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Gender, Design and Electronic Commerce

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The Centre for International Research on Communication and Information Technologies is a research centre at the Royal Melbourne Institute of Technology.

CIRCIT was set up in 1989 to provide independent research and education on information and communication services. The aim is to create new knowledge that is relevant to the community, industry and government so as to increase the social and economic wellbeing of people in Australia and other parts of the world.

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Preface

Women use the Internet and electronic commerce at home less than men.

In trying to discover the reasons, CIRCIT found there had been little qualitative research linking gender and electronic commerce. With funding from the Australian Research Council and the Department of Communications, Information Technology and the Arts, we began a year long project focusing on gender, design and electronic commerce.

This project has led to findings that redefine the relationship between gender and technology. The findings also have the potential to reshape approaches to design and policy. Connecting the sociological research with policy and design in itself has been a major step forward.

This project builds on three areas of CIRCIT research and teaching.

The first is the emphasis of CIRCIT's research program on understanding the users' perspective on information and communication services in a variety of areas. This work has introduced frameworks for contrasting the users' and providers' perspectives. It has established an activities approach to considering usage, and elucidated the concept of "mix and match" of communications technologies to conduct activities.

A second connected stream of research and teaching has approached issues of money and electronic commerce from the users' perspective. This work has included reports on *The Use of Information and Communication Technologies in the Home* (CIRCIT Policy Research Paper 40), *The Use of Electronic Money in the* Home (CIRCIT Policy Research Paper 41) and *Trust and Electronic Money* (CIRCIT Policy Research Paper 42), *Small Business and Electronic Commerce* (CIRCIT Policy Research Paper 44). This research has fed into the teaching of *Electronic Commerce: Money, Media and Communication* for the Masters course in Communication Studies.

A third body of research is exploring the concept of design that in an essential way bridges the perspectives of users, industry and policy. CIRCIT conducted a policy forum in 1998 on issues of effective use and design. This work has been taken further in a project on Deaf Australia Online. The gender project is our most recent effort to see how usage in a particular social and cultural context shapes and is shaped by the design factors in electronic commerce.

The support of the Australian Research Council and the Department of Communications, Information Technology and the Arts for this research is acknowledged with appreciation. We also acknowledge with great appreciation the role played by Dr Helen Marshall of RMIT as the chief reviewer. This research has also benefited from reviews by CIRCIT staff and our external reviewers, Helen Campbell, Mouli Ganguly, Airlie Worrall and Jan Pahl.

John Burke
Director

1 Executive Summary

This project examines women's use of the Internet and electronic commerce in the home, focusing on implications for design and policy.

The central questions are: Why do women use the Internet and electronic commerce at home less than men? How do the Internet and electronic commerce change personal communication and the control of money at home? How can an understanding of these gender differences be used for more effective design and policy of electronic commerce?

We answer these questions through open-ended interviews with 30 Anglo-Celtic women in middle-income households with Internet access. We found that:

Women use the Internet as a tool for activities

- Women generally use the Internet as a tool for activities, rather than a technology to be mastered.
- Women seldom associate the use of the Internet with play, gadgetry, machinery and power.
- Women's lesser use of the Internet and electronic commerce cannot wholly be explained by differences in men and women's skills, expertise, familiarity with the technology at the place of employment, education and time available.
- The difference in use can be influenced by the location of the PC with the Internet in male spaces in the home. But a change in location does not always lead to a change in use.

Women are uncomfortable with technology

- Women's continued discomfort with technology is at the centre of the social construct of gender and technology.
- When women become comfortable with technology – as with the telephone – women no longer see it as technology.
- Women's style of using technology as a tool for activities is not seen as expert use of the technology.

Women farmers routinely use the PC and the Internet

- On the farm, the Internet and the PC are seen as female technologies, unlike the tractor in the paddock, which is male.
- The PC is situated in the female space of the home, the home office.
- The PC and the Internet are used primarily for traditional female activities such as book-keeping and seeking information rather than the male domain of production.
- Women farmers have relatively more education, time and previous PC skills than male farmers.

Women prefer personal and contextualised communication

- Women who perceive email as a personal communication channel are more likely to use it as part of a mix of channels for personal communication.
- Women frequently say they like to shop "in person" and they like the personal interaction of the shopping experience.
- Many of the barriers to electronic commerce are common for men and women, such as a concern for security and authentication. But there is a larger gap between male and female use of electronic commerce than for general Internet use in the home.

Email is changing the nature of personal communication

- Email is leading to more frequent personal communication, particularly across time and distance.
- Personal communication by email has developed a different nature from other forms of personal communication. Email now straddles the boundaries of spoken and written communication, and synchronous and asynchronous conversation.
- Email is substituting partially for personal letters and less so for the telephone.

Electronic money can change the control of money in the home

- Fewer women than men pay via the Internet, though women use other electronic payment channels with ease.
- Personal financial management programs such as *Quicken* and *MYOB* are often used to separate domestic money and business money.
- These programs change the nature of domestic money as it becomes less nebulous and more calculable, less joint and more individual.
- These programs have the potential to concentrate information about present and future patterns of income and expenditure with the user.
- This concentration of information about money can lead to greater decision making power for the user. Information about money however does not necessarily lead to greater power.

Design and policy with women in mind

- The domestication of electronic commerce means that women have to be at the centre of design and policy.
- Women's focus on the activity means women want plain English and a design which concentrates on the activities they want to complete, rather than on the capabilities of the technology.
- Women have found the most helpful government sites reflect a focus on activity and personal communication.
- Policy makers need to emphasise access and use rather than skills to foster a

willing and able user base;

- The focus on the activity also means designing for changes in the nature of the activity. Though activities dealing with money are now information activities, the processes of invoicing, bill payment and the management of domestic money are not as yet seamless information processes.
- The use of the telephone and email to supplement the information on the Web introduces the personal, interactive aspect of communication that women find comforting.
- Cooperative settings with technical support will best encourage women gain confidence with the use of the Internet.

2 Introduction

Isobel, 36, sounds like an e-commerce commercial when she describes how she and her husband bought a second-hand car online. “We went through ‘The Age’ and we just did a search for the car we wanted and the price range we wanted and it came with about 20 alternatives. It was a private sale. We phoned and asked the fellow all about it and got someone in Melbourne to have a look at it for us.” They went to Melbourne from their farm and purchased it overnight. “So it was as quick as that,” she says

Isobel’s[1] Internet use is not unusual for a farmer. However, for Australia as a whole, it is the men who are still more likely to be on the Internet at home than women. The gap is fast being bridged as the Internet becomes more domesticated. Important differences remain, however in the ways women and men use the Internet.

2.1 Aims and significance of the project

This project examines the relationship between the gendered use of the Internet at home, the design of electronic commerce and its impact on the management of money in Australian households.

Data from the Australian Bureau of Statistics show that more men than women use the Internet at home. This gap, though narrowing, led us to examine issues of gender in Internet use. The focus is on the social construct of gender rather than biological differences between men and women.

In this project we define the Internet to include email, the World Wide Web, mailing lists, chat rooms, online games and newsgroups. We define electronic commerce as activities related to the purchase of goods or services via the Internet.

We seek to understand:

- the differences, if any, between men’s and women’s use of the Internet at home;
- women’s use of electronic commerce;
- the effect of the electronic management of money on power and decision making in marriage;
- the implications of gender differences on the design and policy of electronic commerce.

This study is significant for linking interdisciplinary research from the users’ perspective to policy and industry issues in telecommunications. It thus contributes towards a greater understanding of:

- the social shaping and impact of the Internet and electronic commerce;
- the interaction between use and design; and

[1] The names of the respondents are pseudonyms to preserve confidentiality.

- the way policy makers and industry can help make the online environment more inclusive.

Theoretically, the study will further our understanding of money, gender and technology. Though there is some valuable literature that connects gender and technology,[2] there is little that analyses the relationship between money and gender and even less that attempts to connect the technological developments in the field of money with gender.[3] The work on electronic commerce has concentrated almost wholly on charting its rapid development, describing techniques for businesses wishing to trade on the Internet and studying the way electronic commerce will change the way business is done. There is little research on the consumer perspective of electronic commerce.[4] Moreover electronic commerce has not been seen within the social and economic context. The metaphors of economics and engineering dominate the discussion. Hence this study is valuable in helping to develop a language which integrates the perspectives of providers of electronic commerce with those of the user in his or her social and cultural context.

2.2 Studying gender and electronic commerce

The emphasis in this study is to understand women's use of the Internet and electronic commerce at home. The questions focus on the way women communicate using a mix of channels to seek information, communicate, work, play, shop and pay for goods and services.

Our study is based on open-ended interviews with 30 middle-income, Anglo-Celtic women with Internet access at home. We describe middle-income broadly to mean a household income between $40,000 and $99,000 a year. It is a snowball sample, with multiple points of access to ensure a wide range. The women were accessed via our professional and personal networks, and advertising on email lists of women's, farmers' and community organisations.

The sample is not representative of the Australian population, though it covers a broad range of characteristics pertaining to age, education, employment and geographical distribution. The sample characteristics are as follows:

- All the women have Internet access at home.
- Twenty-six of the 30 women are married. Three are in defacto relationships and one is divorced.

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[2] See Dutton, William H. (1999) *Society on the Line: Information Politics in the Digital Age.* New York: Oxford University Press; Silverstone, R. and Hirsch, E. (Eds.) (1992). *Consuming Technologies: Media and Information in Domestic Spaces.* London: Routledge; Wajcman, J. (1994) Technological A/Genders: Technology, Culture and Class. In Lelia Gree and Roger Guinery (Eds), *Framing Technology: Society, Choice & Change,* pp. 3-14, St. Leonards, NSW: Allen & Unwin.

[3] For a discussion of the literature in the field see Singh, S. (1997). *Marriage Money: The Social Shaping of Money in Marriage and Banking.* St. Leonards, NSW: Allen & Unwin. See also Blumberg, R.L. (ed.) (1991). *Gender, Family and Economy: The Triple Overlap.* Newbury Park, CA: Sage Publications.

[4] See Singh, S. (1997). The social impact of electronic money. In Rosston and Waterman (Eds.), *Selected papers from the 1996 Telecommunications Policy Research Conference,* Mahwah, N.J.: Lawrence Erlbaum Associates.

- Eighteen of the 30 women are from households where goods and services have been ordered and/or purchased over the Internet. This overweighting of households using electronic commerce is so that we can better understand the use of electronic commerce.
- Twenty of the 30 women have university education.
- The women come from a range of age groups – 12 each in the 25-39 and 40-54 age groups. We have one woman under 25 and five over 55.
- All except three are in part-time or full-time employment outside the home. All of the women who are employed except one have access to the Internet at work.
- The women are nearly equally divided between the capital cities and the rest of Australia – 14 are from capital cities and 16 from the rest of Australia.
- The women are from Victoria (17), New South Wales (4), Tasmania (3), Queensland (3), South Australia (2) and the Australian Capital Territory (1).

This is a *grounded* study, in that the emphasis is on the emergence of theory from the data. The data have been analysed using NUD*IST (Non-numerical Unstructured Data Indexing Searching and Theorising), a computer program for the analysis of qualitative data.[5]

2.3 Limits of the study

This study is not generalisable across Australia. We aim to understand rather than quantify and predict the different factors that influence women's use or non-use of the Internet and electronic commerce. We place this qualitative study within the random, representative picture of Internet use by using data from surveys conducted by the Australian Bureau of Statistics.

We recognise we are focusing on women's experiences and are investigating women's perception of gender differences (if any) in Internet use and electronic commerce. On the basis of our data, we cannot elaborate on the differences between actual male and female use. We comment only on how women perceive male use of the Internet and electronic commerce.

This study concentrates on women in middle income households, mainly married or in defacto relationships and of Anglo-Celtic background. Our sample helps us understand an important group. We recognise that at best it presents a building block for future research that would extend the focus to:

- women from a range of socio-economic backgrounds;
- women who are from non-English speaking backgrounds;
- the importance of differences in marital status for the use of Internet and electronic commerce; and

[5] For a detailed examination of NUD*IST and the research process, see Singh, S. (1996). Money, Marriage and the Computer. *Marriage and Family Review*, Vol. 24 (3/4), pp. 369-398.

- differences of household composition and Internet use.

These dimensions remain unexplored in the present study.

2.4 The structure of the report

In Section 3, we present the most up-to-date statistical data in Australia and internationally on access to and use of the Internet at home by men and women. Against this statistical backdrop, in section 4, we move to our qualitative data, concentrating on women's use of the Internet. In section 5 we examine women's use of electronic commerce. In section 6 our focus is on electronic money and its management. We examine its effect on the nature, management and control of domestic money. In section 7 we write of the implications of our study for designers and policy makers. In the concluding section, we summarise our findings and their significance for thinking about gender, technology and money.

3 Gender and Internet Access and Use in Australia

In this section we give the statistical picture of male and female Internet access and use in the home. The focus is on Australia, with comparative international data where available.

3.1 Gender and Internet access at home

There is a decreasing gap between men's and women's access to the Internet at home. In May 1998, 13.9 per cent of men 18 years and over used the Internet at home compared to 7.5 per cent of women. In May 1999, 19.8 per cent of men are using it compared with 14.3 per cent of women (See Table 1).[6]

Table 1: Home Internet Users by Gender

	Males			Females		
	Number	%	% increase May98-May99	Number	%	% increase May98-May99
May '98 Adults	920 000	13.9		512 000	7.5	
May '99 Adults	1 324 000	19.8	43.9	987 000	14.3	92.8

Sources: Australian Bureau of Statistics (1999) *Use of the Internet by Householders. Australia, May 1999*. Catalogue no. 8147.0. Canberra: Australian Government Publishing Service.

Australia is moving towards an even gender profile amongst Internet users, comparable to Internet users in the United States (See Table 2).

Table 2: Gender and the Profile of Internet Users - International Comparisons

Country	Males %	Females %
United States (May 99)	51	49
Australia (May 99)	54	46
Singapore 96 (at home)	72	28
Europe 98	78	22
Japan (Dec 98)	83	17
China (July 98)	93	7

[6] Australian Bureau of Statistics (1999) *Use of the Internet by Householders. Australia, May 1999*. Catalogue no. 8147.0. Canberra: Australian Government Publishing Service.

Sources: Australian Bureau of Statistics (1999) Use of the Internet by Householders. Australia, May 1999. Catalogue no. 8147.0. Canberra: Australian Government Publishing Service.

CNET News.Com: China Net use exploding. http://www.news.com/News/Item/0,4,24114,00.html (consulted 22 July 1998)

CommerceNet: The CommerceNet Research Center World Wide Statistics. http:/www.commerce.net/stats/wwstats.html (consulted 10 July 1998)

eMarketer, 17 May 1999. eStats: 64.2 million U.S.Adults Online Monthly. http://www.emarketer.com/estats/051799_642mil.html (consulted 19 May 99)

National Computer Board: IT Household Survey Report. 1996. (1997). http://www.ncb.gov.sg/ncb/press/1996/hholds.html (consulted 30 November 1999)

Nikkei AsiaBizTech (1999). About 40 pct of New Internet users in Japan are Women http://www.nikkeibp.asiabiztech.com/Database/1999_Jan/13/Mor.04.gwif.html (consulted 1 July 1999)

3.2 Gender and Internet use

The pattern of Internet access in the home in Australia is mimicking the career of the telephone (in an accelerated way), where the technology starts off being male dominated, but then becomes more evenly gendered.

As a technology becomes domesticated and feminised, gender differences are seen in the use of the technology rather than in access to it.

Publicly available statistical data in Australia on gendered Internet use are thin, concentrating mainly on quantifying reasons and frequency of use. This is partly because the Internet is new in the domestic context and in the early stages of domestication. Though Internet penetration is increasing, in May 1999 only 22.2 per cent of Australian households had Internet access. Unlike the telephone, the TV and the radio, the majority of homes do not have the Internet.

The personal computer (PC) and the Internet are at present still seen as technologies that need to be learnt, that need expertise and training sessions. The PC and the Internet have also not reached the stage where there are multiple and personal access points in the home, as has happened with the older media.[7] Most households have only one PC. In Australia in February 1999, there were 3.7 million computers for the 2.6 million households that used the computer more than once a week.[8]

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7 Livingstone, Sonia (1999). New media, new audiences? *New Media & Society, 1*(1), 59-66

8 Australian Bureau of Statistics (1999) *Household Use of Information Technology. Australia, 1998.* Catalogue no. 8146.0. Canberra: Australian Government Publishing Service.

ABS data on frequency of use show that men use the Internet more often at home than women (Table 3). Market research in the United States also found that females are likely to be 'lighter' users of the Internet at home than males. Women are likely to be on the Internet at home less than an hour per week.[9]

Table 3: Frequency of Internet Use at Home by Gender, Australia, 1998

Frequency	**Males** %	**Females** %
Daily	32.40	27.85
2-6 times a week	41.07	34.11
Once a week	17.53	18.86
Once every two weeks	2.30	6.42
Once a month	5.01	10.60
Less than once a month	1.25	0.24
Don't know	0.43	1.69

Australian Bureau of Statistics (1999). Unpublished data.

In Australia, ABS data show men over the age of 18 years use the Internet more for all activities, but particularly for study (27 per cent of male Internet users against 18 per cent of female Internet users) and activities relating to goods (54 per cent male against 38 per cent females) (Table 4). In 1998, men also used the Internet more for email than women – 62 per cent men to 55 per cent women[10]. ABS does not have comparable data for male and female users 5-18 years of age.

This gendered pattern of usage differs from that in Japan and the United Kingdom. In Japan, women use the Internet more for entertainment than men.[11] In the United Kingdom, men spend an average of 3.4 hours per week playing computer games, compared to 1.2 hours for women. [12]

[9] CyberAtlas (1999). Gender gap impacts e-commerce. http://cyberatlas.internet.com/markets/retailing/article/0,1323,6061_153661,00.html (accessed on 23 November 1999). We are indebted to Francine Buchanan for this reference.

[10] Office of Women's Policy, Queensland. (1999). Commonwealth/State Ministers' Conference on the status of women, Agenda Item 5.1, May 1999. Unpublished paper.

[11] Nikkei AsiaBizTech (1999). About 40 pct of New Internet users in Japan are Women http://www.nikkeibp.asiabiztech.com/Database/1999_Jan/13/Mor.04.gwif.html (consulted 1 July 1999)

[12] Anderson, B. McWilliam, A, Lacohee, H, Clucas, E. and Gershuny, J. (1999) Family life in the digital home – domestic telecommunications at the end of the 20th century. *BT Technology Journal Vol 17 No 1* 85-97.

Table 4: Activities Undertaken Via the Internet by Adults by Gender, Australia, 1998

Activity	Female	Male
Studies	146 332 17.6%*	289 796 27.06%
Work	717 219 86.26%	962 745 89.90%
Surfing	453 995 54.60%	607 262 56.71%
Goods	313 092 37.66%	579 491 54.11%
Other	34 634 4.17%	83 904 7.84%
Total	831 438 43.7%	1 070 868 56.3%

*% is of female and male Internet users.

Source: Australian Bureau of Statistics (1999). Unpublished data.

4 Women's Use of the Internet

Our qualitative study reveals a complex picture of women's use of the Internet at home. In our sample, women use the Internet at home more than their male partners. Fourteen of the 29 married or defacto women we interviewed use the Internet more than, 11 use it less than, and four use it as much as their partners.

The difference among the three groups of women is not wholly explained by skills, expertise, education, use of the Internet at work or the rural urban divide. The difference is influenced by the location of the PC with the Internet, but it is not the complete answer. The one factor that is clear is that there is a farm divide. In our sample, women on farms use the Internet more routinely than their partners, primarily for book-keeping and seeking information.

Keeping this complex picture in mind, we probe the relationship of gender and technology. Within this theoretical framework, we focus on women's use of the Internet for different activities and as a communication medium. Analysing our data of women's perceptions of their use of the Internet, we find that:

- Women use email and the Web instrumentally for activities which range from work, study, personal communication, seeking information, and helping their children do homework to buying and selling goods and services. To a lesser extent they participate in mailing lists and discussion groups.
- Women seldom associate their use of the Internet with a desire to play with, fix or master the technology.
- Women prefer personal and contextualised channels of communication. Women who perceive email as a personal communication channel are more likely to use it as part of a mix of channels for personal communication.
- Email is leading to more frequent personal communication, particularly across time and distance. The nature of this personal communication is changing as email straddles the boundaries of spoken and written communication, and synchronous and asynchronous conversation.
- Email is substituting partially for personal letters and less so for the telephone.

4.1 Gender and technology

The statistical picture of women's lesser use of the Internet fits with the theme of women not being comfortable with technology. Like Wajcman (1991), [13] we are using technology in a broad sense to include human activities and practices. Technology also includes the 'hardware' definition of technology referring to "sets of physical objects" (p. 15).

Wajcman says, "A major concern of feminists has been the impact of new technology on women's lives, particularly on women's work… A key issue … is whether the

[13] Wajcman, J. (1991) *Feminism Confronts Technology*. North Sydney, NSW: Allen & Unwin, (p. 13).

problem lies in men's domination of technology, or whether the technology is in some sense inherently patriarchal" (p. 13).

Wajcman argues that technology itself is gendered, associated with masculine culture. She says technology has been defined as an "activity appropriate for men. As with science, the very language of technology, its symbolism, is masculine. It is not simply a question of acquiring skills, because these skills are embedded in a culture of masculinity that is largely coterminous with the culture of technology… Therefore, to enter this world, to learn its language, women have first to forsake their femininity" (p. 19).

The development of the personal computer fits the stereotype of technology "made by males for males".[14] However Leslie Haddon argues the reality is more complex. The early systems were developed by male electronic and computer hobbyists for other male hobbyists. In the early 1980s when low-cost machines were packaged, they appealed to the male hobbyists. But a wider audience was invited to play with these machines. Though women used them, particularly for the education of their children, the gendering of the computer was also influenced by the interactive games that mimicked the pinball machines in the male dominated spaces of the arcade.

Haddon's emphasis on factors inside and outside the home in the gendering of the computer is borne out by studies of the gendering of the telephone. Carolyn Marvin (1998)[15] in her fascinating study of the use of the telephone showed how when the telephone was new and seen as a male communication tool, the 'correct' way of using electrical communication was with brevity and efficiency (p. 21). Women who wanted to have long conversations on the phone were seen to suffer from "electrical ineptitude" (p. 24). Women were excluded to the extent that technical ignorance was a virtue of the "good" women (p. 22).

There remains a persistent perception that the computer and the Internet are part of a male world. This is reflected in women's "relatively low rates of participation in the labour market for designing and developing computer-based systems".[16] The maleness of the computer and Internet world persists even with teen-aged girls with online experience. Cheskin Research and Cyberteens.com surveyed 2759 teens, 13-19 years of age, who were recruited via email. They found that technology was not the favoured career path for girls – 60 per cent of the males said they wanted to work in technology after they graduate, compared to 26 per cent of the females.[17]

In our interviews, women perceived there were gender differences in the use of technology – the Internet in particular. They also said they thought there were differences in the way men and women communicate. However, when they described

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[14] Haddon, Leslie (1999). Gender and the domestication of the home computer: A look back. In Dutton, William H. (written and edited) *Society on the Line: Information Politics in the Digital Age.* 253-254. New York: Oxford University Press, p. 253.

[15] Marvin, C. (1988). When Old Technologies Were New: Thinking About Communications In The Late 19th Century. Oxford: Oxford University Press.

[16] Webster, Juliet (1999). Women's access to ICT-related work. In Dutton, William H. (written and edited) *Society on the Line: Information Politics in the Digital Age.* 167-169. New York: Oxford University Press, p. 167.

[17] Cheskin Research and Cyberteens.com (August 1999). Teens and the future of the Web. http://www.cheskin.com/think/studies/netteens.html (accessed on 23 November 1999).

the way they and their male partners used the Internet at home, they most often qualified their perception of gender differences, and said it was a matter of personality or the way they had been brought up.

The women said technology was gendered, but, except for one woman, they did not label the technology as male. The masculine nature of technology however is more evident in the way the women define technology. Our interviews show that when women become comfortable with a technology, the focus shifts from the technology to the activity. Domestic technologies – those that are primarily related to the conduct of household work such as the washing machine, the refrigerator, the microwave oven and the stove – are not seen as technologies. Information communication technologies such as the telephone, the radio and the television – technologies used comfortably by women – are also no longer seen as technologies. They are now associated with activities – telephoning, listening to the radio, watching television.

The telephone was often spoken about in the interviews, particularly when comparing email and the telephone. It is interesting that none of the women we interviewed saw the telephone as technology. When we asked about gender differences in communication, women often spoke of the way they and their husbands use the telephone. Talking on the telephone was communication. The focus was not on the telephone as an instrument.

The women who were most opposed to the use of the Internet at home were also the ones oblivious to the fact that the telephone is a technology, an electronic medium of communication. Olivia, 55+, a housewife in South Australia was the one woman in our sample who did not use the PC and the Internet. She is not planning to learn how to use them, for she does not want to use them. For her husband on the other hand, she says, the computer is "almost a baby. He spends a lot of time on it".

As several of their children are now overseas, Olivia thought she should get on the Internet, but says she finds messages that have gone "through an electronic process" very impersonal. She however speaks to the family on the telephone. Yes, she says, that is an electronic process, "but there is a person at the other end".

Olivia's story illustrates that when women become comfortable with technology, they no longer see it as technology. At the centre of the social construct of gender is women's discomfort with technology. Hence Anglo-Celtic women continue to be defined by their ineptitude with technology.

There is a similar relationship between the construction of gender and money on the one hand and gender and work on the other. Being good with money, particularly money in the market, has been regarded as unfeminine. But the area of women's traditional expertise – domestic money – is not seen as money. [18] Similarly it is work in the employment market, rather than the unpaid work that women do at home, that is

[18] For a more detailed discussion on the gender of money, see Singh, S. (1997). *Marriage Money: The Social Shaping of Marriage and Banking.* St. Leonards, NSW: Allen & Unwin. For a discussion of how the absence of money influences female identity, see Rabow, J., Charness, M., Aguilar, A.E. and Toomajian, J. (1992) Women and money: Cultural contrasts. In P.A. Adler & P. Adler (Eds.) *Sociological studies of child development*, Vol 5, pp. 191-219. Greenwich, CT: JAI Press and Kray, S. (1993). Images of money: Cultural drift, capitalist fantasy and the prime-time female hero. *Communication*, vol. 13, no. 4, 277-302.

measured and counted as productive work. The unpaid work that women do is not defined as productive work.[19]

4.2 Extent of use

It is not possible to explain differences in the extent of use by relating them simply to women's lower education and expertise. The stories of the women we interviewed show that women who use the Internet at home are not necessarily less expert or educated than their husbands. In some cases, they have greater professional expertise with the Internet, yet it is their husbands who spend more time on the Internet at home. In many cases, time availability is also not the issue.

Laura, 25-39, who lives and works in a regional town in Queensland, is a computer programmer and a case in point. She and her husband have no children. At home the Internet is nearly wholly her husband's domain. Much of the time he plays games on the PC and online. She says the PC is very much his. "He upgrades it… and generally monopolises it." It is in his study, which is his space. She doesn't clean the study because "he doesn't like me to touch things on his desk". His use of the Internet is so extensive that she got herself a mobile phone just so that she can use a telephone if necessary.

The location of the PC with the Internet can be an important aspect of use. Earlier work on the use of information and communication technologies in the home showed that if there was one PC in the home, it was most often placed in the study – often the male work space in the home.[20] However our interviews alert us that changing the location of the PC to communal spaces like the living room or the kitchen does not necessarily change usage. In Belinda's household (defacto, no children, 25-39 years of age, university education), the PC used to be in the kitchen, because that was where the most convenient phone connection was located. Now the PC is in the study. However in neither case was Belinda tempted to use the PC and the Internet at home. Both times, she preferred to read a book than to sit in front of the PC.

4.2.1 The farm divide

There is a farm/non-farm divide in the use of the PC and the Internet. All the six farmers in our sample used the Internet more than their partners. This is a farm divide, rather than a rural/urban divide, as Laura's story demonstrates.

It is difficult to place our sample within an up to date macro statistical picture. The Australian Bureau of Statistics does not give figures for computer and Internet use on the farm. Surveys of computer and Internet use on farms by industry associations and organisations are most often focused on the male "operator". Figures for 1996-1997 show that across all farming businesses, the main user of the computer in the farm business is the operator. The figures are 43 per cent for the male operator, and 38 per

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[19] See Waring, M. (1988) *Counting for Nothing: What Men Value and What Women are Worth*. Wellington, New Zealand: Allen & Unwin and Port Nicholson Press.

[20] See Singh, S., Bow, A., and Wale, K. (1996). *The use of information and communication technologies in the home.* Policy Research Paper, No. 40. Melbourne: Centre for International Research on Communication and Information Technologies.

cent for the spouse.[21]

We do not know whether the greater use of the Internet by women in our sample is because of the nature of our sample or because of the way earlier surveys were conducted.

The farm divide in Internet use shows the importance of the social shaping of technology. On the farm:

- The Internet and the PC are seen as female technologies, unlike the tractor in the paddock, which is male.
- The PC is situated in the female space of the home, the home office.
- The PC and the Internet are used primarily for traditional female activities such as book-keeping and seeking information rather than the male domain of production.
- Women farmers have relatively more education, time and previous PC skills than male farmers.

Marjorie, 40-54, a farmer in Queensland who is also an Internet trainer, says about 70 per cent of the requests for training come from the women. The context of available time, place and activity link the PC to women on farms. She draws on her own use of the Internet, saying the PC:

> …is a house item. Our workplace is in our house if we're the book-keeper. And the farmers, our husbands, are working without exception I would say 14 hour days seven days a week at the moment.

Like the other women farmers we interviewed, Marjorie does the books, seeks the information, inputs the data and helps with some of the less heavy farm work. Book-keeping and information seeking in particular are traditional activities for women farmers. It is the link between book-keeping and the PC that has meant that women on the farm have acquired PC skills earlier than their husbands.[22]

Marjorie is the one who does the research that feeds into the production decisions. She likes that role, but it is also because her husband, like other male farmers, works outside on the farm, 14 hours a day seven days a week. Marjorie's role as the information seeker is a traditional role for women farmers.

Describing how production research for a new crop is done in her household, Marjorie says,

> I do all the research on the Internet for him (her husband) and I drag in all the data from all the universities, the latest research results. And I start communicating online with other farmers who trialed it. And then I give him the results and I say, "This is what I can find out to date."

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[21] Garnaut, Jayne and Rasheed, Caroline (1998).Computers: Use in management and electronic commerce in Australian farming. *Australian Farm Surveys Report 1998.*

[22] See Easdown, W. (1999). Rural computer and Internet training needs. Paper presented at Biloela Networking the Nation forum, February 4-5. He cites a survey of Queensland dairy farming families in July-August 1998 which showed that in 70 per cent of the households with a PC, women were the main computer users. Financial management was one of the main uses of the PC by 61 per cent of the users.

> He will combine that with traditional forms of research. Magazines and the publications that come in hard copies, and he will come to his conclusions… talk to other farmers, phone them, meet them, go and look at their crops, discuss failures.

Her husband makes the final decision about production. Though they are partners in the farm and in marriage, Marjorie says, "He makes the decision on production because we can't both make that decision. That's really a matter for him and he says 'Right. This is what we plant and when we plant it'."

Women's greater use of the Internet on the farm does not mean that their husbands do not use the Internet at all. Most often the male use of the PC and the Internet is for farm management purposes. But in a couple of cases, the women speak of their husband's lack of interest or expertise in the Internet in terms that mimic the stereotypes of women and technology. Hortense, a farmer in Tasmania, says her farmer husband "doesn't even know how to turn the computer on. Occasionally he'll come in and sit down and we do a bit of research, but I do all the computer work… He doesn't understand computers."

Jemima, 25-39, is also from a farm household where her husband is not interested in PCs. Her husband works on the family horticultural farm while she works part time in the town and has a small home-based business. Jemima says her husband is "a physical sort of fellow".

When we interviewed Jemima, she had had the Internet at home for only four weeks, though she had done an Internet course two years earlier. She is excited about selling flowers from her husband's horticultural business on the Net and is planning to learn how to put up an electronic commerce site.

She says her husband's business could use the Net to track the flowers as they go from Australia to say Hong Kong. They could have digital photographs to promote their flowers.

> It'd be wonderful because …especially Geraldton Wax, there's so many different varieties and colours. If you could have an image on the screen for people to see on your Web page, you'd sell a lot more…(Sometimes) we think, 'Oh, they're no good you know, won't sell'. Perhaps they will in another country. The trends are different over there.

She thinks if they photographed the flowers as they left and again as they reached their destination, they could refute claims that there were bugs in the flowers when they left Australia. She says, "If we could just see what the insect was and say, 'Well look, that's an Asian insect, it doesn't come from Australia', then you'd have a little bit more recourse there. You wouldn't lose you know $20,000 in shipment."

Jemima's plans are unlikely to be implemented in the near future for her husband's parents who own the farm have only recently bought a fax machine. They are still a fair way from getting the Internet.

One of the contributing reasons for women's greater use of the Internet on farms is that women on the farm have a markedly higher education than the men. Nancy, who works for a farmers' association but is not a farmer herself, says male farmers "traditionally leave school at year 10. So something like a third more women have

tertiary education than their husbands." The policy and design challenge on farms is how to get men to see these new communication technologies as useful for production. Moreover, for some farmers, there is the added disadvantage of low literacy skills.

There are several other barriers, Nancy says, to male farmers' use of the PC and the Internet. They have generally no keyboard skills and the design of the PC is unsuitable for farmers' large hands. Moreover, the PC is seen as a domestic and female technology.

Nancy says the approach to teaching male farmers has to be unthreatening. You have to keep the wives out and use key men to:

> …sit them down and show them the picture of their favourite animal if they're livestock breeders, or show them graphics about silage development… When you show them the satellite maps they say, "I pay $1,000 a year for this and it's just sitting there."

This approach places the Internet within the context of a production related activity. The instructor tells them they can use an infra-red camera:

> to find out where the canola crops had been eaten by mite. And normally when you discover mite in the paddock you've got to … spray the whole lot. But with the GPS co-ordinates that are associated with this he can go in with a backpack and spray one metre. And chemical spray is terribly expensive. That's about $100 worth.

Nancy says this approach is working. "It's now ordinary for a bloke to admit to his friends that he's actually sneaking off to TAFE to learn how to use the PC." Right now "it's not something you spend money on because it's only what the wife does. As soon as toys for the boys kick in, anyone who's used to buying a quarter of a million dollar header" will want a bigger and faster PC.

Women farmers could be a particular case of women's greater use of the PC and the Internet in small family businesses where the business keeps the male owner mainly outside the home. Dr Elizabeth Casling, Policy Officer with the Australian Information Industry Association says that women in the trucking industry have similar traditional roles – keeping the books and getting the information.[23]

4.3 The Internet is a tool for activities

Women farmers' use of the Internet as a tool for book-keeping and information gathering illustrates a dominant characteristic of women's use of the Internet. Most of the middle-income, Anglo-Celtic women we interviewed use the Internet instrumentally for a wide range of activities. The distinguishing characteristic of women's use is that they seldom see the Internet as an object of play or something to fix and master.

We are not saying that men do not use the Internet as a tool and that women never use it as play. In our sample, we have three women for whom tinkering with the

[23] Personal communication, 17 November 1999.

technology is the activity. But if we place the use of technology as a tool and technology as play on a continuum, women are on the 'tool' side of the continuum.

Our work also leads us to pose the question of gender differences in a different way. Is the male desire to master the technology, to fix it, seen as expert use? Is the female approach to technology primarily as a tool for activities seen to be non-technological?

Celia, Belinda and Dorothy are typical of the 'technology as a tool' approach, which characterises most of the women in our sample.

Celia is an academic, 40-54 years old. Her husband is also an academic, her daughter is at university and her son is still at school. Celia's main use of the Internet at home is for work, as she teaches online. She says, "I tend to use it for research and … specific things like downloading forms or getting yourself registered at a conference… more like work accessories … than hobby interests." Her daughter uses it for research for her study or to enrol in courses.

Celia's son is the most ardent user of the Internet in the household. Celia says, "My son almost guards the machine. He often puts it on and tells me if there are messages …waiting. I very rarely have to put it on myself, because he's got there first."

He plays games on the computer for hours, unlike the others in the household. She says, "He's much more adventurous with it, whereas the rest of us tend to think we'll look on the Internet because we need to know about something or other. We use it as a tool for the things we need it for." She says, "My son likes to get the whole circuitry out and look at it. That wouldn't interest me."

Celia sees the difference between her son's use of the Internet and her own use and that of her daughter in gender terms. This is despite the fact that her husband who is a musician is more in the middle of the continuum. Celia says, "My husband's not a machine person. He creates his thoughts and he only uses a computer as a tool." He uses email to write long letters to his family and friends. He also uses it for a chat group to investigate a particular medical condition he has. But he would rather be on the computer than read a book, Celia says.

The differences between men's and women's approach to technology continues to puzzle Celia. She says,

> I don't know what it is. It's just the same as when they were very small. I thought, 'Right, they're going to have a complete gender balance'. I gave my son dolls and houses and so on, our daughter we gave balls and trucks and all those things. But my son still wanted to kick a ball, climb a tree, and my daughter still wanted to put the teddies to bed and make little cakes and biscuits. … We've given them both computers and they've had the same opportunities for computer work, but just somehow boys like all this spatial location stuff and are so good at this and how things work.

She adds,

> It's all this getting things to match up, which I think girls aren't interested in…He and his friends play for hours. I would get terribly bored with it. But I don't know what the answer is, why the boys like them so much more than girls. There are just so many other things to do… I remember going to a friend's house, before there were computers as such, but they had a joystick on the television, a kind of

> Nintendo. He had two sons and three daughters. It was the sons who said, 'Come on, come on, we can find you another seat to play', and the girls weren't interested. The boys just hogged this thing and liked it.

Celia's description of the way her son wants to play with the PC and the Internet, the way he wants to get to how the machine works, finds an echo in other interviews where the woman uses the Internet at home but the man uses it more. Belinda, 25-39, uses the PC and the Internet regularly at work. She says she would use the Web at home if she were studying or had "a real purpose to look it up" Belinda avoids using the Internet at home for, after 8-9 hours on the PC at work, "sort of the last thing I want to do is come home to it".

Her defacto partner also uses the Internet intensively at work. But at home, he plays with voice-activated software in the study while she reads a book in the living room. Belinda says, "He likes to know how things work, how things tick."

Dorothy, 25-39, skilled at using the PC and the Internet at work, says she prefers not to use it at home. To her it seems too much like work. "I don't want to turn on the computer" at home, she says. Her husband also uses the PC and the Internet continually at work but he likes to tinker with the PC at home.

> I think there's more that play element. I come to my computer and find things that Damian (her husband) has put on it. You know, he's played around and there's a funny button and I click on it and the message is, 'Hello my love Dorothy' or something. Or I've got these new little buttons, he's created icons which make it easier to do certain things. So he likes to play around.

Dorothy wants to be able to fix things when they are broken because she wants to feel self-reliant. But her husband Damian wants to fix things because he is a tinkerer. This difference between Dorothy and her husband is evident in other parts of their lives. The garage has become a tool shed for Damian. Dorothy says,

> Damian reads the phone manual and works out how to do all the different things on the phone. And I think, 'What do I really need to know?' and I work out how to do that. So for me the important thing is how to record a message and when I'm out how to ring up to get my messages. But Damian actually told me that. I didn't read through the manual… Damian reads it to find out all the little things we can do with it and I'm not that interested. I just want to know what I use the phone for.

The stories of Celia, Belinda and Dorothy are particularly interesting because they have equal expertise in the use of the Internet as their husbands. All of them use the PC at work, just like their husbands. Belinda and Dorothy particularly see housework as a shared responsibility. Neither has children. So the difference of time availability at home is not such an important factor. Yet there is a distinct difference in their use of the Internet at home from the way their partners use it.

4.4 The Internet as play

At the other end of the continuum are three women in our sample who see technology as play. They want to experiment with what they can do with this technology to test its limits and potential. We give their stories because they stand out against the more general pattern of women using the Internet as a tool.

Sheila, 40-54 years of age, is a teacher in a new defacto relationship. Her partner has to travel often. She uses the chat groups to connect to people outside. She says, "If there's nothing on TV and it's raining outside and I can't get in the garden and Sam (her partner) is away, well, it's just like another little bit of fun, a toy."

Her approach to the Internet is in tandem with her approach to all domestic technologies. Sheila says:

> I love the TV. I love my VCR. I love my Internet and my computer. I love the washing machine and all those things, because I don't like doing a lot of work… I'm so glad I'm living now and not 50 years ago… I can watch a video and totally forget about everything else…

She tests the boundaries of the Internet, wanting it to merge text, voice and video. She likes the visual aspect of the Internet. She wants the Internet to talk to her. She says,

> I talk to these people overseas and one of the guys, he sings songs and he puts them over the Internet, and he has shown me how to get his songs through. And so now I can hear him. And he talks to me. I can hear him like you have a proper telephone call. Like that, because I don't like having to type.

Edith, 55+ is a skilled Internet user at home and at work, like many of the women in our sample. She used the Internet extensively for her university degree and is the Webmaster of a number of organisations. She reads the manuals and is not afraid of fiddling with the technology to try to see whether she can get it to work. She sees herself approaching machinery in a logical, step-by-step fashion.

She knows that this is not an approach one can take for granted with men or women.

> How many people that you know can set a timer? I'm not talking about G-code; I'm talking about a timer. To me it's the easiest thing out, probably because I've read the instruction manual and I don't mind making a mistake, and I'll fiddle with it until I get it to work and I think, 'Oh, that's what they meant'…. Most people either don't want to, or can't, move out of a very rudimentary way of thinking. Evan (her husband) and I frequently talk about this, how few people will think … 'I'll try that' and do it logically…

Edith's main frustration with other women is their perception that they cannot handle machinery. When she taught motorcycling, women would come to her saying there was a problem with their motorbikes. She would say,

> 'Oh, have you checked your battery?'
> 'Oh, I don't know how to do that.'
> I said, 'Well, where is it?'
> 'I don't know.'

If a woman dropped her bike, she would almost without fail stand back waiting for a male to pick it up. Men were equally gendered in their responses. Edith says,

> I made sure I was standing next to my male colleague and I'd have my hand like this (she shoots out her hand) ready to grab his collar…. I'd say, 'Wait!' They didn't even realise they were doing it half the time.

Edith however disputes the concept of gender differences in the approach to technology and communication. She says she knows a lot of men who cannot figure out PCs. She says,

> I think that the way Evan (her husband) and I tend to use communication patterns is more to do with our personalities and backgrounds, rather than the fact the he's a bloke and I'm not a bloke…. The thing is, I notice the difference between myself and other women. I know women are on the phone to their girlfriends, three or four girlfriends, every day of the year.
>
> I don't…. Now that's supposed to be the female pattern, it's the one that keeps getting spouted to us, and I know women who do this, but I haven't got time to do that. I mean I'm not interested in doing that.

Marjorie, a farmer in Queensland, 40-54 years old, also stands out because she is a tinkerer. She got interested in PCs because she wanted to construct databases. After learning how to do that, she became interested in the potential of the Internet and now trains others. She says she "loves" using the Internet.

> I love doing it. I really enjoy it. I enjoy all the new applications. I try out all the software applications. I'm the technology tester for (an organisation). I test every bit, every chip, anything, any camera, any video link. Anything they've got….I straight away put my hand up and say I would love to try this. And that's probably pretty obsessive I think. I probably don't need to be like that.

When asked, "What makes you like that?" Marjorie is unable to answer. She says, "I don't know, I can't help that. I just really love it." She did not use PCs and the Internet in her previous occupation. But when she became self-employed, she knew she needed the skills so she did a TAFE course. She says,

> It was since coming on the farm (five years ago) that I could see the opportunity. Helping to overcome some of the isolation or the expense of getting the information. To get access to specialist information – a lot of it for no charge. A lot of university databases are freely accessible. And I thought "This is great. This can help us with production."

So Marjorie's enthusiasm for the Internet came from her passion for seeking specialist information. The Internet was such an effective tool that it has led her to an interest in the Internet itself.

Women's preference for technology as a tool for activities rather than a medium for play is in seeming contrast to earlier work on women's and men's cognitive styles. Turkle, in her study of the computing styles of men and women says men want the "hard mastery" over technology, whereas women prefer the "soft mastery" which

allows them to accommodate to the world (Turkle, 1984). This is a near fit with Pirsig's (1974)[24] earlier dichotomies of romantic and classical dimensions of knowing.

It is interesting to compare these insights with our findings of gender differences in the use of the Internet at home. Women are said to prefer soft mastery, connection, the romantic way of knowing – yet it is women who use the Internet as a tool. It is the men who want to play and explore the possibilities of use. This juxtaposition raises issues which need further research.

4.5 Women prefer personal communication channels

The women we interviewed prefer personal channels of communication. This preference substantiates Tannen's (1990)[25] submission that many men engage the world as individuals in a hierarchical social order. They are either one-up or one-down. The key struggle is to preserve independence. Many women approach the world as a network of connections, where the key aim is to achieve intimacy. Tannen sees these differences as a continuum with more men ranged on the status end and women's concentration being on connection.

The women in our sample had a clear preference for a personal style of communication. They differed however in their view of communication technologies as personal or impersonal. As discussed in section 4.1, women saw the telephone as such an appropriate channel for personal communication that they did not see it as technology.

When women see email as impersonal, it blocks usage in the home. When women see email as a personal and intimate medium, they are more likely to use it for communication. Their use also has much to do with the people with whom they are communicating and their comfort with a changed style of communication.

Hence there is a wide spectrum of use ranging from a distaste for email to a situation where email is the primary channel of personal communication across distance. For the majority of the women, however, email is becoming part of the mix of channels used for personal communication. It is substituting partially for personal letters and less so for the telephone.

Frances is one of the two women in our sample who will not use email for personal communication. She sees it as an impersonal medium. She is in her 40s or early 50s, has a university degree, works part time and lives in a regional town in Victoria. She does not use email even though they have been connected at home for at least 18 months. Her dislike of email is so intense that she does not give out her email address at work, although at her workplace there is pressure to use the Internet.

Frances says that she finds the Internet a solitary activity – impersonal and alienating. When helping her children with their homework, she sits with them, but notes it is not for as long as she would have if they were at a desk. Frances says, "All the men I

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[24] Turkle, S (1984) *The Second Self: Computers and the Human Spirit*. New York, NY: Simon and Schuster; Pirsig, Robert M. (1974) *Zen & the Art of Motorcycle Maintenance: An Inquiry into Values*. London, UK: The Bodley Head.

[25] Tannen, Deborah (1990). *You just don't understand: Women and men in conversation.* Milsons Point, NSW: Random House Australia.

know would use the Internet more than women because they're quite happy with its impersonal nature." She says, men:

> …enjoy the technology and the gadgets more than women do. They don't like to look you in the face. They like to stand back. They like that barrier. They can relate to that screen. I believe that women probably – I know this is a huge generalisation – enjoy the emotional response from spoken communication that technology doesn't provide.

As Frances says, this is a generalisation. It doesn't hold true for all the women we have interviewed. It also does not hold true for her husband. Frances says he is a "typical man". He uses the computer a lot in his workplace but at home,

> He doesn't use it a lot, no, not at all. He doesn't sit on it and play on it. He may email a few friends, but not for anything serious at all. If he had a serious message he would ring them up.

For most of the women in our sample, email is part of a mix of channels. Harriet is typical of this group. She is 40-54 years old, with a secondary education, in part time work and from a middle-income household. Her children are grown up and living away from home.

She and her husband both use email to keep in touch with their children and friends. The email has replaced the phone to some extent because of the cost "but I don't think there's anything the same as that personal contact". Harriet says her husband is happy with the email because "He's a practical man, and as long as it's practical he doesn't care about anything else". She however finds email is not as intimate as the telephone. She likes "people and the personal touch". She says,

> Personally, I like a hand-written note and a special stamp on it for my mum, or send the same to her with just a little something, news-clipping, whatever, just to be in touch now and then. I thing there's nothing like a hand-written letter and even our exchange students in Canada say the same, you know, 'I'm emailing you, mum, but I wouldn't mind a real letter in return'.

This preference for the personal has little to do with expertise, because women such as Belinda and Dorothy who use the Internet regularly at work do not often use the Internet as a leisure activity. Dorothy says, "the phone is part of my living space more than the computer."

Unlike the generally mixed view of email, Queenie, 40-54, working in the information technology area, is ecstatic about email. She says, "I live on email." For her the boundaries between work and home are blurred, because of her work in the software industry. Email not only dominates her communication for work, but it is her chosen medium for personal communication. "I just love it," she says. She communicates with her oldest friend in Adelaide only by email. "We never ever pick up the phone." Even when Queenie's friend had a medical problem, she said, "It never occurred to me to pick up the phone."

4.6 Conversation in context

Women are agreed that they like conversation which is framed in a personal context, giving a sense of place, time and the texture of their lives. Queenie says most of the women who write to her on email will write a letter, often giving a bit of a description like "It's snowing here", before they talk of the problem they want to discuss. She says she tends to do that too.

> If I'm talking to somebody early in the morning from home, I'll comment to them that …the sun's just coming up… I do it as a way of establishing a friendship… I think women initiate that as a way of sort of making an email message into a real communication rather than just 'Tell me how to do this in my project'… Men very rarely do that.

It is this conversation in personal context that Ursula, a farmer in Victoria, most likes about WeLink, an electronic mailing list for country women. As she also works full time outside the home, Ursula seldom has the time to follow the discussions. But she says it is this personal context that makes a virtual community of women possible. She says,

> It's amazing…the discussions they come up with and how long they take. They can go on for a month or two on a specific issue. If somebody's sick, everybody knows about it, if somebody's flooded, everybody knows about it, and someone goes to a hospital, people are there to find out how they are and to organise things. It just makes …a small community which isolated women really need.

You get images like:

> It's rained and I'm bogged in, and I can't get out for six weeks, my husband is going around the bend, the cat just died, the dog got killed by a kangaroo, my baby got leukemia or something, so it's just all out there, and you get all this information from a lady in the States, somebody in Ireland. It's magic.

The personal context to the conversation makes it an effective way of delivering government information. As all the participants have to put a little bit of blurb about who they are, where they come from, whether they have kids, and so the information is personalised. She says,

> You pick up the information in the mailing list where you probably wouldn't go to the government home page and try to find it, because you wouldn't really know it was there. Most women probably wouldn't have the time and the inclination. But if you hear about it in the mailing list and somebody's pushing it….then you're more likely to do it.

Leonie Daws, a member of the team that put Welink together, says it is this incidental information in the course of a "chat" that provides effective information. She says, "We believe that in such a personalised communications context information is more readily accessed because it becomes more meaningful. In the friendly 'chat' situation,

women are more likely to pick up on information, perceive its relevance to them and be stimulated to actively seek more information."[26]

It is this lack of personal context to email in her work environment that alienates Laura, 25-39, a software programmer. Laura says, "I've learnt with my male colleagues that there's this unsigned code, that each email has to have an individual subject…. It has to be very, very short, short enough to fit into the preview of Outlook. Otherwise they'll delete it." The women on the other hand write long emails to each other, "really in depth". She herself primarily uses the telephone to keep in touch with family.

4.7 Email changes the nature of personal communication

Email is substituting partially for personal letters and less so for the telephone. The main issue however is that email is changing not only the mix of channels of communication but also changing the nature of personal communication. Just as word processing changed the activity of writing, with email women find themselves communicating more frequently and informally, particularly across time and distance. The nature of personal communication is also changing because email straddles the boundaries of spoken and written communication, and synchronous and asynchronous conversation.

Email is making for more frequent conversation in situations where there may have been little personal contact before. As Trixie, 40-54, says, email is "not as good as talking but it's way ahead of nothing and … it's instant…. It's wonderful." She says email has replaced letter writing to a great extent, but her phone bills remain astronomical.

This more frequent contact is due to email being a more convenient and often cheaper way of communicating across time and distance. Harriet, 40-54, for instance is in regular touch with her daughter in China because of the email.

Email also makes a different kind of incidental communication possible. Jemima, 25-39 with a small business, speaks of her sister emailing her a joke. Jemima then telephoned back to say thanks and the conversation proceeded.

The major change is because email has some of the characteristics of a letter and some of the telephone. One can see it as an informal, colloquial letter where one can write a short paragraph, not spellcheck, move things around, play with it, but like a telephone achieve the intimacy of nearly instant communication. It is particularly good for sharing documents. Or like Hortense, 40-54, you can see email as a "drawn out telephone conversation", and see yourself as talking on email.

This straddling of boundaries is in one sense leading to greater intimacy and communication within the family.[27] In the future, women may become important

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[26] Daws, L. (1998). Creating communities through electronic communication: Rural women online. Background paper presented at the CIRCIT Information Symposium, Melbourne, 7 July. For the general importance of incidental information in context, also see Williamson, K. (1997). Found by chance: The role of incidental information acquisition in an ecological model of information use. Paper presented at the CIRCIT Information Symposium, 27 February.

[27] Harmon, Amy. (1998, March 26). Guess who's going online. http://www.nytimes.com/library/tech/98/03/circuits/articles/26geez.html (accessed on 23 November, 1999). We are indebted to Francine Buchanan for this reference.

creators of domestic context. Will the family Website become the equivalent to the photo album?[28]

It is the straddling of boundaries that also makes some women treat email more warily. There is the feeling that email is conversation, yet it has the fixity of the written word. There is instantaneous communication without the feedback of voice of the telephone or body language of face-to-face conversation. As Dorothy says, on email there is "less of a finding out and then responding". On the phone it is easier to know the boundaries of what feels comfortable and what doesn't. Email takes away some of the sensitivity that comes from non-verbal messages.

[28] We are indebted to Helen Campbell for this point.

5 Women's Use of Electronic Commerce

The domestication of the Internet is central for the growth of electronic commerce. In 1998 in Australia, 75 per cent of the people who ordered or purchased goods through the Internet in the previous 12 months did that from home.[29]

5.1 Fewer women use electronic commerce

The gender gap in electronic commerce is greater than that for general Internet use in the home. ABS unpublished data for 1998 show that of the 479,529 adults who purchased on the Net, 69.1 per cent were men and 30.9 per cent were women. As a percentage of adults in general, 4.96 per cent of men bought on the Net compared to 2.15 per cent of women. There are no reliable data on the expenditure of men and women on the Net.

ABS 1998 data also show that males are more willing than females to access selected online services from home (Table 5). The differences are greatest with shopping (23 per cent women against 33 per cent men) and Government information or form lodgement (40 per cent women against 48 per cent men). It must be noted however, that with most activities other than gambling and shopping, at least one third of women 18 years and over are willing to access online services.

Table 5: Adults Willing to Access Selected Online Services from Home by Gender, Australia, 1998

Online service	Female	Male
Shopping	1 555 144 22.84%*	2 161 481 32.65%
Banking	1 360 570 34.67%	2 596977 39.23%
Gambling	149 820 2.20%	404 277 6.11%
Educational	3 284 836 48.24%	3 348 740 50.59%
Government information or form lodgement	2 753 054 40.43%	3 185 149 48.11%

*Percentage is of adults.

Source: Australian Bureau of Statistics (1999). Unpublished data.

Our sample was deliberately over-representative of households which order and/or pay on the Net. In our sample men use electronic commerce more than women, but the difference is marginal.

[29] Australian Bureau of Statistics (1999) *Household Use of Information Technology. Australia, 1998.* Catalogue no. 8146.0. Canberra: Australian Government Publishing Service.

- 18 of the households had engaged in electronic commerce.
- In 12 of these households, women had ordered or purchased on the Net – seven jointly with their husbands.
- In six households the man had used electronic commerce while the woman had not.
- In five cases, the woman alone ordered and/or paid on the Internet. Of these five, one woman did not have a partner, one woman used electronic commerce as part of her part-time business at home, one woman was a farmer and two were housewives. Of the two housewives, one used the Internet as a convenient way of paying bills rather than purchasing goods and services on the Net. The other was a housewife whose husband was not interested in the Net for he spent his leisure time on the radio.

The women in our sample, like the men, purchased books and CDs and booked accommodation. They also bought concert tickets, plants, vitamins and cleaning products. None of them have as yet done Internet grocery shopping. Software and computer parts were mentioned particularly as purchases by their husbands. Women on the farm were keen to investigate the role that electronic commerce could play in marketing their farm products.

Electronic commerce is not as yet a routine activity for women. Electronic commerce is not compatible with women's preference for the personal context of shopping. The phrase that keeps coming up when women explain why they do not want to shop online is that they like to shop "in person", to touch and feel the goods they are buying.

Women we interviewed say they like the social experience of shopping, which at times is done with their partners or children. It is interesting that the most positive experiences of Internet shopping were when women spoke of sitting together with their partners or other members of their family and friends and planning a holiday together or comparing prices at an online auction.

Most of the women who bought on the Net said it was important for them to be able to get things that were not locally available. It is therefore interesting to note that in our sample more of the capital city households bought on the Net – 12 of 14 – than the rural and regional – six of 16. In the rural and regional households, the importance of buying locally was more forcefully expressed. Marjorie, a farmer in Queensland, said she has compared prices online for machinery, but she has a policy of "keeping all our business in the local district… keeping the money in the community". So if she could buy online and the machinery be supplied locally, she would do it.

We give below the stories of two women, Queenie and Isobel, who have routinely purchased goods on the Internet for personal use. Their stories are interesting because they are different from those of the 18 women in our sample who did not use electronic commerce.

Queenie, who "lives" on email says, "I'm amazed there is anybody still in the world who doesn't know my credit card number." She buys books from Amazon.com routinely for "You can get a book much faster from Amazon.com than you can through the local book store". She has also booked accommodation online. As yet,

she has not bought her travel online, because she has a good travel agent. She also does not contemplate shopping for groceries on the Internet because she likes the interaction in the local shops, likes seeing the milk and remembering that she needs it. She says, "It sort of doesn't make sense to me. But then if you'd told me I'd do a Web search to get a book for my Dad a while ago, I would have said 'Don't be silly'."

Isobel is a farmer and also works part time in a regional town in Victoria. She not only uses the Internet for routine purchases of vitamins, but she also is exploring its possible use as a selling channel. Isobel is the computer literate person in the family, doing her studies on line, using email, chat lines and the Web. She downloads stock market reports every day, buys her vitamins and cleaning products on the Internet and pays for them with a Bankcard online. These are items she has purchased before and so she feels confident buying them. She began by ordering them on the telephone and then moved on to the Net as it was more convenient. Moreover these are items for personal rather than business use. For business items, she likes having a cheque butt as a record, and so does not purchase those items on the Net.

Her husband does not use the PC and the Internet as much as she does. She says, "He's a farmer. He hasn't had much need." She says,

> There's not the number of farming businesses that have their products available across the Internet that we found. The only thing that we have been looking at is we'd like to export our wool and we've been looking at places in India that we could possibly contact. And that's the only real input he's had into searching on the Internet.

They have been looking up this prospect together. It has worked. She says,

> We just sort of put in 'Indian wool' and we actually have got a contact name over there of one of the fellows who's … the chairperson of all the importing of wool into India.

Isobel and her husband have looked for a car together in *The Age Online* though they then went personally and bought it in Melbourne. She says,

> We've also been looking around at different auctions that are on the Internet too. Just had a bit of a look …to see ... specific furniture items, and whether actually we can compare prices of what they're paying in Melbourne to what we're paying locally

They have not yet put in a bid for anything, in case they may get it and then they would have to get it home. The Internet is mainly a tool for comparing prices at the moment. There is a clothes dryer they have been particularly looking at. Isobel says, it is "something that we can do together if we have to….My husband's a farmer and he spends 12 hours a day working." This way they can spend time there together on joint shopping activities when they are at home.

6 Electronic Money and Management

In this section we focus on the electronic management of money and its effect on the nature, management and control of money in marriage.

Electronic money is at the centre of the distinctiveness of electronic commerce. Financial institutions and large businesses have for many years known that money is information. But for domestic users and small businesses, the transformation of money to electronic information is so recent that in our daily conversation we continue to see cash as the reference point for money.

6.1 Fewer women pay via the Internet

Women in Australia use the older electronic channels such as Electronic Funds Transfer at Point of Sale (EFTPOS) more than men (See Table 6). Women's use of telephone payments and Automated Teller Machines is similar to that of men. Hence the issue is not that women are reluctant to deal with electronic money. The gender divide is greatest with payment on the Internet as more than twice as many men than women pay on the Internet. This gap has not diminished between February 1998 and May 1999 (See Table 6).

Table 6: Electronic money transactions undertaken by persons aged 18 years and over – by gender
May 1999 (February 1998 in brackets) (a)(b)

Electronic money transactions by persons 18 years and over	Males '000	%	Females '000	%	Persons '000	%
Paid bills or transferred funds via the Internet	176 (32)	2.6 (0.5)	94 (12)	1.4 (0.2)	270	2.0
Paid bills via information kiosk	137 (28)	2.1 (0.4)	83 (41)	1.2 (0.6)	221	1.6
Paid bills or transferred funds via phone	2 666 (1 958)	39.9 (29.7)	2 669 (1 971)	38.6 (29.0)	5 335	39.3
Paid bills or withdrew funds via EFTPOS	3 993 (3 529)	59.8 (53.5)	4 432 (4 226)	64.2 (62.1)	8 425	62.0
Transferred or withdrew funds via ATM	4 853 (4354)	72.7 (65.9)	4 904 (4504)	71.0 (66.1)	9 757	71.8

(a) Period covers the 3 months to February 1998 (in brackets) and February 1999.
(b) Percentages are of persons 18 years and over

Sources: Australian Bureau of Statistics (1998) *Household use of Information Technology. Australia.* Catalogue no. 8128.0. Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1999) *Use of the Internet by Householders. Australia, May 1999.* Catalogue no. 8147.0 Canberra: Australian Government Publishing Service.

6.2 Transforming the nature of domestic money

Central to the electronic management of money is the use of personal financial management programs such as *Quicken* and *MYOB* (Mind Your Own Business). These programs are used to get a greater sense of control over money flows. They also enable the user to specify the different components of domestic money. The nature of domestic money changes, becoming less nebulous and more calculable, less joint and more individual. In this sense, domestic money becomes more like market money.[30]

Financial management programs have become a new way of earmarking money, of differentiating domestic, personal money from business money. This same distinction used to be done with cash in different jars, and later through different accounts with various financial institutions or separate credit cards for personal and business expenditure. Isobel uses *Quicken* for personal expenditure linked to the cheque butts, and uses *MYOB* for the farm business books. Jemima, a farmer in Victoria, uses *Quicken* for both business and personal expenditure, separating the different kinds of money within the same program.

The same earmarking function which differentiates personal money from business money also makes the nature of marriage money less nebulous. This is one reason why Prudence, 25-39, does not use a financial management program. She hated the idea of such a program when her husband suggested it. She says, "I don't want my life to be like that."

6.3 Money, information and power

The use of personal financial management programs has changed the way money is managed in a physical sense. Once the kitchen table meetings move to the home office or the study and the PC, the management of money can become more individual rather than joint. Financial information is concentrated more than before with the manager of the money. If the user of the program is male, then there is potentially a greater likelihood of male control over money.[31]

Jan Pahl, in a study of electronic money in households in the United Kingdom, also came to the conclusion that, "Men make more use of new forms of money than women do, and tend to dominate the use of new technologies such as Internet

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[30] For a discussion of the difference between marriage money and market money see Singh, S. (1997). M*arriage Money: The Social Shaping of Money in Marriage and Banking.* St. Leonards, NSW: Allen & Unwin.

[31] Singh, S. (1996). *The use of electronic money in the home.* Policy Research Paper no. 41. Melbourne: Centre for International Research on Communication and Information Technologies.

banking: this is changing the gender balance of financial power within families."[32] Pahl's conclusions are substantiated by market studies in the United States. Among online households, the male head of the household generally pays the household bills, whereas for households in general, it is the female head who usually pays the monthly bills.[33]

Seven women in our sample used personal financial management programs. Another three women used *Excel*. Our interviews showed that

- These programs have the potential to concentrate information about present and future patterns of income and expenditure with the user.
- This concentration of information about money can lead to greater decision making power for the user. Information about money, however, does not necessarily lead to greater power.

Ursula, a farmer in Victoria, married to a farmer with good accounting skills, says,

> We used to do the books together. Or I do them and then ask him if this is right? Does this go in this column? Now that I do them on *Quicken*, he's not involved at all… (When) he does his monthly or two monthly budget… he'll get the information from me."

She adds that their domestic and farm money continues to be joint, and major decisions are joint. For Isobel, her use of the programs, she says, does mean she is in control of the finances. But she says this is something they have chosen to do.

The use of financial management programs is not necessarily a solitary activity. Vera, 55+, says she and her husband put in the details together. She says,

> We do it together. We get the Bankcard and he sits at the computer and I read out the figures… I think it's because he's a single minded, highly focused person… To him it has enormous value and it tells him exactly everything about [each transaction].

This concentration of information about money can lead to greater decision making power with the user. Yvonne, an accountant in a capital city, agrees. She says a program like *Quicken* can make budgeting easier.

> Whoever was using the package would probably have more say on… what we've got to spend… Just seeing what income was coming in and what was going out, you can see easily on *Quicken*. Then whoever was using it, I think would be in more control of the money.

Control would be more likely if only one of the partners knew how to use the program. In some cases, where money has always been managed with the use of a personal financial management program, there is no sense that there has been a

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[32] Pahl, Jan (1999). *Invisible Money: Family Finances in the Electronic Economy*. Bristol: The Policy Press, p. viii.

[33] CyberAtlas (1999). Number of online banking customers to triple by 2004. http://cyberatlas.internet.com/big_picture/demographics/article/0,1323,5961_179421,00.html (accessed on 23 November 1999). We are indebted to Francine Buchanan for this reference.

change. And even before that it may be the case, as with Angela, 25-39, that she has always had more information about their money and savings.

There is no necessary link between information about money and control of money, despite the truism that information is power. In a study of women in small business, Singh (1995) found it was possible for women to do the books, to be informed about money and yet powerless to influence decisions, a state of 'informed powerlessness'.[34]

Interviews with women farmers did not show a sense of powerlessness, but they demonstrated that having information about money does not necessarily translate to greater power. Marjorie, a farmer in Queensland, is particularly articulate on the point that power on the farm rests in production, not on Internet use, and not on cash projections and budgets. She doesn't think the men feel disempowered in using the Internet less than women or in not managing their money electronically. She says,

> It's more emasculating for a male to not produce. And that is a real survival thing for them. They have to produce. They can't fail. They mustn't fail with what they're doing because it's in your face isn't it? The crop's there dying ... It would be a personal disappointment to him and a failure … I'm pretty sure that they live and breathe with what they can produce when they're working with soil.

The struggle on the farm is with prices and the seasons. It is these variables – prices and seasons – that change the relationship between the management of money and power.

Marjorie does the farm accounts. She says,

> In non-agricultural businesses that we've been in, we do use a cash flow and projections and we stay rigidly with them. But...in agriculture that is just so much paper… (Prices) went from $200 a ton this time last year to $80 a ton now... So that was an uncontrolled variable and we put it in the cash flow at what we think is an average. … And the weather is another uncontrollable variable… So the cash flows (are)… just an exercise. It's really of no relevance… Power for us doesn't come into it. We're sort of both of us against those variables. We've got a united, a bigger enemy if you know what I mean.

So it is that Marjorie could do a five year cash flow plan, but it couldn't be definitive. The decision to buy a green tractor worth $350,000 could be made despite the cash flow projections, and may be a valid decision. It was to do with production, and it was important in dry country to be able to plant when the land still retained moisture, and so the more you could plant in a day was important. It was also important for conservation reasons.

Marjorie also explains that decisions to spend are made differently on the farm, because of the different nature of farm money. She says this is because their income is tied to the season, instead of weekly or fortnightly. They get large amounts at large intervals and the amount is unpredictable. This changes the way they decide how to

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[34] Singh, S. (1995). *For Love, not money: Women, information and the family business.* Melbourne: Consumer Advocacy and Financial Counselling Association.

use the money. There is little impulse gratification, for there is a delay between the decision to spend and acquisition. The decisions thus are more joint, for there is more time to discuss them.

7 Designing for Women: Policy Implications

The Internet and electronic commerce are on their way to becoming domestic technologies. The gender gap in the extent of use is narrowing. The increase of women online is already leading to clothing becoming the fastest growing category of e-commerce in the United States.[35]

An increase of women shopping online also has important social and work force implications. A greater reliance on online ordering and purchase will decrease the collection and carrying aspects of household work. The experience with other domestic technologies suggests that women's work will not necessarily decrease. However, it will mean that women will re-shape their management of time. The domestication of online shopping will also convert significant aspects of women's unpaid work to paid work for a new group of workers.[36]

These trends mean an important shift for design and policy. Women are no longer a special group of disadvantaged consumers for whom special programs need to be devised, but are at the centre of the market. Many aspects of good design are of course common to both men and women. But design and policy now have to consciously focus on responding to women's needs as a central rather than a residual aspect.

It is in this context that our findings are significant. To recapitulate:

- Women focus on the Internet as a tool, rather than the Internet as a technology to play with or master.
- Women use these new technologies most readily when they perceive them as personal and connecting media.
- The use of these new communication technologies is changing the nature of personal communication and the management of money within the household.

In this section we detail how these findings will impact on:

- Designing services that focus on the activity
- Emphasising access and use rather than skills
- Designing for a change in the nature of activity
- Using a mix of communication channels to enhance the personal aspect of the Internet

7.1 Design connecting domestication, use and policy

Design is an important bridging concept connecting the domestication of the new communication technologies, use and policy.

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[35] CyberAtlas (1999). Gender gap impacts e-commerce. http://cyberatlas.internet.com/markets/retailing/article/0,1323,6061_153661,00.html (accessed on 23 November 1999).

[36] We are indebted to Helen Campbell for these points.

Silverstone and Haddon (1996)[37] have argued that domestication is always a multi-layered process linking design and use. They say that with information and communication technologies, design has to take note of their "double articulation" as domestic objects and media. Design also has to make possible the use of the new, while responding to the innate conservatism of the consumer.

We are using design to cover the design of interfaces, applications, software, equipment and of human processes. Design is an important concept that connects the use and supply of technologies. It links the understanding of cultural meaning, technology and markets. It also bridges the understanding of change at the human behavioural level on the one hand and at the institutional and technological levels on the other hand.[38] Design is also an important bridge between use and policy.

Designers have thus often found themselves in the middle, trying to connect the users' social and cultural worlds with business and policy goals and the possibilities of technology. Design requires an ability to understand the new in terms of what is familiar, often using stories and techniques of collaborative design to bridge the different dimensions of knowledge and the perspectives of users and designers.[39]

7.2 Designing services that focus on the activity

Users react favourably to services that focus on the activity, rather than on the services that are possible or can be provided. However, with women, there is the added dimension of the focus being on the activity rather than the technology. A focus on the activity means the user is led in easy steps to the completion of the activity without having to tussle with the technology.

In order to achieve this, the emphasis would be on reducing complexity, enabling connection between activities and making the technology invisible. The emphasis is on individuals' perceptions of innovations within their social and cultural context, rather than on the innate characteristics of the innovations. As Rogers has pointed out in his study of the diffusion of innovations, the reduction of complexity is one of the main ways to persuade men and women to adopt something new, overcoming the innate conservatism of the consumer. [40]

Marjorie, a farmer, who is also an Internet trainer, says women – and to a certain extent men too – "want you to cut the waffle and get straight to the point. They're not really concerned as to why or how it works, but how it's going to help." So in her training sessions, she says,

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[37] Silverstone, R. and L. Haddon (1996). 'Design and Domestication of Information and Communication Technologies: Technical Change and Everyday Life', in R. Mansell and R. Silverston (eds) *Communication by Design: The Politics of Information and Communication Technologies*, pp. 44-74. Oxford: Oxford University Press.

[38] Mansell, Robin (1996) Communication by Design. In Mansell, Robin and Silverston, Roger (Eds) *Communication by design: The politics of information and communication technologies*, pp. 15-43. Oxford: Oxford University Press.

[39] See Boden, M. A.: Agents and Creativity. In Communications of the ACM, Vol. 37, No. 7. (July 1994) 117-121; Holtzblatt, K. and Beyer, H.: Making Customer-Centered Design Work for Teams. In: Communications of the ACM. (1993) *A*ccessed at http://www.incent.com/papers.indx/Customer_Des_Teams.html

[40] Rogers, Everett M. (1995). *Diffusion of Innovations.* 4th edition. New York: The Free Press.

> I cut out all the introductory stuff and I say, "You don't need any computer experience" and "You can just do this and (it) will get you to the weather map for Australia". Bang. How does it work? Who cares? We just do it.

Effective navigation is part of this effort to reduce complexity and increase trustworthiness.[41] To achieve effective navigation, the women we interviewed say they want two things – plain English and a design which concentrates on the activities they want to complete, rather than a knowledge of the capabilities of the program and the providers' mind-set.

The constant refrain is the lack of plain English on the Internet. It is assumed that the user knows the technological terms associated with the Internet. Felicity, an expert user of the Internet comments,

> I have noticed in a couple [of Web sites] that I was looking at recently, [they] did allow you to download an html file or a pdf file, which I think would have meant absolutely nothing to a majority of the population. They wouldn't have the faintest idea which one they wanted or how they might need to use it.

These points were most dramatically illustrated with reference to government sites[42] where plain English and useable design were seen as lacking. Edith, a Webmaster, observes of the Victorian Maxi kiosk and Web site:

> I found it quite cumbersome. They may have improved it, but I wasn't all that impressed, because as a Webmaster, all they had for the title of the page was 'Maxi', that's all it was. If you go to a search engine all that comes up is 'Maxi'. Well, I mean 'Maxi' what? Well, it could be a sex service for all you know. On the Maxi also, it seemed to me to be going out of my way to do something I could do more conveniently in other ways, so that's probably why I haven't persevered with Maxi…

Nancy, who works with a farming organisation had a look at Maxi some time ago. She says,

> It didn't strike me as being amazingly user friendly. I think it was probably done by the same authors as those manuals that we're all supposed to look at to solve our problems. Too much technicality and not much professional, plain English…
>
> I find it almost impossible to use any of the Windows manuals. On the other hand … I use a digital camera which I've got on the PC using the Kodak software and that's terrific. It's obviously been designed for major idiots. It's easy to use and it's friendly to do.

Uniformity of presentation can assist the user. Felicity thinks that should be possible

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[41] For a clear description of the way design leads to trustworthiness, see Cheskin Research and Studio Archetype/Sapient (1999). *ECommerce Trust Study* http://www.studioarchetype.com/cheskin/assets/images/etrust.pdf accessed on 26 October 99.

[42] For a more detailed examination of electronic service delivery, see Ryan, A. (1999) *The user's perspective of online government services: A qualitative study*. Melbourne, Vic: unpublished CIRCIT report.

with government Web sites.

> Something that would be really good with the government pages, if there was some sort of consistency, so that people in one state looking at one type of page would feel comfortable when they saw another one and that would be a Federal Government page and State Government pages. And if you've got forms for this and forms for that, if they're consistent with the way that they're laid out and what you need to do with them, people are going to feel more comfortable with it. I think that's very important.

Edith tried to complete a transaction on the Vic Roads site. She says,

> I wanted to order a number-plate, a tow-bar number-plate. …[In] the end …I finally found … that you have to go to … one of their offices to order it. I think eventually I found out you can do it over the phone.

The emphasis needs to be on simple, reliable information. Odette, a part time farmer in New South Wales, says, "I'm just not interested in bells and whistles, not if I'm just after information." She does not want propaganda, just the facts. On some of the government sites, she says, "You start to sort of wonder, you know. Are they fair dinkum or are they just publicising?"

Part of the problem with some government sites – as with many others – is that you have to have expert knowledge of the government department and its offerings to make sense of the site. Nancy says that when she was trying to find out about pensions or youth allowance, she found she had to jump from one bit to another to find out the policy and then find out how much was the entitlement. She says,

> I think the design of it is poor. I don't find it easy to read and I don't like orange anyway. I also know that country people prefer not to use it. [They] would rather queue in the Centrelink offices the next time they're in town, … so they can talk to someone. 'Look, I've got this … and it says here – and the person can say, 'Oh yeah that's right. What it means is that…'.– even if it's a young whippersnapper…
>
> It's an unfamiliar area anyway. It's not something you would tend to use every day like I do. It's something you go to when you've got a problem, so you don't have any familiarity with the site. As well as the problems of the design, I think a proper service is when I can go in to you behind the desk and tell you all about that problem, the things that are impacting on it, (the) state of the weather, the fact the bank's knocked me back, the fact the kids are sick or one of the girls has got to go to boarding school or whatever. Your job is to listen to all that and to factor it in when you put your response together. There's no dialogue with this [the computer].

Women we interviewed reiterated the general emphasis on security and privacy. Yet these were the features that were couched in varying degrees of technological jargon, leaving the impression that security features are inadequate. Edith, who is a Web designer, says what is required is:

> Good security warnings and perhaps an explanation in simple terms of which security they are using, you know, what its, to use an art term,

> what its provenance is, where it comes from, who else uses it. Like if they say that NASA uses it and you find out that last week NASA's system was breeched, well you might not have too much sympathy with it…
>
> I think it's important that they have some simple explanation, what it is and how it works, but simple. There's no point in going into the cryptography of it and … you've got 72 pairs of binary series or something, I mean, you've lost people. But I think it would be of use, telling people just what they're tapping into. Actually when I signed up for (the ISP), they explained. As I got deeper and deeper into security to sign up, they were telling me exactly what was happening and what level of security I was at, and we even got to one stage where they said, 'We are using the services of blah, because they have a fully secured server'…
>
> And that was really good, because they were explaining to me as I went deeper into it how I was gradually being moved to a more and more secure place all the time, so frankly by the time I got there I didn't have too many qualms about the transaction.

7.3 Emphasising access and use rather than skills development

A central theme of government policy relating to the Internet and electronic commerce is to harness the "potential of the technology"[43] to connect communities, businesses and citizens. The Victorian Government policy, for instance, emphasises to this end:

- Building a learning society
- Growing the industries of the future
- Boosting e-commerce
- Connecting communities
- Improving infrastructure and access
- Promoting a new politics

A willing and able user base is central to all these objectives. The government approach to fostering this user base has been to emphasise skills development through the ICT (Information and Communication Technologies) Skills Taskforce and Skills.net for Community Groups. Skills development is particularly at the forefront of policy because the information technology industries require people who are able to design and produce the technologies and services of today and the future.

However the emphasis on skills places the spotlight on the technology rather than the user and the activity. This emphasis on the technology is particularly problematical

[43] Department of State and Regional Development, Victoria. (1999). Connecting Victoria: The Victorian Government's strategy for information and communications technologies.

when women are one of the main groups towards which the skilling programs are directed.

The aim of both industry and policy is to arrive at a point when specific training is not needed to live with the Internet and electronic commerce. The focus from the design side needs to be on making the technology invisible. From the policy side, the approach that is most likely to succeed is to present technology as an enabler.

This approach would mean a significant recasting of training programs to resemble the access and use programs that are currently being run in some states. The goal should not be a competency certificate vouching for technological skills but an ability to use services and technology to achieve what the user wants to do.

Providing access and use programs for women should also include providing an environment where women could work together on activities they see as meaningful – with a technology person available to provide support and facilitate additional ways of using the technology for the activity.[44] In such a setting, the connecting powers of the technology could be harnessed to the preference of women to connect rather than compete.

7.4 Designing for a change in the nature of activity

A focus on the activity rather than the technology also means designing for changes in the nature of the activity. Just as the nature of writing changed with the word processor, expectations of communication are changing with email. Another major change has been in the area of managing money.

A major change with the domestication of electronic money and electronic commerce is that activities to do with money have become information activities. Yet electronic commerce does not connect seamlessly with other money-related activities in the household such as invoicing, bill payment and the management of domestic money. Each of these activities remains a separate activity, though for the user they are related information activities.

Winifred, 25-39, a housewife in Melbourne, describes the sequence of activities. She gets a bill in the mail, then she goes straight to the computer, types in the amount, and pays it on the Net. She says she sends it and "It's all done. Don't have to go through cheque books and cheque butts." But then she manually puts it into *Quicken*, prints a report and completes the process. She still has no way to connect all those money activities.

Rosemary, who regularly uses the Net to order her supplies for her direct marketing business and pays online, says she hopes the link is coming so that the payments get recorded into *Quicken*. Marjorie, a farmer, is hoping that the connection happens from the invoice end. She says, "If I was invoiced online I'd probably look at electronic payment."

[44] We are indebted to Jan Pahl for this suggestion.

7.5 Using a mix of channels to enhance the personal

The use of the telephone and email to supplement the information on a Web site provides a back-up of personal, interactive communication.

Some of the greatest successes have been government sites that encourage initial contact by email so that users can alert them to their problems. This approach is problem/activity oriented, rather than provider focused and it avoids the call centre wait that users find so frustrating. On receiving the email a staff member can deal with the problem and get the local context right before contacting the consumer by phone. This final stage has the advantages of personal and interactive communication.

Odette speaks approvingly about this aspect of Centrelink's service. She says, "I'd much rather send them an email and they can muck around for a couple of hours and then ring me back." This way she gets the best of both worlds and does not have to wait. Ingrid, 25-39, in Tasmania also went to the Centrelink Web site because of the difficulty of getting through on the phone. "There's a little thing there where you can say what your request is about and give your number. They say they'll call you back in two days or something. Wonderful."

Sometimes it is the unreliability of the personal response that makes the Internet a pleasant alternative. Hortense, a farmer in Tasmania, finds the Australian Taxation Office site "easy to get around. I download publications [on]… provisional tax, prescribed payments, business tax details." The incentive to go online was that the department's telephone service and response times were not satisfactory. She says, "There are times I've waited for two or three months for things and [they] haven't arrived." With the Internet, "you're not depending on a person".

Personal interaction is particularly valuable when the user is stuck. Odette says that many Web sites give a general email contact. This is not sufficient. She says,

> I do like to have the personal details of someone that you can get in touch with if you need more detail of information or you need to query it. And you want, you actually need that person's phone number I think or email address, a personal contact.

Ruby too says, what she would like is somebody you can ring up if you are stuck – a help line. This is particularly important if:

> ….you're installing a new program on your computer and somebody's given you information over the Internet. And I've done that sometimes with downloading stuff you know and then try to get it to work and it doesn't. You've come to a dead wall. Unless you know somebody who knows somebody who's done it, you can't, there's no way. Well I haven't been able to, anyway.

Conclusion

Electronic commerce has most often been addressed as a business and technological phenomenon. Studying it within the social and cultural context alerts one to the central role of gender differences in the use of the Internet and electronic commerce. It also places the emphasis on how these communication technologies have already changed the nature of personal communication for some men and women. These technologies have also changed the nature of money and will possibly transform money relationships in the home.

In this study we found that women's use of the Internet is characterised by their emphasis on the Internet as a tool for activities rather than a technology to be mastered. We also found that women were most responsive to these technologies when they perceived the Internet as a personal medium. This approach to the Internet has the potential to reshape the approach to design and policy – particularly in the way information is delivered and access and use is fostered.

Women's growing comfort with the Internet and electronic commerce will not necessarily change the way women think of themselves in relation to technology. Our study shows that once women are comfortable with a technology, such as the telephone, the technology becomes invisible. Their ability to use these technologies is not seen as expertise. Hence the discomfort with technology continues to remain at the centre of the social construct of gender.