICT and may be seen as unarticulated ways to resist ICT's encroachment into their personal space and time available outside working hours.

The second issue that arises is a potential critique of the pragmatism of this group of Singaporean-Chinese women in their lack of actively creating social change via their access to ICT. Consalvo & Paasonen (2002), Dorer (2002), and Ng & Mitter (2005) have argued that ICT can perpetuate regressive social structures and maintain gendered social conditions. The study suggests that my older, married informants exhibited a complex array of perceptions of gendered relations in their preferred activities in their homes. While older, married women are recognized as being less likely to use the Internet (<http://www.nut.edu.sg/sci/SIP/Summary>, retrieved 21 November 2007) my informants' articulation of 'preference' and their strategic thinking in relation to which family member would 'work on the computer' at home suggested they were optimizing their domestic relations in ways that enabled them to juggle fulltime work, childcare and domestic duties (albeit some with the assistance of a domestic worker).

Nonetheless, it can be argued that a gendered division of labour is operating in the home and women are shouldering the multiple responsibilities of paid work and unpaid domestic tasks. As Nadarajan proposes, the demands of unlimited access to ICT and long days at work exact a high cost from Singaporean women, who despite having made strides in education and earning power, 'still shoulder the bulk of the task of taking care of the home and raising children' (Yim & Ang 1997: 174). Despite the passing of the *Women's Charter (Amendment) Bill 1996*, which sought to give greater consideration to women's nonfinancial contribution to the family, Singapore has not fully ad-

dressed the workload issues of working mothers (Nadarajan 1997: 174). The informants' responses linked with the NTU survey, which states two of the most frequent reasons given for not using the Internet were 'no time' and 'no interest' (<http://www.ntu.edu.sg/sci/SIP/Summary>, retrieved 21 November 2007). My informants' 'preference' not to access ICT in their home following a busy day's work may well be an act of human agency in terms of ensuring that the burden of labour at work and in the home is shared, and that their preferences are acknowledged. Equally, it must be recognized that their 'preferences' fall within socially appropriate ideals of 'women's work' in the patriarchal ideologies that shape Singaporean society. While pragmatism and agency are operating in my informants' decisions about access to ICT, it can be argued that their access is not producing major positive structural changes to women's overall status and socioeconomic opportunities in Singaporean society, nor are women actively creating social change.

It is noteworthy that none of my informants stated they accessed ICT and engaged with the Internet to network for political purposes. This disparity in relation to research from the US suggests that the third issue generated by the case study is my informants' preference to access ICT as a tool to achieve workplace goals and to complete domestic tasks rather than as a tool to network for political change in the centrally planned and well-monitored society of Singapore. There is a strong argument internationally that women should be more involved in the development of ICT and the Internet in particular, not only for themselves, but also to mould a promising medium with gender sensitivity. It is suggested that partnerships need to be developed to constitute a justly gendered Internet, where women have access to the wealth of information which resides on the Internet in the form of news, research, information exchange, debate, communication and the intellectual growth and stimulation which interaction with new technology brings. However, my Singaporean-Chinese informants accessed ICT only for its benefits as a practical tool, and engaged with it as one of an array of activities. Their passive resistance manifested in their preference not to use ICT in their personal space and during their non-working time, and to engage in activities away from the computer. As Singaporean-Chinese people recognize themselves as pragmatic and will opt for lesser political freedom in order to maintain high social and economic stability, my informants situated themselves within the broader social constraints of patriarchal Singaporean society, an approach that is reflected in the pragmatic feminist political strategies of Singapore.

Women and the Future of Cyberculture

Globally, women's access to ICT is increasing as more women are engaging with online electronic tools such as email, instant messaging, mailing lists, the Web, blogs, and YouTube and are encouraging other women to do so. ICT is an evolving medium and it has proven its ability to educate and raise awareness on a global scale (Shade 2002). Women are building and sharing online resources that are women-focused, while others repackage online information for those without access. New ICT facilitates increased opportunities to obtain abstract information and to network socially (Clark 2005). But women have both negative and positive experiences of ICT at work and at home (Srinivas 2004), not only because much product design and content is dominated by and for men but also, as this study shows, women work and live within patriarchal social constraints.

The case study suggests that when gender is used as an analytical prism access to ICT is insufficient to actively challenge and change women's status and socioeconomic opportunities beyond providing a speedier process of information retrieval, and that opportunities for women to actively create broader social change via access to ICT are limited. Some of my informants perceived that access to ICT enhanced their work capabilities. However, because many occupied supervised paraprofessional positions and older informants with families juggled the double burden of paid work and unpaid domestic labour, the case study also suggests that women's engagement with ICT's potential is shaped by broader sociocultural constraints.

Yet, as Ng and Mitter argue, if women 'do not engage with the information society in its formative years, women's voices will not be heard in the future [and] women's active involvement is essential to ensure that a plurality and diversity of views are accepted in the information society [to promote] gender equity' (2005: 10). Singapore shows how a key to overcoming the barriers, shortcomings and misconceptions of women's participation in ICT development resides in the comprehensive education of women, the promotion of equal access for young women to scientific and technological arenas, the provision of opportunities for increased technological training, and the strengthening of decision-making in women's roles. But governments must also legislate to enable equal access and opportunity for all via their policies and programmes and more broadly in the private sector and the larger civil society so that social attitudes, cultural ideologies, and gender stereotypes can be changed. By partnering local communities with progressive feminist women's groups, strategic and practical engagement with ICT can be encouraged, a gender-sensitive development of online information content can be facilitated, relevant information and online content

can be produced, managed and delivered appropriately, and further lobbying and advocacy for a change in attitudes and approaches to women can also occur.

Additionally, Srinivas (2004) recommends the development of a series of 'gender information systems' that address the issues of gender imbalances and serve as a gender database for women's groups, providing specific information on women's groups, statistics, gender policies, programmes, projects and plans. Such a network, he proposes, could provide tools in the form of practical ideas, guides, strategies, courses and methodologies; success stories in the form of case studies, comparisons, inspiring ideas, and best practices; articles in the form of theoretical and practical analyses of the issues of interest; and resources in the form of organizational and operational information on current policies, programmes, projects and other initiatives.

While the research in Singapore adds empirical detail about Singaporean-Chinese women's social practices to broader theoretical debates about gender and access to ICT, it also provides a springboard for future investigations into the ways that social interactions with ICT are shaped by gendered and crosscultural difference. For women's capacity to make choices about how they manage their time, how they access and engage with ICT, and ICT's importance in their lives relative to other ways of being must also be recognized. Balancing the opportunities offered by ICT with the time, energy, and knowledge required to engage with it is important, particularly when discussing how and why women may best work with new ICT. We may then see Singapore as a gender-sensitive model to be emulated, while adjusted with cultural sensitivity to the needs of women in the Asian region.

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