

**CHANGING TECHNOLOGIES AND WOMEN'S WORK LIVES:  
A MULTIMETHOD STUDY OF INFORMATION WORKERS, AND  
FEMINIST AND UNION ACTION RESEARCH IN CANADA**

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in partial fulfillment of the requirements  
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## ABSTRACT

This feminist sociology thesis, theorizes changing technologies as social processes in women's work lives. It is based on a study of how women information workers understand changing technologies, and a study of actions taken by and for women workers through feminist and union action research. Theoretical arguments are developed in a critique of Marxist, labour process and feminist literature on technology and work; the purpose is to identify concepts relevant to feminist social theory. Methodological issues are discussed reflexively to reveal the rationale behind a feminist qualitative multimethod study. It includes group interviews with employed and unemployed information workers, individual interviews with action researchers, and documents analysis of feminist and union action research projects in Canada in the 1980s and 1990s. Analysis of group interviews with information workers focuses on the social construction of women's skills, contradictions that participants experience with changing technologies in their work lives, and technology and control issues. Analysis of feminist and union action research projects focuses on contributions to organizing through development of tools for workers and information for the labour movement. The qualitative multimethod study forms the basis for rethinking changing technologies and women's work lives from a feminist perspective.

This doctoral dissertation is dedicated to  
the memory of my father and friend  
**OWEN CLARKE**

## **ACKNOWLEDGMENTS**

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TABLE OF CONTENTS

<b>ABSTRACT</b>	iv
<b>ACKNOWLEDGEMENTS</b>	vi
<b>TABLE OF CONTENTS</b>	vii
 <b>CHAPTER ONE</b>	
<b>INTRODUCTION: TECHNOLOGIES AS SOCIAL PROCESSES IN WOMEN'S WORK LIVES.....</b>	1
 <b>CHAPTER TWO</b>	
<b>THEORETICAL BACKGROUND: A CRITIQUE OF MARXIST, LABOUR PROCESS AND FEMINIST LITERATURE ON TECHNOLOGY AND WORK</b>	
A. Introduction.....	8
B. Meaning of Technology.....	10
C. Machinery and the Sexual Division of Labour.....	17
D. Technology as a Means to Control Workers.....	24
E. Recent Labour Process and Feminist Studies.....	27
F. Theorizing Technologies and Women's Work Lives.....	41

**CHAPTER THREE**

**METHODOLOGY: A FEMINIST QUALITATIVE MULTIMETHOD STUDY OF  
INFORMATION WORKERS AND ACTION RESEARCH**

A.	Introduction.....	48
B.	Links Between Theory and Methodology.....	51
C.	Rationale for Multimethod Study.....	57
D.	Selection of Participants for Small Group Interviews.....	61
E.	Dynamics of Small Group Interviews.....	66
F.	Selection of Action Research Projects.....	79
G.	Study of Action Research.....	84
H.	Analysis of Group and Individual Interviews.....	87
I.	Conclusion.....	91

**CHAPTER FOUR**

**WOMEN'S SKILLS: INFORMATION WORKERS'  
PERSPECTIVES ON THEIR WORK LIVES**

A.	Introduction.....	93
B.	Perspectives on Skills.....	96
C.	An Average Work Day for Information Workers.....	102
D.	People Skills and Computer Skills.....	110
E.	Who Needs Women's Skills?.....	119
F.	Does Multiskilling Secure Union Jobs?.....	126
G.	Who Acknowledges a Job Well Done?.....	132
H.	Who Understands Information Workers' Skills?.....	136
I.	Social Construction of Women's Skills.....	144



**CHAPTER FIVE**

**TECHNOLOGICAL INTERACTIONS: WHO CONTROLS**

**CHANGING TECHNOLOGIES?**

A. Introduction.....149

B. Job Loss and Intensification of Work.....151

C. Technology to Deskill and Control Workers.....157

D. Coping and Resistance Strategies.....160

E. Participants in Social Change?.....167

**CHAPTER SIX**

**TOOLS FOR CHANGE: ACTIONS TAKEN BY AND FOR WOMEN WORKERS**

A. Introduction.....170

B. Action Research as a Political Process.....173

C. Tools for Women Workers.....178

D. Organizing Workers Around Health Issues.....195

E. Information for the Labour Movement.....201

F. Strategies for Action.....205

**CHAPTER SEVEN**

**CONCLUSION: RETHINKING CHANGING TECHNOLOGIES**

**AND WOMEN'S WORK LIVES.....209**

**REFERENCES.....217**

## LIST OF APPENDICES

- APPENDIX I: GROUP INTERVIEWS WITH INFORMATION WORKERS
- APPENDIX II: DETAILS ABOUT GROUP INTERVIEW PARTICIPANTS
- APPENDIX III: ACTION RESEARCHER INTERVIEWS
- APPENDIX IV: FLYER FOR PARTICIPANTS IN GROUP INTERVIEWS
- APPENDIX V: SCHEDULE FOR GROUP INTERVIEWS
- APPENDIX VI: INFORMED CONSENT FORM FOR GROUP INTERVIEWS
- APPENDIX VII: LETTER FOR GROUP INTERVIEW PARTICIPANTS
- APPENDIX VIII: SCHEDULE FOR ACTION RESEARCHER INTERVIEWS
- APPENDIX IX: LETTER FOR ACTION RESEARCHERS
- APPENDIX X: GROUP INTERVIEWS TRANSCRIPTS ANALYSIS
- APPENDIX XI: ACTION RESEARCHER INTERVIEWS  
TRANSCRIPTS ANALYSIS
- APPENDIX XII: TIRF AND TARP ACTION RESEARCH PROJECTS  
STUDIED

**CHAPTER ONE**  
**INTRODUCTION: TECHNOLOGIES AS**  
**SOCIAL PROCESSES IN WOMEN'S WORK LIVES**

Recent sociological literature in the 1980s and 1990s that is grounded in dialectical, materialist and historical approaches provides rich explanations of social relations of women's work in capitalist and patriarchal societies. Connections between theory, method and explanation are often carefully thought through in many feminist studies of women and work. In contrast, the complexities of technological changes and women's work lives are less well understood.

Based on feminist sociological research, this thesis investigates ways that women understand and respond to technologies in paid work, domestic labour and community activities. It offers an analysis of changing technologies that sees them as social processes in women's work lives, processes in which women are not simply victims of technological change. I argue that when changing technologies are studied as interactive social processes in specific historical and cultural contexts, some of the different ways that people understand and participate in technological changes are brought to the surface. An important point of entry for my research are actions taken

by and for women workers, in forms of individual action, collective action and action research projects. I investigate technologies as changing social processes, in which women can and do participate, even though their complicated lives and their relative lack of power limits their response.

In this feminist sociological thesis, theory, method and action are linked. Feminist theory grounds the questions and approach taken to changing technologies and women's work lives. The empirical study is based on research methods from a feminist perspective. Most importantly, this means an emphasis on understanding women's experiences from their perspective. It also means that explanations are informed by the feminist literature on women and work.

My review of Marxist, labour process and feminist literature traces literature on women and work from Marx to Braverman to recent labour process and feminist studies. Through this review, gaps in the literature are identified, and concepts that contribute to contemporary theorizing of women, work and technology are highlighted.

This literature provides the analytical tools for an empirical study about information workers in Ontario. In addition to interviewing the women who do such work, I also examined feminist and union action research in Canada, research which specifically addresses issues related to

changing technologies and women's work lives. Information is combined from group interviews with information workers, individual interviews with action researchers, and documentary analysis of feminist and union action research projects in the 1980s and 1990s. Some of the complex ways that technologies influence women's lives are made visible by combining these three methods. This approach shows some ways in which women act individually and collectively to resolve contradictions that they experience in their work lives. It also reveals some of the limits on their action, limits related to the complexity of their lives, the power of their employer and their particular employment. In short, a qualitative, multimethod approach informed by feminist perspectives allows me to look at changing technologies as social processes in women's complex work lives, and at some ways they participate in these changes.

One part of this multimethod study was designed to gain a perspective from women as workers. It involved a series of 9 small group interview information workers who had experience in different work settings in the Toronto area of Ontario. Group interviews with information workers focused on the everyday experiences of women workers, their views on women's skills, their understanding of changing technologies in their work lives, and contradictions that they experienced at a personal level. When women information

workers were asked about their work, they expressed an understanding of changing technologies as social processes, processes in which they do try to participate. Nonetheless, for women to find openings and opportunities to take action and have input into decision-making at work is more problematic, particularly in relation to changing technologies. These women had only limited means of shaping the technologies and the social relations in which they are embedded. To a large extent, their possibilities for influencing changes depended on their particular workplace. Unions, bosses and the specific workplace did make a difference.

The group interviews informed, and were informed by, a study of feminist and union action research on technological change issues. These research studies themselves indicated a view of technologies that see them as social processes that can be influenced by workers and are thus themselves an attempt to shape technologies. Most of the action research projects that were selected for study brought together theory, method and practice to address actions taken by and for workers on technological change issues. Many projects, therefore, started from the personal experiences of workers, particularly women. They then provided tools for workers to address technological changes at work, and subsequently contributed expert information to the labour movement for

more structural changes to work organization. They thus in themselves provide evidence not only of action but also of a belief in the possibilities for action.

A selection of feminist and union action research projects reveals some of the interventions and actions taken by and for women workers. Projects selected for detailed study were part of two Canadian state funded programs, the Technological Impact Research Fund (TIRF) in the 1980s and the Technological Adjustment Research Programme (TARP) in the 1990s. Technological change issues were on and off the agenda of the women's movement and the labour movement in Canada during the 1980s and 1990s, partly as a reflection of changing economic and political conditions that set conditions for workers' responses. In other words, it was not just the workplaces but also specific historical conditions that influenced actions.

Action research from a feminist and union perspective is a political process because it contributes to organizing; therefore, it offers an entry point into changing technologies as participatory social processes. Such projects are thus themselves evidence of at least efforts to shape technological change. With the theory and evidence generated in these projects, workers were assisted at a local level, and through contract negotiations and policy within the broader labour movement. The action research

process brings technological interactions to the surface so that people behind machines are visible and strategies for action are made explicit.

The structure of this thesis moves from theory to methodology to explanation. Theoretical arguments are developed through a critique of Marxist, labour process and feminist literature that forms the framework for the empirical study. Methodological issues are discussed reflexively in order to reveal the rationale behind the qualitative multimethod study of information workers, and of feminist and union action research in Canada. The material from the multimethod study is discussed in three chapters (Chapters 4,5,6) that intentionally present changing technologies and women's work lives as increasingly complex, complexity that often serves to limit their actions.

The chapter on women's skills focuses on material from group interviews with information workers. There are debates in the literature about whether technology eliminates or enhances the need for skill, especially in information work (e.g. Menzies 1989, 1984; Braverman 1974; Beechey 1982). Written from the perspective of interview participants, this chapter describes how information workers make sense of their day-to-day work lives. It specifically highlights their understanding of people skills and computer skills, and reveals some contradictions that they experience at a



personal level. These women clearly see their work as skilled, itself a definition that provides evidence of participation given that many of their employers define the work as unskilled.

The chapter on technological interactions draws on material from group interviews, action researcher interviews and action research projects. It deals with issues of technology as a means for employers and managers to control the labour process. It also identifies ways that information workers attempt to intervene and gain input into technological changes through some resistance in the form of individual and collective actions.

The chapter on tools for change is based on material from action researcher interviews and documents analysis of feminist and union action research projects. This analysis focuses on feminist and union projects that provide tools to women workers to organize around technological change, in their workplaces and locals, and information for unionists and the labour movement in general.

The thesis concludes that both women information workers' definition of skills and action research projects demonstrate that technological change must be understood as social processes in which women are active participants, albeit ones severely limited by the complexity of their lives and their limited access to power.

## CHAPTER TWO

### THEORETICAL BACKGROUND: A CRITIQUE OF MARXIST, LABOUR PROCESS AND FEMINIST LITERATURE ON TECHNOLOGY AND WORK

#### A. INTRODUCTION

Recent sociological literature grounded in political economy and socialist feminist perspectives reveals the complexity of social relations in women's work lives (Applebaum 1993; Armstrong and Armstrong 1990; Beechey 1982; CSE Microelectronics Group 1980; Luxton 1980; Menzies 1994; Walby 1990). Connections between theory, method and explanation are often carefully thought through in many feminist studies of women and work. Research that includes analysis of historical and cultural context, material conditions and class struggle, also often explores ways that women individually and collectively resist oppressive working conditions. Less attention has been paid to an analysis of changing technologies as social processes in women's work lives. From a feminist and sociological perspective, even though technologies are powerful, it is important to conceptualize technological changes as interactive social processes in which women can and do participate.

Margaret Benston (1989) noted that it is difficult to

get beyond physical machines to see people acting behind and interacting with technologies. This supports the view that when the machinery of technology is studied alone it can appear to be neutral and determining because people, particularly workers, are absent. Yet, when changing technologies are studied as interactive social relations in historical and cultural contexts, different ways that people shape and are shaped by changes in technologies are more visible. As Pat Armstrong emphasizes:

Technology must be understood as a social process, one that is shaped by the political economy. The choices, the problems, the applications, the very commitment to and definitions of science and technology are made within the context of a capitalist society and reflect the larger social forces in the society (1984:140).

In this chapter, a critical analysis of Marxist, labour process, and feminist literature traces some theoretical underpinnings of debates on technological changes and work. This review contributes to my inquiry into how to problematize technologies as social processes, ones in which women can and do participate. My aim in this chapter is to tease out relevant concepts and methodologies in literature on technology and work that can contribute to a more complete understanding of changing technologies and women's work lives. This approach follows a tradition in feminist research. A strategy of drawing out concepts from sociological literature in a Marxist tradition has been

integral to feminist theorizing, particularly from a socialist feminist perspective (Armstrong and Armstrong 1990; Hartman 1976; Luxton 1980; Walby 1986). For instance, Armstrong and Armstrong identify this strategy in reference to the concept of class in feminist theory: "As feminists have used marxist concepts to understand the position of women, they have transformed these concepts" (1990:77).

As a starting point in this chapter, I address the meaning of technologies to demonstrate the way that determinism, ideology and androcentrism can confuse debates about technological changes and work, particularly the work women do. Then a critical literature review taps a wide range of sociological literature in a Marxist tradition that contributes to feminist theory, focusing quite specifically on technology and work debates. This strategy allows me to draw out concepts from sociological literature that contribute to feminist theory, and inform my understanding of changing technologies and women's work lives. This chapter exposes gaps in literature on women, work and technology, some of which are subsequently addressed in this thesis research.

## **B. MEANING OF TECHNOLOGY**

The term technology has had multiple meanings - from machines in isolation, to a body of knowledge, to means of

organizing workplaces, to specific social practices that are part of complex social and cultural relations. In this section I discuss some of these meanings and their history, and also indicate the particular meaning of technologies that is used in this thesis.

According to Raymond Williams, in the late nineteenth century there was a shift in meaning of the term technology from a broad sense of arts and craft-based knowledge to the contemporary meaning of machine application (1976:315). To explain this shift in meaning, Williams (1976) points to a specialized sense of the concept of science and technology linked to man controlling nature which occurred during the late nineteenth century. Technology, then, as a term to describe machines rather than knowledge is a recent development with its own history; yet, a more complex understanding of technologies is necessary.

In literature on technological change and work, the interpretation of technological determinism remains unresolved. Generally, technological determinist arguments are based on an understanding of technologies as neutral machines in isolation, as objective things, and as determining social change. Bimber points out that at issue with technological determinism discussions are the "significance of technology to social change, but they differ as to why and how technology is so influential. Some

observers of technology and social change use the term as if it were ambiguous" (1990:336).

DeBresson (1987b) argues that technological determinism and biological determinism are closely linked because they are based on an evolutionary model. From this perspective technical change is irreversible, inventions are seldom lost, technical learning is cumulative, technical change occurs in small increments which are cumulative, adaption variation occurs, and it is easier to explain technological change that cannot than can occur (DeBresson 1987a:146). This characteristically mechanistic approach is reflected in much of the language employed to describe a wide range of machines, devices and computers as if they were external to the people who designed them and those who are employed to use them. When technologies are described in such ahistorical contexts, questions about links to power relations remain obscured, with the result that class, gender, race and ethnicity are essentially irrelevant.

Noble (1995) argues that the doctrine of technological progress, a version of technological determinism, dominates industrial capitalist society: "the abstract idea of technological development became simply a given from the past, saturated with the future: autonomous, inevitable, and sacrosanct" (1995:20). This view conforms to what DeBresson describes as the universal religion of technological

progress that he locates not only in industrial capitalism, but also in Judeo-Christian culture: "If there is one universal religion of our times it is the belief in technological progress... Technical progress is a central component of all political discourse on progress" (1987a:147). Noble also points out that this notion of technology as progress also contributes to the perception that any resistance to technological changes is taboo (1995:20).

Krahn and Lowe note, however, that technological determinism characterized theories of post-industrial society and automation particularly in the 1960s and 1970s. More recently, they claim, evidence from studies of computerization and automation suggest that "technology is chosen for and shaped by specific social and economic reasons" (1993:355).

Technology as social process arguments that are the basis of this thesis describe technologies as embedded in social relations, as changing social processes, and as powerful but not determining social change. This approach goes beyond technologies as neutral object. Instead, as Wajcman succinctly points out: "technological 'things' are meaningless without the 'know-how' to use them... A computer without programs and programmers is simply a useless collection of bits of metal, plastic and silicon" (1991:14).

From this perspective, there is an emphasis on the social construction of technologies that accounts for gender and power relations in ways that produce a more complex understanding of technologies as social processes. This understanding of technology is based on questions about what shapes the technology and what role societies have in shaping technology (MacKenzie and Wajcman 1985:8). To study technology as a social process, then, is also to emphasize the way people act behind and interact with technologies. The power relations that inform their actions in specific contexts are taken into account. This particular approach is usually part of feminist and labour process research on technology and work, even though explanations of social construction of technologies as social processes often differ.

From a feminist perspective, the androcentric practices in technological issues traditionally make men's actions evident and obscure women as legitimate agents of change (Benston 1988; Cockburn 1985; Wajcman 1991). For Cockburn (1985), the strong link between men's interpretation of mechanization is based on their position of power in manufacturing trades. This leads to an understanding of industrial machines being "men's hands that control them" (Cockburn 1985:139). This, then, excludes women as operators, regardless of the evidence that women routinely



operated machinery in industry. For Wajcman, it is the "ideology of masculinity that has this intimate bond with technology" (1991:136). While technology is often described as though there is some natural connection between men and machines in terms of masculinity, Wajcman locates this as a social construction of power:

Gender is not just about difference but about power: this technical expertise is a source of men's actual or potential power over women. It is an important part of women's experience of being less than and dependent on, men (1991:159).

Margaret Benston identifies two consequences of a technological world view which is gendered male. On the one hand, technology can be understood "as a 'language' for action and self-expression" (1988:15), and since men have more access to and knowledge of tools and machines than do women, they are more able than women to use the 'language' of technology. As Benston points out: "Generally, because they lack knowledge, women do not discuss technology with other women at all" (1988:26). On the other hand, it is men with a technological world view, who are "expected to be rational, objective and able to keep emotions out of most parts of their lives" (Benston 1989:23). Men, then, are generally the experts who control technological systems, which often leads to women's voices being silenced in applied technical contexts: "They do not have the same access to techniques or the same experience with concepts

and equipment that men do" (Benston 1989:23).

Schenk and Anderson (1995) provide a succinct definition of technologies in terms of paid work, that reflects usage in many contemporary labour studies. They make a crucial distinction between the 'hard' and 'soft' technologies. For Schenk and Anderson, hard technical changes, such as the introduction of machinery and equipment like computers and voice mail into the workplace, and are often acclaimed by the media in sections "devoted to the wonders of new computer software and new techniques to production" (1995:10). DeBresson refers to the hardware of technology as easily observed and quantified by social scientists, but he also notes that: "In isolation, however, the hardware makes no sense; only the way humans use the machines and tools make them understandable" (1987b:1).

Unlike hard technologies, Schenk and Anderson claim that soft technological changes, including work organization such as multiskilling and total quality management, are "conveniently ignored and forgotten" (1995:10). These soft technological changes are less tangible than machines. Such an approach challenges the notion of technology as inevitable progress. This same distinction between machines and social relations can be expanded to domestic labour and community activities that are included in feminist studies of women and work (Luxton 1980; Hayden 1981; Wajcman 1991).

The lines between machinery in isolation and work organization as a whole, however, are not as clearcut as they may appear in this dichotomy. The notion of changing technologies in people's work lives must also take power relations into account. After all, not only are workers shaped by technologies, workers can and do participate in shaping technological changes, albeit not under conditions or relations of their choosing. Moreover, some workers are in a more advantageous positions than others in these terms.

### **C. MACHINERY AND THE SEXUAL DIVISION OF LABOUR**

The development of feminist theory, particularly from a socialist feminist perspective, has drawn extensively on literature in the Marxist tradition to understand the relationship between capitalism, the sexual division of labour, and the work women do (Armstrong and Armstrong 1990; Hartmann 1976; Luxton 1980; Walby 1986). In terms of understanding technology and the sexual division of labour, a similar analysis is less thorough.

I agree with DeBresson that "Marx had no theory of technology" (1987a:143); therefore, I do not intend "to extrapolate a general understanding of technological change from Marx's writings" (1987a:143). In fact, the debate about whether or not Marx is a technological determinist is perhaps sparked by Marx's imprecision on many topics related

to technology (Bimber 1990; DeBresson 1987a; Elger 1986; Luke 1981; MacKenzie 1989; Rosenberg 1977). Braverman also points out that there is confusion in social science about Marx's position on technology: "orthodox social science...itself prone to the most vulgar and superficial technological determinism, often misunderstands Marx in exactly this respect, and accuses him of this very sin" (1974:17). Nonetheless, Marx does provide insights into machinery and the sexual division of labour that point to technologies as social processes. It is this element of Marx's analysis that contributes my theoretical and methodological understanding of changing technologies and women's work lives. In this section, Marx's understanding of machinery and instruments of labour are critiqued in terms of the practical functioning of capitalism.

Marx locates machinery and instruments of labour in an historical context: "In manufacture the revolution in the mode of production begins with the labour-power, in modern industry it begins with the instruments of labour" (1987[1887]:351). For Marx, instruments of labour are one of three elementary factors of the labour process, the other two factors being personal activity of workers and the subject of work itself (1987[1887]:174). Marx's historical materialist analysis of instruments of labour focuses on shifts in the labour process from craft-based production of

manufacturing to factory-based production of industrial capitalism. In this context, some parts of machinery are more relevant than others to the labour process. During the industrial revolution one means by which capitalists achieved a goal of gaining control over tools of work from workers was by changing the working mechanism of machinery: "The machine proper is therefore a mechanism that, after being set in motion, performs with its tools the same operations that were formerly done by the workman with similar tools" (1987[1887]:353).

Contemporary use of the term 'machine' is often vague and implies inert, yet visible, production equipment. For Marx, however, implements and machines are distinguished on the basis of their connection to power relations of the labour process. Implements leave craft knowledge in control of workers, while machines leave part of the craft knowledge of workers in control of capitalists: "Capital now sets the labourer to work, not with a manual tool, but with a machine which itself handles tools" (1987[1887]:365). Human agency in the labour process, then, is not lost or obscured, but there is a shift in power relations. Control over technical knowledge is essentially shifted away from workers to capitalists. Mechanization entrenched a particular form of division of labour in early machines which mimicked workers' hands. Automation multiplied labour power through

reproduction of these processes in machinery. Automated machinery shifted power relations because capital gained control of craft knowledge of workers. Marx's analysis of mechanization and automation indicates that changing machinery or technologies is a means for capitalists to shape the everyday functioning of capitalism in historically specific contexts'.

According to Marx, and specific to a particular phase of capitalism, capital's introduction of technological changes not only replaces male labour by mechanization and automation of production processes, but also regenders jobs so that women's and even children's cheaper labour power is used to replace men's labour power:

Insofar as machinery dispenses with muscle power, it becomes a means of employing labourers of slight muscular strength and those whose bodily development is incomplete, but whose limbs are all the more supple. The labour of women and children was, therefore, the first thing sought for by capitalists who used machinery (1987[1887]:372).

Capital's design of machines to take the place of muscle power, arguably a victory over forces of nature, opened the way to employ women and children as machine tenders. Specific exploitation of working class women and children by means of technological changes points to Marx's understanding that subordination of women in patriarchal relations is inherent to the capitalist mode of production.

Marx also notes that capital's choice of technological

changes can also be a means to reorganize work to subvert organized worker resistance. For instance, if technological changes are a means to regender work, then this strategy can be used to replace potentially resistant male workers with more malleable female workers. Marx, therefore, explicitly links technologies and the sexual division of labour. Also in some recent literature, a similar argument is made to explain technologies as a means for capital to reinforce a division of labour based on race and ethnicity (Levidow 1991; Mitter 1986). Marx's explicit identification of women and children with machinery to replace male workers is a dimension of technology that is seldom emphasized in subsequent Marxist literature prior to recent feminist critiques.

When emphasis is placed on technologies as a means for capitalists to degrade work, cheapen labour and control work, the impacts of technology can appear deterministic and inevitable. An element of Marx's analysis that challenges deterministic interpretations is a recognition of the contradictory nature of machinery or technologies in capitalism. For Marx, the contradictory nature of machinery and the labour process in the hands of capitalists: "do[es] not arise out of the machinery, as such, but out of its capitalist employment" (1987[1887]:416). Marx makes the comparison between the machinery alone and in the hands of

capitalists to demonstrate that technologies are a means for capital to exploit and degrade workers. Four contradictions are spelled out by Marx to illustrate the contradictory nature of machinery in capitalism. While Marx's analysis must be understood within a particular historical context, it offers insights into technology and the labour process that remain relevant in a contemporary context in capitalist societies.

First, considered alone machinery shortens hours of labour, but in capitalism work days are lengthened (Marx 1987[1887]:416). Automation, for instance, speeds up the production process and potentially work days could be shortened because the same amount of work could be completed in less time. This seldom occurs because surplus value is increased if hours worked remain the same.

Second, considered alone machinery lightens labour, but in capitalism labour is intensified (Marx 1987[1887]:416). When technological changes, for instance process controls, reduce the manual labour then work should be less stressful. In a capitalist workplace, labour is seldom lightened but instead is speeded up and intensified to increase production in less time.

Third, considered alone machinery is the victory of man (seldom women) over forces of nature, but in capitalism workers are slaves to these forces (Marx 1987[1887]:416).



This situation describes the way that production machinery is often specifically designed to replace a biological function, for instance mechanization to replace the manual craft skills of tradespersons. The workers are then trapped because their work is degraded and their skills devalued.

Finally, considered alone machinery increases wealth of producers, but in capitalism workers as the producers become paupers, relatively if not absolutely (Marx 1987[1887]:416). If workers are the producers then automation, for instance, that allows for increased profit should lead to workers benefiting economically with increased wages. The increased profits in capitalism are seldom passed on to workers, and this has become part of the struggle that unions confront through contract negotiations to redirect more profit to the workers as producers.

The elements of Marx's analysis that I have drawn out in this section demonstrate that within capitalism, technological changes are employed in particular ways to subordinate and manipulate labour power in order to embed the division of labour. In this context, it is striking that specific reference is made to the sexual division of paid labour in terms of developments in machinery which replace men's muscle power. While these examples may demonstrate the sexual division of labour in waged work, they show no indication of an understanding of domestic labour. For Marx,

public and private domains of work are set apart with only the public domain of waged work being relevant to his analysis of machinery and labour power. For a more thorough analysis of technological change and work in capitalism, particularly women's work, the interrelationship between waged work, domestic labour, and community activities needs to be taken into account.

#### **D. TECHNOLOGY AS A MEANS TO CONTROL WORKERS**

Labour process literature draws on an historical materialist analysis to trace the connections between technological changes in instruments of labour in different modes of production and in different phases of capitalism. While Marx's work accounts for the transition from precapitalist to capitalist modes of production, many sociologists in the 1970s investigated the transition from manufacturing to industrial capitalism. Harry Braverman (1974) took this analysis one step further by investigating the transition from industrial capitalism to monopoly capitalism, with an emphasis on technological changes as a means to increase control over workers. Braverman's insights deserve close scrutiny because they sparked renewed interest in examination of technological changes and work in the 1970s and 1980s.

Braverman accounts for technological changes and the

labour process in monopoly capitalism by focusing on connections between scientific management, technological change, and the nature, conditions and relations of work. Scientific management, based on principles of Taylorism, is described as: "an attempt to apply the methods of science to the increasingly complex problems of the control of labor in rapidly growing enterprises" (Braverman 1974:86). For Braverman, development of scientific management as a capitalist strategy essentially completes a fragmentation of work and removes control of production processes from workers and places it in the domain of capital (1974:78). One means to control the labour process, particularly technical knowledge acquired by workers, was to develop increasingly mechanized and automated machinery. Braverman argues that scientific management of monopoly capitalism employs machinery as a means to control workers and deskill work.

The separation of manual work from mental work that occurs with automation and computerization at many levels of production means that worker autonomy is continually eroded and capitalist control of workers is increased: "The separation of hand and brain is the most decisive single step in the division of labour taken by the capitalist mode of production" (Braverman 1974:125). According to Braverman, a general degradation and deskilling of work, and an

increased control of the labour process occurred in monopoly capitalism. As jobs became less skilled and specific jobs became deskilled, labor became more disposable, then managers enforced an undervaluing of workers to degrade work. Along with degradation of work, automation of production leads to an intensification of labour through organizational strategies which force workers not only to work to increase productivity, but also to work at their physical limits.

Braverman's focus on workers and conditions of work faced in monopoly capitalism provides a valuable contribution to developments in labour process theory. By centring attention on management practices, some important capitalist strategies which shape changes in workplace technologies in monopoly capitalism are uncovered. One of Braverman's critical insights is that, as a consequence of exploiting alienated labour, management displaces workers' technical knowledge of production and replaces it with increased automation (1974:425).

Armstrong and Armstrong note that with an emphasis on skill as measurable, Braverman ignores the evidence that skill is socially constructed and closely linked to power relations (Armstrong and Armstrong 1990:89). By emphasizing objectivity, Armstrong and Armstrong argue, Braverman also overlooks the importance of contradiction in Marxist theory

which means that the consequences of worker resistance are set aside (Armstrong and Armstrong 1990:90). Similarly, Elger also credits Braverman's contribution and identifies his shortcomings:

For Braverman the process of degradation of work and the disciplining effect of the reserve army of labour together appear to produce a virtually inert working class, unable to pose any substantial problems for capital either within production or beyond it (Elger 1982:25).

Nonetheless, as Armstrong and Armstrong point out, Braverman's work expanded Marx's analysis of the labour process by investigating transformations of modern capitalism, and "was central in shifting the focus of theoretical and empirical examinations of work" (1990:89). This very shift in focus has contributed to recent labour process studies, and has been an integral part of the development of women and work research, particularly from a socialist feminist perspective.

#### **E. RECENT LABOUR PROCESS AND FEMINIST STUDIES**

Recent contributions to labour process and feminist theory reflect an expansion of Braverman's (1974) ideas, particularly his deskilling thesis. In many workplaces deskilling is usually readily demonstrated; however, it became clear to labour process theorists (DeBresson 1987b; Elger 1982; Lee 1982) that technological changes and work

are more contradictory than was accounted for in Braverman's methodology. This view is also expressed by Elger:

A more adequate account of the transformation of the labour process would involve a more complex and sustained analysis of the historical development of capital accumulation, the contradictions to which accumulation gives rise and the manner in which such contradictions develop and are resolved in class struggle within and beyond production (1982:33).

In terms of understanding women's work, Braverman does recognize the importance of the sexual division of labour. Nonetheless, as Veronica Beechey (1982) notes, this view is neither informed by a feminist understanding of patriarchal relations in paid and domestic labour, nor offers a thorough account of the gendered power relations of pre-capitalist society and pre-industrialized capitalism. A critique of recent labour process and feminist studies points to contributions which are particularly relevant to a feminist analysis of changing technologies and women's work.

Braverman's deskilling thesis provides an explanation for the mechanization and computerization of office equipment for clerical work (1974:335-342). This is also an area of work in which technological changes were documented as a means of regendering work. For instance, Graham Lowe's (1986) historical materialist analysis of clerical work in Canada traces the feminization of work as a consequence of the introduction of the typewriter. According to Lowe, clerical work was transformed from work that was once a

stepping stone for men into management to an occupational ghetto for women (1986:196). Mechanization, through the introduction of typewriters, was a means for capitalists to deskill and feminize work. While not the emphasis of Lowe's study, his work does support Braverman's deskilling thesis, as well as Marx's analysis of mechanization as a means to regender work in order to exploit women as cheap labour. Although this notion of deskilling does demonstrate its social construction and relation to sexual division of labour.

It is well documented that the introduction of electronic data processing systems to replace typewriters provided a means for capital to deskill, intensify and decrease autonomy of clerical work (Applebaum 1993; Armstrong 1984; Braverman 1974; Menzies 1984; Merneke 1983; Pringle 1989). For instance, Rosemary Crompton and Stuart Reid (1982) argue that since electronics data processing is a means to increase centralization of control of clerical work, workers lose access to decision-making. Jane Barker and Hazel Downing claim that in a traditional mechanized office, clerical work conforms to a patriarchal form of control. With computerization, they argue, clerical work shifts to a more direct capital form of control, because unobtrusive monitoring of workers is often part of computer software programs (Barker and Downing 1985:150).

When worker resistance is considered in office work it is often individual resistance or coping strategies which reinforce a gendered workplace that are emphasized. The place of technologies in worker's actions, individually or collectively, is seldom taken into account. For instance, Barker and Downing (1985:156) note that worker resistance in offices is gender specific and includes strategies like pacing work, excuses to stop the line, and office talk. Also, women office workers try to exclude male workers from their culture as an attempt to subvert the patriarchal relations of the office. In my view, this form of individual resistance does more to reinforce patriarchal relations by enhancing not challenging gendered work. While Barker and Downing's analysis addresses the power relations of office work, they overlook the possibility that women may also use their knowledge of computer technologies as another means by which they resist oppressive working conditions. For instance, the use of electronic mail as a means to communicate with and organize workers.

Cynthia Cockburn (1985) claims capital has a need for domination and control of technology and workers; however, she draws on socialist feminism to expand this analysis. In the case of mechanization and automation of printing trades in Britain, Cockburn argues that control through technology is control by male capitalists. Yet, domination of



technology and work is not only the prerogative of male capitalists, but also a part of the material of male power where men as workers attempt to control the labour process and dominate women both inside and outside family relations (Cockburn 1985:135). For Cockburn, it is only by understanding the gendered character of technology that the power plays of men as capitalists, workers and spouses can be challenged (1985:143).

In the Canadian clothing industry in the late 1800s and early 1900s, technologies were also shaped by both decisions of capital and the control of the labour process by men as workers. Mercedes Steedman (1986) argues that resistance of male workers to women as co-workers reinforced the sexual division of labour which shaped technological changes in the Canadian clothing industry during industrialization of the needle trades. In the textile industry, resistance from tailors who were strong male unionists ensured that male-dominated cutter and presser jobs were protected both from being structured as piecework, and from being mechanized to speed up production (Steedman 1986:159). In contrast, women operated easily mechanized sewing machines and were subjected to traditionally exploitative piecework. When women entered factories, the piecework structure of work from a traditional putting-out system was maintained (Steedman 1986:158). Enhancing a piecework structure by

speeding up machinery as part of mechanization met the needs of capital because: "piecework thus institutionalized the intensity of work familiar to women from experiences in their homes and in contract shops" (Steedman 1986:159). Since female machine operators lacked support of male workers, their attempts to resist technological demands of capital were undermined. While unionized male tailors were able to resist mechanization and piecework, non-unionized female machine operators lacked collective power and were not supported by male coworkers. Women working as sewing machine operators were familiar with piecework and lacked collective power; therefore, an opening was left for capitalists to mechanize sewing machines for textile work and enhance the sexual division of labour by maintaining piecework for women (Steedman 1986:160). In the needle trades, therefore, introduction of new technologies reinforced traditional oppressive working conditions for women.

The introduction of automation and computerization into service work is a means by which capital has transformed fast food services into deskilled, fragmented work. Ester Reiter (1991) draws on Braverman's deskilling thesis to explain the way fast food industry work is structured in a manner similar to automated factory work. Reiter's study indicates automation of the fast food industry includes a

level of control by scientific management and a technological monitoring of fast food industry workers which even limits individual resistance. Under such controlled circumstances, Reiter argues, any form of collective action is difficult and unionization rare (1991:159). Reiter's analysis demonstrates the weakness of limited form of resistance accessible to workers in automated fast food service work, suggesting that the sex and location of the workers as well as the workplace, can limit opportunities to shape technological change.

Les Levidow (1991) points to the gender stereotyping of skills as part of undervaluing women assembly workers in the microelectronics industry. The assumption that women have 'nimble fingers' is part of the hiring process for young marginalized women as assembly line workers in the microelectronic chip production plants in Silicon Valley in California as well as in East Asia (Levidow 1991:106). The gender stereotype of 'nimble fingers' that Levidow identifies, is often applied to marginalized women of colour and seldom applied to white Western women. In my view, this form of stereotyping not only conforms to a gendering of technology for particular women's small hands. It also reveals the racism and ethnocentrism which Cockburn and Dilic (1994), Mitter (1986), Palmer (1994) and Phongpaichit (1991) identify as part of the structuring of workplace and

domestic technology for women in Western and Third World countries. Mike Duncan points out that:

instead of skill, the industry rests on a sexual and international division of the labour force where real subordination of labour to production and the organic composition of capital have reached new heights in the history of capitalism (1981:178).

This contribution by technological change to the international division of labour is particularly critical in microelectronic technologies which have such widespread applications.

While technologies may be introduced to control a specific form of work and shape a workplace, the agency of workers can also shape the impact of a technological change in the long term. Jacqueline Choiniere's (1993) study of the introduction of patient information technologies into a hospital investigates why a particular technology was chosen and the effect of its introduction on nurses work. One methodological concern Choiniere notes is the need to look at how the nurses see themselves acting on the basis of the contradictions experienced with the technologies in ways designed to shape it to their needs (1993:61). Nurses attempted to resolve contradictions they experienced with the introduction of patient information technology by changing ways they used the technology, so that it suited the needs of their particular workplace. By making adjustments to information processing to accommodate

realities of their needs, nurses also actively resisted technological changes. According to Choiniere, unevenness of organizational and technical change demonstrated that Braverman's deskilling argument underestimates the reality that with introduction of new technologies some workers increase in skill while others decrease in skill level (Choiniere 1993:72). Workers themselves are often active in ensuring that some skills are retained and new skills are recognized. The ways in which workers respond to technological changes in a workplace, therefore, has serious implications in terms of whether efforts to control workers by introducing new technologies is as effective as management planned.

Labour process researchers who studied manufacturing work questioned whether Braverman's deskilling thesis adequately described the impact of technological changes on monopoly capitalism (e.g. Lee 1982; Penn and Scattergood 1985). Veronica Beechey raised similar questions about the limitations of the deskilling thesis: "the history of capitalist production must be seen as the history of the destruction and the recomposition of skills" (1982:65), and also added a gendered analysis to the debate. Beechey argues that at times women workers replace skilled male workers as part of the deskilling process (1982:66), which is often linked to the feminization of occupations that may include a

recomposition of skills (1982:67). In some situations skilled jobs that were male-dominated jobs became female-dominated when women replaced men as part of a deskilling of the labour process. Then these regendered jobs that were considered skilled jobs for men, such as printing and clerical work, become perceived as semi-skilled once they are female-dominated occupations. But the skills have not necessarily disappeared and women may resist the classification of their work as unskilled.

Penn and Scattergood, in a study of manufacturing work, argue that while some work is deskilled, at the same time new skills emerge with an increased emphasis on the more peripheral jobs associated with installation, maintenance and programming of automated machinery (1985:624). This trend towards an increase in work to oversee and maintain new automated systems was also predicted by Margaret Benston, but she added that this work would form male-dominated jobs due to a requirement for technical knowledge:

There appears to be little opportunity for displaced women to obtain these jobs, which go mainly to technically trained, male workers. The training required is often inaccessible to women in general and to working women in particular (1983:48).

For Beechey (1982), overlooking the gendered social construction of skill is a serious limitation of Braverman's thesis. His assumption that male artisans or mechanics are

regarded as key to understanding skilled labour, means that different kinds of skill based on competency, control over labour process, and occupational status are not necessarily distinguishable. For instance, Beechey notes that housewives are described by Braverman as becoming deskilled (Beechey 1982:58). Yet, it is questionable whether the skills of domestic labour in capitalism are ever viewed as skilled, because the very notion of being skilled often refers to paid work and usually men's work. Moreover, this does not necessarily mean the women see themselves as unskilled or experience their work as unskilled. Indeed, the definition of the work by employers as unskilled may demonstrate an effort to control women's work, and women's definition as skilled may be seen as a form of resistance.

On this point, Jane Gaskell argues that even in paid work "the notion of skilled work is used in a way that devalues the work women do" (1987:363), because the process skill definitions is a political process" (1987:362) which is mainly controlled by organized male not female workers. Beechey and other feminist researchers (e.g. Cockburn 1985, Walby 1990, Wajcman 1981; Webster 1993) also question at which point is a shift from skilled to semi-skilled work directly connected to a technological change, and at which point is it more closely connected to a regendering of work. Links between technological changes, the social construction

of skill and the sexual division of labour are not only relevant to women's waged work. Feminist researchers, particularly from a socialist feminist perspective, also drew on Marxist and labour process theories to analyze domestic labour and motherwork in patriarchal capitalist societies (e.g. Hayden 1982; Luxton 1980; Walby 1986).

Changes in technology that effect domestic labour over time are a part of Meg Luxton's (1980) study of the transition from one form of work and technology to another, experienced during the lifetimes of the three generations of women in a Canadian mining town. Attention is given to links between domestic technologies and the sexual division of labour in the home. Luxton argues that domestic labour in working class families is essential to industrial capitalism, because it is both a site of production of family subsistence, and of labour power (1980:19). According to Luxton, one means of changing working conditions for domestic labourers is technical innovation, which mirrors an increase in mechanization and automation of the industrial workplaces (1980:128). For Luxton, the introduction of technologies into homes has resulted in a deskilling of domestic labour, fragmentation of work and an increased dependence on machinery for housework (1980:131).

Delores Hayden (1982) takes the social relations of domestic technologies as part of a capitalist agenda one



step further by considering the relevance of home design as a means for capital to reinforce the sexual division of labour. In contrast to Luxton, Hayden reveals some of the ways women have shaped technology. Hayden traces the history of material feminists, who were primarily middle class women active in the US from the 1860s to the 1930s. They attempted to redefine space for women's work at a time when industrial workers living in urban centres were being encouraged to resettle in newly designed suburban areas. According to Hayden, materialist feminists chose a particular form of resistance based on an understanding of how both patriarchy and capitalism structure the technology of the home not only from the inside, but also from the outside as particular urban spaces that isolate women in the home are imposed on women's lives (1982:296).

Hayden describes how in some areas materialist feminists encouraged a socialization of domestic labour by successfully working with architects to design cooperative housing complexes (1982:255), and even kitchenless homes in urban centres (1982:231). Materialist feminists also struggled, though with less success, to avoid women's isolation as homemakers in their homes. Material feminists challenged housing developers to try to stop a trend towards suburban developments during the relocation of industrial production from urban centres to scattered sites in suburban

areas (1982:22). Hayden summarizes the relevance of material feminists' struggles to contemporary feminist debates:

These women had the imagination to conceive of changing the culture, the economy, and the physical environment to support programs for workers' control of the reproduction of society, a notable theoretical achievement. The resistance they encountered illuminates the interrelatedness of patriarchy and capitalism by revealing that male-dominated private life and corporate-dominated public life are mutually reinforcing (182:301).

In my view, material feminists' critique of suburbanization of the home remains an important feminist contribution, which is relevant in contemporary settings where design of space for women's work is still seldom challenged and links between changing technologies and women's work lives are often ignored. Moreover, it demonstrates both the power relations that frame actions, as well as the social construction of skills related to technology.

In this section, I have argued that recent developments in labour process and feminist theory expand on Braverman's ideas to provide a more complex analysis of social relations of technological changes and the work women do. Feminist sociologists employed tools of labour process analysis to stress the social construction of skill, to reveal links between paid and domestic labour, to expose the undervaluing of women's work, and to emphasize the gendered characteristics of technological change. When labour process theorists applied Braverman's concept of deskilling, they

discovered deskilling was a partial explanation of the impact of technological changes on work. Labour process studies also identified technological changes as a means to reorganise work that transformed and expanded skills in new ways. Many of these new skills, though, were in jobs done by women and thus often remained invisible (Gaskell 1987; Armstrong 1984). Moreover, workers seldom passively accepted the changes accompanying technology. Recognition of limitations of Braverman's analysis meant that contradiction and resistance were reconsidered as analytical tools in studies of technological changes and work.

#### **F. THEORIZING TECHNOLOGIES AND WOMEN'S WORK LIVES**

In this chapter, I have traced the threads of an historical, materialist and dialectical analysis of technological changes and work in Marxist, labour process and feminist literature in particular. This critical review of the literature provides the groundwork for rethinking technological changes and the work women do from a feminist theoretical perspective.

Marx's analysis provides links between technologies and the sexual division of labour, and an understanding of the ways that technological change is a means for capital to transform work. Marx also points to contradictions of technology in capitalism that partially explain resistance.

The context of worker resistance to technological change and attempts to reshape technology offer some insights into the complexity of this particular strategy.

Braverman's analysis of technology as means for management to control workers and his deskilling thesis offer a framework to trace links between automation and computerization of the labour process. The deskilling thesis, as an explanation of technological change, is a powerful tool for analysis of technology and work. His analysis of agency of scientific managers as representatives of capital who control workers by means of technological changes, offers a firm foundation for subsequent elaboration by labour process and feminist theorists.

Recent developments in labour process and feminist theory expand on Braverman's ideas to provide a more complex analysis of social relations of technological changes and the work women do. Labour process theorists noted that while providing a means to deskill work is a key element of technological changes within capitalism, new skills emerge as workplaces are restructured, how these are defined is related to gender. Feminist theorists extended Braverman's analysis by accounting for domestic technologies and the home as legitimate workplaces for women which are structured by capitalist and patriarchal relations, as well as by the construction of skills in gendered ways.

Feminist studies also demonstrated the importance of focusing on particular workplaces in order to draw out the complexities of the interactions between changing technologies and women's work lives. Not only are women as workers shaped by the technologies that are introduced into their work lives, but also women as workers participate in technological changes through individual and collective actions, and thereby potentially shape technologies in their work lives. By expanding on Braverman's ideas, labour process and feminist theorists also returned to Marxist analytical tools, such as accounting for contradiction and worker resistance, to expose complexities of technologies as social relations in specific workplaces within historically specific contexts.

The empirical study in this thesis was informed by the critical review of literature on technology and work in this chapter. The notion that technology is embedded in social relations points to technological changes as complex social processes, yet they are often hidden. In practice, to reveal the complexity of the everyday experiences of workers, particularly women workers, I conducted a qualitative multimethod study from a feminist perspective to gain the depth of information that reveals complexity of work, details of context, and everyday understanding of technology and skills. These analytical tools traced in this literature

review, then, are an important organizing principle in the design of group interviews with information workers and the study of action research. This is done in order to bring to the surface technological changes as social processes in which women can and do participate, albeit under conditions that severely limit their possibilities.

The persistent linking of skill to machinery, and the use of deskilling thesis to explain the impact of technological changes requires further investigation to address these issues more thoroughly from a feminist perspective. In my thesis research, the concept of skill is used as a means to engage women in group interviews in a discussion of technologies in their work lives. It also provides a way to determine how some women understand skill and how they perceive their employer's understanding of skill. Women's descriptions of both skilling and deskilling indicate that technological changes are not only enabling and limiting, but also can be both at the same time. The particular ways that skill is described by these information workers points to a complex understanding of skill that expands our understanding of changing technologies and women's work lives.

In critiques of Braverman, recent labour process studies, and in feminist literature, the notion of contradiction as an everyday experience that may add to

analyses of technology and work is reiterated (Armstrong and Armstrong 1990; DeBresson 1987b; Elger 1982; Lee 1982). Marx points to this meaning of what has been termed internal contradiction when he describes free wage labour as being simultaneously free and not free. Such contradictions too can be the basis for resistance. It is this type of contradiction found at the level of everyday experience, the irreconcilable events or experiences that people struggle to resolve in their daily lives, that can also be the basis for action, either individually or collectively. Exploring how such contradictions are experienced and the ways in which they are addressed is an important means of revealing both whether women are able to act on their own behalf, and how context limits the extent to which women workers are able to act.

The feminist literature also points to limitations that women experience when they attempt to resist technological changes at work. Investigating in addition to action as forms of collective actions, I also explore the notion of actions taken by and for women that expand the meaning of resistance. This particular approach addresses coping strategies and individual resistance, as well as formal collective action as part of union strategies. It also allows me to address questions about whether and how women participate and shape technological changes, in terms of

action taking by and for women. Here I focus on the study of action research projects from feminist and union perspectives.

## ENDNOTES

1. Marx also argues that machinery or technology is a means to increase surplus value and contribute to accumulation of capital by reducing costs of labour power. This cost reduction is understood in terms of both absolute surplus value from prolonged working days, as well as relative surplus value from curtailment of necessary labour time (1987[1887]:299).

According to Marx, labour power is variable capital that can produce surplus value and contribute to reproduction of capital. In contrast, machinery is constant capital that loses exchange value through non-use and does not produce surplus value. By using machinery as a means to replace labour power, capitalists also replaced variable capital with constant capital:

Now, however much the use of machinery may increase the surplus-value at the expense of the necessary labour by heightening the productiveness of labour, it is clear that it attains this result, only by diminishing the number of workmen employed by a given amount of capital. It converts what was formerly variable capital, invested in labour-power, into machinery which, being constant capital, does not produce surplus-value (Marx 1987[1887]:383).

Since machinery does not produce surplus value, continued production of surplus value means that some workers must continue to be employed:

[T]he application of machinery to the production of surplus-value implies a contradiction which is immanent in it, since of the two factors of the surplus-value created by a given amount of capital, one, the rate of surplus value, cannot be increased, except by diminishing the other, the number of workmen (Marx 1987[1887]:384).

Marx's analysis brings to light a dilemma for capitalists who have power to use technology as a means to reduce labour power and increase surplus value, yet



this strategy has economic limitations. On the one hand, changes in machinery or technologies are a means by which capital can increase surplus value by reducing labour power, yet on the other hand this strategy replaces variable capital with constant capital and limits capital accumulation. To resolve this dilemma, capital must juggle technological changes and reduction of workers.

**CHAPTER THREE**  
**METHODOLOGY: A FEMINIST QUALITATIVE MULTIMETHOD STUDY OF**  
**INFORMATION WORKERS AND ACTION RESEARCH**

**A. INTRODUCTION**

Armstrong and Armstrong emphasize that: "Feminist theorists have been committed to change and have been clear about the need to connect theory and strategy. Theory simultaneously grows out of and guides efforts to alter structures" (1990:16). In many socialist feminist studies of women and work explicit connections are made between theory, method and action taken by and for women workers (Armstrong 1984; Mies 1989[1983]; Smith 1987). Links between theory, method and action, however, are not always as visible in studies of technological changes and the work women do. A useful way to address this is through an examination of the particular contexts in which women work, the different strategies used for change, and the theories and methods used for action research.

In this thesis, I employ a qualitative multimethod approach to study aspects of changing technologies and women's work lives. The research methods are primarily guided by feminist social theory, particularly of women and

work. I select particular qualitative social research methods that allow me to encourage women to share their experiences in a non-exploitative context. I acknowledge women as knowers and respect their understanding of their lives. In the data analysis, I consciously include many quotes from participants in group and individual interviews to maintain women's voices and lived experiences. In the analysis, links between theory and methodology are maintained and explicit, and explanations of the multimethod study are informed by feminist social theory. It is this I understand as a central feature in a feminist perspective.

In this chapter, the design and implementation of the qualitative multimethod study (also referred to as the multimethod study) are discussed reflexively. Links between theory and method are thought through in relation to studying changing technologies and women's work lives at home and in the labour market. The multimethod study is described in terms of the rationale for the project design as a whole, followed by details of separate parts of the study. Description of the small group interviews with information workers places emphasis on selection of participants, the dynamics of the interview process, and includes reflections from my position as interviewer and moderator. Description of the study of action research projects from feminist and union perspectives places

emphasis on selection of projects and approach to documentary analysis. Description of the interviews with action researchers emphasizes a means to help trace actions taken by and for women workers around technological change issues, and to help explore how action research serves as a means to link theory, method and practice. Description of analysis of qualitative data from the multimethod study, focuses on ways that themes and quotes were organized and selected from group and individual interviews, to gain a more complete understanding of changing technologies and women's work lives.

My discussion of the research process in this chapter is part of a feminist perspective to methods. I include an active reflection of my position as researcher and reveal my commitment to social change. I expose parts of my conceptual baggage: "thoughts and ideas about the research question at the beginning and throughout the research process" (Kirby and McKenna 1989:32), and some subjective elements of the study. I attempt to capture an element of discovery that is not only a part of multimethod research, but also a part of my experience when studying changing technologies as social processes in women's work lives. As Reinharz points out: "Multimethod feminist research tends to be written in a way that reveals the 'process of discovery'. Initial discoveries energize the researcher to continue on her quest"

(1992:211).

## **B. LINKS BETWEEN THEORY AND METHODOLOGY**

The qualitative multimethod study for this thesis is informed by the critical review of literature on technology and work in chapter 2, in which I argue that several criteria need to be taken into account in order to conceptualize technologies as interactive social processes, and to include women workers as potentially active participants in technological changes. I argue that technologies are part of social processes and relations, and it is important to look for ways that people influence, shape and structure them. Studies informed by feminist and labour process theory suggest that technologies be conceptualized as gendered social relations and often serve as a means by which the sexual division of labour is reinforced rather than blurred. The impact of technologies are often contradictory; however, experienced as both skilling and deskilling, empowering and limiting. As Marx suggests, it is these very contradictory experiences that form the basis for change.

Theoretical and methodological issues are taken into account in a multimethod approach to research on women and work for this thesis research. Group interviews with information workers were designed to encourage women to talk

about changing technologies at the level of their everyday lives in and out of the household. Group interviews with information workers (Appendix I) revealed the everyday experiences of women workers, their understanding of changing technologies in their work lives, and contradictions they experienced at a personal level. This information, however, must be understood not only within a specifically Canadian context, but also within a context of a declining economy and neo-conservative agenda of the Toronto region of Ontario in the 1990s.

Documentary analysis of action research projects from feminist and union perspectives (Appendix XII) offered several different kinds of evidence. Action research projects that were selected for study focused on microelectronics technologies and information workers in specific Canadian contexts in the 1980s and 1990s. The very existence of these projects suggested both that workers thought they could influence the impact of technologies, and that they could have some impact on the technologies. These documents offered details about technological change issues from the perspective of workers. They also offered descriptions of actions taken by and for workers at workplaces, union locals and within the labour movement. Interviews with action researchers who were involved with these projects (Appendix III) contributed theoretical and

methodological insights about action research as a consciousness raising process for participants, providing yet another indication of how women influence technologies. The action researchers interviewed described the projects they were involved with as a political process that made contributions to workers and the labour movement.

For this thesis research, technologies are studied as gendered social relations that reinforce the sexual division of labour in the workplace and in the home. In my research, emphasis was placed on changes in microelectronics technologies that have had a dramatic effect on women information workers in particular over the past 15-20 years. The influence of these technologies, however, does not stop at the shop floor or the office door. Interviews with information workers, therefore, address issues of participants' experiences and understanding of technological changes in their paid work, domestic labour and community activities.

The information workers who were the focus of group interviews were working class women in metropolitan Toronto, Ontario, in the 1990s. They were in waged work, with limited decision-making power and little or no authority over others in their paid work. Working class women were also the focus of many of the actions by and for women workers studied in action research projects from feminist and union

perspectives. Most of these projects involved unionized information workers, in a Canadian context of Canada in the 1980s and 1990s, particularly Ontario. The information workers studied in the group interviews and the action research projects had all experienced technological changes, particularly in computerization, that occurred since the 1970s in Canada.

The multimethod approach results in material that is concealed by one method being revealed by another method. The use of qualitative methods is a conscious strategy to expose contradictions in information workers' daily lives, because this approach goes beyond a more accessible quantitative analysis that Armstrong and Armstrong argue: "can only measure linear or partial relationships" (1990:136). The rich details that are shared by participants in small group interviews was an opportunity for women workers to describe in their words the contradictions they experienced working on a daily basis. In order to further explore the objective of searching for evidence of technological change as a social process, participants in the small group interviews were encouraged to describe the ways that they individually coped and collectively took action to respond to the changes in work organization that they experienced during changes in microelectronic technologies in their workplaces.



To investigate actions taken by and for women workers, the study involved an analysis of selected action research projects on technology and work, ones from a feminist and union perspective that specifically addressed workers' experiences. Particular action research projects (Appendix XII) were chosen for study that were part of two Canadian state funded programs, the Technology Impact Research Fund (TIRF) in the 1980s in Canada, and the Technology Adjustment Research Programme (TARP) in the 1990s in Ontario. The TIRF and TARP programs were both opportunities for significant funds to be allocated to action research projects that specifically addressed workers' concerns about technological changes they experienced in their work. Ones conducted from feminist and union perspectives were of particular relevance to my thesis research. Project documents that were selected for study from these funding initiatives were chosen because they were conducted by women's groups or unions, and as such represent written examples of action research by and for women workers on technological change and women's work issues. Many of the action research projects studied, that take the perspective of workers, are an attempt to determine the contradictions that workers experience, and then develop strategies to partially resolve these contradictions in ways that potentially benefit workers. These action research projects are, then, themselves evidence of women's attempts

to shape technologies, as well as sources of information on such attempts.

Group interviews with information workers can reveal everyday experiences of women workers, their understanding of changing technologies in their work lives, and contradictions they experience at a personal level. Individual interviews with feminist and union action researchers can highlight changing technologies as processes in which people can and do participate as part of social change, and can reveal ways that research from the perspective of workers can be linked to actions taken to benefit workers. Documentary analysis of state-funded action research projects in Canada makes visible some actions taken by and for women to partially resolve contradictions they experience around technological changes and work. They can also point to the political action around changing technologies and women's work lives, another indication of attempts to shape these processes. The data from this type of study is rich in detail and draws from several kinds of data to reveal complex patterns and expose the contradictory nature of changing technologies in women's work lives.

The range of methods that were part of the multimethod study also allowed for triangulation of data, "the act of bringing more than one source of data to bear on a single point" (Marshall and Rossman 1989:146), which permits

explanations that link and overlap different kinds of data. Reinharz points out that: "multiple methods work to enhance understanding both by adding layers of information and by using one type of data to validate or refine another" (1992:201).

### **C. RATIONALE FOR MULTIMETHOD STUDY**

It is a practical challenge to design a study that draws out women's experiences and understanding of changing technologies in their work lives, takes the perspective of workers, and makes women's agency an entry point for investigation. In order to cover these criteria, I designed a qualitative multimethod study from a feminist perspective.

In my initial review of academic literature on technology and work, particularly about women information workers, I did not find satisfactory research models for investigating women as active participants in technological change at work. In contrast, when I reviewed studies included in feminist and union action research projects (Bird and Lee 1987; Clement and Zelachow 1987; Cohen and White 1987, 1986; Hartman 1987; O'Toole and Burns 1986; Pane 1994; Public Service Alliance of Canada 1993, 1987; Women's Skill Development Society 1986), I found they often included innovative methodologies, particularly multiple case studies. Approaches employed in these action research

projects offered detailed information on the impact of technological changes on workers, and described some actions taken by and for women workers. Also, some of these studies were based on an understanding of technological changes as contradictory experiences for workers, and suggested that these experiences of contradictions could be the basis for change. These action research projects both informed the methodological design of my thesis research, and became an integral part of the empirical study for this thesis.

Case studies of individuals, groups, and institutions are often used as an effective way to study many topics in feminist research, particularly studies of women and work. Reinharz points out the importance of this approach as a feminist method in social research: "The power of the case study to convey vividly the dimensions of a social phenomenon or individual life is power that feminist researchers want to utilize" (1992:174). Case studies often represent examples of multimethod studies that draw out information of different kinds and from different perspectives, using a combination of quantitative and qualitative forms of data collection from one work setting or several comparative sites. Case studies are a valuable methodology for studying women and work issues, especially when researchers are able to gain information from the perspective of workers and unions. Many case studies in the

Canadian women and work literature provide complex explanations that are informed by gender, class, 'race', and ethnicity (Armstrong 1988; Choiniere 1993, Gannage 1986, Luxton 1980, Reiter 1991).

Regardless of the strengths of single case studies in feminist research, to study technological changes and work it is useful to study more than one location. Case study research is usually limited to one site, and if people's actions are not visible, then such a case study can lead, quite unintentionally, to conclusions that suggest deterministic explanations. For instance, in a case study of the introduction of computers into a workplace, only the particular choices that one employer has made to use computers as a means to reorganize work may be taken into account. When analyzed in isolation, such a case study can imply that when computers are introduced into particular workplaces the technology determines the restructuring of workers' lives. Other options or actions may be hidden. An addition of an investigation into actions taken by and for workers, may indicate that at one point in time alternative ways to introduce computers in a particular workplace were set aside in favour an employer's interest in controlling workers.

One way to avoid the problem of interpretations of technological changes as simply determining work

organization, is to investigate similar technological changes in several workplaces in different contexts. In the process, it is important to take into account actions by workers who have the potential to shape or be shaped by technological changes. In this situation, not only is a comparative analysis possible of employers' use of technologies in different ways as a means to reorganize work; but also power relations between management and workers, that influence ways that new technologies are introduced, are made visible. Several case studies in different contexts, then, would be an effective way to examine changing technologies and women's work lives. Perhaps, in this way it is possible to see how context counts, and explore whether women do shape changing technologies, and if so, how and what is successful.

Multiple case studies for this type of comparative analysis, however, are an expensive and time consuming proposition. Needless to say, the political economy and time constraints of graduate studies research generally make multiple case studies financially impractical and logistically unmanageable. Yet, for this research project I wanted to take advantage of detailed data from several different contexts, similar to a project that includes multiple case studies. For instance, I wanted to collect information about unionized and non-unionized workplaces in

the public and private sector, in order to gain an understanding of the impact of changing technologies on women's work lives in several different contexts.

It was difficult to design an affordable and practical project in which data on changing technologies and women's work lives was collected from several contexts. A detailed overall picture of many work settings from multiple case studies was economically and logistically impractical. My alternative option was a series of rich impressions or glimpses of women's work lives. To meet this requirement, I designed a multimethod study that included small group interviews with information workers who had worked in several work settings in the Toronto region of Ontario, a documentary analysis of a selection of feminist and action research projects in Canada, and interviews with action researchers involved in these projects.

#### **D. SELECTION OF PARTICIPANTS FOR SMALL GROUP INTERVIEWS**

The small group interviews included information worker participants who worked in college and university educational institutions, public service offices, and unemployed women who had worked in several different workplaces, and in a range of jobs over time. While the choice of work settings studied was influenced by accessibility through the labour movement and networking,

these workplaces were also selected for particular reasons to include a variety of different contexts.

The unionized college and non-unionized university educational institutions were chosen because information workers in these settings often have a broad range of tasks, and have experienced rapid changes in microelectronics technologies in the last 15 to 20 years. The public services workplaces were chosen because of the range of work organization, the rapid changes in technologies as a response to downsizing, and a lengthy strike in 1995 had brought information workers issues to the surface. All the participants from public service departments were located in Toronto, and had been on strike during the 1995 Ontario Public Services Employees Union (OPSEU) strike in Ontario. The women's employment centre was selected for study because many of the women accessing these services at the time of this study had a broad range of work experience (temporary, part-time and full-time) in the private, not-for-profit and public sector workplaces, mostly in non-unionized jobs.

Participants were contacted through activists in groups that represent women, unionists in the labour movement, and through personal networking. For some groups, like the women's employment centre and union locals, a flyer was prepared that explained the project to encourage participation (Appendix IV). For one interview in a non-



unionized workplace, a woman was contacted who was keen to talk about her work and she contacted coworkers to form a group. In other instances, union stewards were contacted, information about the project was given to them (similar to flyer in Appendix IV), and they were asked to approach their members to encourage participation in a small group interview. Initially, union stewards were usually enthusiastic to encourage members to participate in group interviews and showed interest in my research topic. Later, some stewards expressed surprise and frustration that members were reluctant to participate due to time constraints, low morale and fear of speaking out. This pattern of enthusiastic union stewards having limited success encouraging members to participate in group interviews was repeated in several union locals that represented information workers in both public and private sector workplaces. In private sector workplaces, access to information workers who were members in union locals was more difficult than in public sector workplaces. It occurred often enough that the question of why women in organized workplaces are reluctant to participate in this type of study is a relevant research question, but beyond the scope of this study.

Intentionally, none of the participants were selected through management contacts, and employers were not informed

about workers' participation in this project. This was an attempt to avoid selection of participants by supervisors and bosses. Contact of workers through management is often the pattern of case studies of workplaces, and may inhibit workers' ability to respond freely to interview questions, particularly from sharing negative experiences of their current workplace. Avoiding selection through management for this study was also an attempt to provide a safe context for workers to share individual and collective resistance strategies, when they were relevant to the group participants. I also wanted to be able to reassure participants that information from interviews was independent of their employer's interests. This means of selection meant that workers were participating on their own time, even though they often chose to meet in their workplaces. Also, finding a time slot in which all members of a group were able to meet was often a challenge, due to participant's complicated lives and time constraints.

The contact person for an interview, who was sometimes the union steward, often selected participants for the group interview, and in some cases became a participant themselves. While I was conscious that this may limit discussion of union related issues, or lead to stewards taking a position of control in a group, the stewards who participated were respectful of others' views and showed no

obvious monitoring of participants' discussion. When a steward was a participant, they were often willing to start the group process by being the first to respond to the initial question; however, this response order never structured the rest of the group interview. I am also conscious that this may bias selection in the opposite direction from those selected by management.

In interviews with information workers in public service, college and university educational institutions, participants knew each other as coworkers and occasionally as friends. The advantage of this was that when shared experiences were discussed that several perspectives on an event may be included in the discussion. The disadvantage may be that this process meant participants who were generally compatible were more likely to agree to be in a group interview.

In groups with unemployed women, participants did not know each as coworkers or friends, and in most cases had not met each other prior to the interview. This meant that the participants sometimes asked each other for clarification of events because they were unfamiliar with another participant's work. At times, it also meant that participants recognised shared oppressive experiences in different contexts and learned from one another.

The selection of participants for small group

interviews was an attempt to avoid the bias that can occur if access to participants is made through management routes, when those selected may be complacent workers may be selected or ones who are less likely to describe coping and resistance strategies. While there is also a bias that occurs when interview participants are contacted through unions and women's groups, it is likely to be a bias in favour of revealing coping and resistance strategies that information workers take, and that are relevant to this thesis.

#### **E. DYNAMICS OF SMALL GROUP INTERVIEWS**

Many feminist studies are based on making women's lives visible, partly through crediting women's understanding of their lives from material like personal journals, oral histories and interviews, which take the everyday world as problematic (Smith 1987). For areas where women are seldom credited as knowers, such as technological changes, women's understanding of the topic from their perspective must be taken into account even though tapping this information can be a methodological challenge. Feminist research, after all, has shown that women do experience the impact of changing technologies in particular ways (Benston 1983; Cockburn and Dilic 1994; Hayden 1982; Luxton 1980); therefore, how they make sense of these experiences

necessarily informs feminist theorizing of changing technologies and women's work lives.

What is important in the design of my research is that several different social contexts are discussed by participants in small group interviews. I chose group interviews, from 2 to 6 participants, to get a range of experiences and input from women working in a variety of work settings in the metropolitan Toronto area in the 1990s (Appendix I). The group interviews were face-to-face interactions that were time limited, one-time discussions based on an interview schedule of open-ended questions (Appendix V). These are small group interviews, not to be mistaken for focus groups that have a different history. As Reinharz (1992) notes there are similarities between group interviews and focus groups because both are face-to-face interactions, time limited, one time discussions of a topic. Focus groups, however, are derived from market research public opinion methods (Morgan and Spanish 1984, Wells 1979), and are marked by a notion of manipulation for product marketing, that is not part of group interviews from a feminist perspective. The detailed qualitative data from the interviews points to similarities and differences in women's experiences and understanding of changing technologies in their work lives.

The small group interviews were not simply a means of

gaining more information from more workers in a shorter time than individual interviews. They were chosen because they offer a different quality of information from individual interviews. With small groups it was possible to encourage participants to give detailed descriptions and discussions of their lives, yet at the same time ensure that interest from the group in general is maintained while they listen to each other's experiences. Small group interviews were also chosen because discussion of technological change and social relations is difficult to address in individual interviews with women without interviewer prompts. In contrast, the group interview context left space for discussion and gave time for participants to make sense of the interview questions. This particular format facilitated the process of participants building on each other's ideas and contributed to more detailed descriptions of shared experiences. These interviews also offered an appropriate environment for workers to exchange ideas and share experiences as part of responses by the group to questions on the interview schedule.

There were also limitations to group interviews that I took into account. The open discussion that was generated by the interview questions and participants' responses meant that time for response to questions varied. At times, in a researcher/moderator role, I actively refocussed discussions

that had strayed too far from the interview questions. I remained conscious that in a group interview one participant may dominate or intimidate others, though this was not a problem in the interviews for this research, even when union stewards were included in the group. For example, order of participant response in these interviews seldom followed the same order from one question to the next; instead, group members switched the order in which they responded on their own.

Participants in the 9 group interviews included 7 unemployed women seeking services at a women's employment centre, 8 workers in college and university educational institutions, and 8 workers in public service departments (Appendix II). After 9 interviews, with a total of 23 participants, there was sufficient duplication of information that a degree of saturation of data had been reached. A snowball sampling technique was used to select information worker participants, and they represented a range of age, and ethnicity (Appendix II). They were not necessarily a representative sample of information workers in general, perhaps more of information workers who feel they can talk about their work in a group setting.

The interview format did not include specific demographic questions; instead, general information was collected. Since women participants chose to be interviewed

at or near their workplace during the day, the time frame of group interviews was limited. Therefore, my concern at the beginning of interviews was to facilitate the group process as soon as possible, and minimize diversions with completion of additional forms that covered information that participants may be reluctant to share. From observation and information shared during group interviews, however, I noted general age and ethnic diversity of participants (Appendix II). Of the 23 participants in group interviews, 14 were white women, 8 were women of colour, and there was one man of colour<sup>1</sup>. From participants' reference to years of paid work, job seniority, and time spent parenting, as well as physical cues, I concluded that most of the participants were at least 30 years old, and some were in their late forties and early 50s. The demographic information about the group contributes to an understanding of the context of the interview participants and confirms that a diverse group of information workers were interviewed. This study, however, is **not** about an analysis of effects of sex, age and ethnic diversity on technological changes and work, nor is it intended as survey or sample research. Instead, the context in which group interview participants worked, such as type of workplace and whether workers were organized, structured the design of the small group interviews. The purpose was to find out what these workers see, as a way into analysis of



technological change as a social process.

Even though groups of 5 were planned and appropriate participants contacted, usually women's lives were complicated by so many constraints on their time that an average of 3 participants kept the commitment and came to each interview. Since most groups included three participants, and me as interviewer and moderator, there was lively discussion that engaged participants and diverted attention away from my role as interviewer. Nonetheless, the interview schedule was still followed.

On two occasions, when only one participant turned up for interviews at the women's employment centre, I proceeded with the session and followed the group interview schedule and format, then analyzed them with the other group interview material. An unintended consequence of this unpredictable participation rate was that I was able to compare the dynamics of these single participant interviews with the interviews of two or more participants. In the single participant interviews responses were less detailed and participants were more likely to provide confused or off-topic responses to some questions. When several participants were in a group interview more details were generated through exchanges among information workers. Also, participants became interested in other participants' responses so that less confusion occurred during group

discussions.

The 45 - 90 minute interviews were set up at the convenience of participants. When I asked women what was the best time and place for them to get together, it usually turned out to be limited to a lunch hour somewhere at or close to their work, and not after work in the comfort of someone's home or a coffee shop as I had anticipated<sup>2</sup>. Similarly, the most convenient time and place for unemployed women to meet was during the day in the group room at the women's employment centre. Since interviews were set at a time and place that suited participants' schedules, it meant that women who did turn up were usually keen to participate.

Most groups involved three women plus myself, so we usually sat in a small circle around a table. I began the interview by introducing myself and the project. Then I requested to tape the interview, and placed a microcassette on a table between us. At that point, informed consent forms (Appendix VI) were discussed and signed. This process was a chance to reinforce each participant's trust in me as an interviewer and researcher, and let participants gain clarification of the structure of the interview and the purpose of the research.

The structure of group interviews and ordering of questions (Appendix V) encouraged participants to reflect on their current experience of unemployment or paid work, as

well as earlier information work experience. Employed information workers tended to focus on their current job and related work within the same institution. Unemployed women selected jobs from their work history, so that quite different workplaces were at times discussed within the context of one group interview.

Interview questions were ordered with the intention of moving the discussion from general information about participant's work lives to a particular focus on changing technologies. The selection of questions was informed by my critical review of the academic literature, and more importantly from studying feminist and union action research projects on technological changes and work. In the action research projects, particularly those conducted for the Women's Skill Development Society (Women's Skill Development Society 1986; Cohen and White 1989, 1987, 1986), I noticed that the notion that questions about skills were a way to encourage women to talk about work organization and technological changes stood out. This observation, then, informed my choice of questions on these topics.

The interview began with general questions asking participants to take me through a work day, their activities at home and in their community, and to comment on links between their activities in different places (Appendix V). These questions were an indirect way to find out about

technological changes that participants experienced in their homes and their communities. These questions were also an attempt to reveal coping strategies and actions in which information workers participated, which were discussed more directly later in the interviews. Responses to these questions included rich details of day-to-day activities and insights about participants specific work setting. It also established a background or context for subsequent responses about their understanding of skills, experience of technologies, and coping strategies. Participants were encouraged to answer in whatever order they chose, and I checked that all participants had a chance to talk as much as they wanted.

The general questions often took as long as 15 minutes because participants were encouraged to talk about their lives in a way that made the most sense to them, so their stories and anecdotes were an important part of the process. This section of group interviews was also a way to let participants relax, because they became interested in hearing about each other's lives and sometimes offered each other feedback. While I concentrated on maintaining eye contact to reinforce an interest in what was being said, the centre of attention shifted away from me as interviewer to the interaction among group participants. I did not take notes in group interviews because I wanted my active

interest in participant's input to be tangible and visible. After most interviews I wrote or recorded my reflections on the interview process, which included general observations and insights to improve methodology and contribute to data analysis.

Each group interview started with participants describing their average day's work and their activities at home and in their community, and shifted to a discussion of their understanding of skill and information work, technological changes they had experienced, and individual or collective action in which they had participated. Participants had already talked at length about their work before describing themselves in terms of skilled workers and their experiences with changes in technologies in the work they do.

At the end of the interview schedule I included some questions that asked participants to imagine themselves as decision makers (Appendix V, questions 21-22). Normally these types of questions required either enough time for some reflection before response, or a return for a second meeting with the group. Due to time limitations of single sessions of approximately one hour for most interviews, these questions were not always asked and usually elicited brief incomplete answers from participants. For information workers to imagine themselves as decision makers, after many

of them had spent most of the hour long interview describing how little decision making input they were able to gain, was a difficult switch for them to make without time for reflection. These questions, in fact, require enough reflection from participants that they would be more appropriate for a separate study.

It was a conscious methodological approach to direct conversation in group interviews from a broad discussion of participants' work lives to more specific attention to their understanding of skills, technological changes at work, and themselves as potential agents of change. This strategy let participants become comfortable discussing their own work in their own words before an academic, because their comments generated interest from other participants, and they realised there was no correct answer to the interview questions. A degree of mutual trust developed because a group process was encouraged; therefore, participants more readily shared their experiences and ideas about topics like changing technologies, coping strategies, and even their response to strike actions.

Talking about technological changes does not always generate enthusiasm among women. In a group setting, however, when participants shared their experiences and views about technologies it encouraged others to join the discussion. Group dynamics among participants as they

exchanged ideas and experiences usually sparked examples from others as part of the process. While most participants in interviews had gained insights about skills, changing technologies and work organization, several indicated that they seldom had a chance to voice their views, or to think through these issues with coworkers.

When only one participant turned up for a group interview (Appendix I, IW-GP-5 and IW-GP-6), the dynamics of the interview were strikingly different. Without the group interaction, single participant interviews seemed to generate less detailed responses. Also, questions about skilled workers and technological changes generated confused or off-topic responses. In the group setting, when confusion occurred other participants usually clarified the point so that I seldom needed to intervene as the 'knower'.

At the end of each interview, I thanked participants for their time and for sharing their ideas with me. As a gesture of respect, I gave each participant a letter of thanks so they had a document that explained the project, the confidentiality of the information, and encouraged them to contact me if they had any questions or wanted a summary of the project when it was finished (Appendix VII).

Usually, in group interviews my role was more as a moderator of a focused conversation, rather than as an interviewer anxious to get every question answered in an

allotted time. This approach was a conscious letting go of some control of the interview, so that the group dynamics became an important part of the process. What I would describe as my feminist approach to interviewing was to follow the same practice that Ann Oakley points to, by answering "All personal questions and questions about the research as fully as required" (1981:47). Usually this meant I made brief interventions and then the talk returned to the information workers. Occasionally, at the end of an interview I responded to personal questions that the group asked. For instance, participants were often curious to find out more about my background and why questions were asked in a particular way, or even how I might respond to my own interview questions. At this point, I expressed my own views in a way that reflected Fontana and Frey's observation: "Interviewers can show their human side and answer questions and express feelings" (1994:370).

The most difficult part of conducting group interviews with information workers was simply gaining access to women workers who might be interested in participating. Literally getting women to an interview was a difficult task. Part of my methodology was to consciously avoid gaining access to women through management contacts. Instead, I made connections through the labour movement, groups that represent women as workers, and personal networking.



Approaching workers via management contacts is frequently used in case studies, and usually includes access to personnel documents such as job descriptions, position postings and personnel policies which can complement interview data. Access to workers through management may also mean that interview participants are given paid time to participate in the research during the work day, so that time restrictions on interviews is less problematic. Nonetheless, in my view there are serious drawbacks to gaining access to workers through management contacts. For instance, supervisors or bosses usually select interviewees rather than voluntary participation. Also, as an interviewer/moderator of group interviews it is difficult to gain participants' trust if I may be perceived as a researcher for management. To gain rich qualitative information about women's work lives, I wanted interview participants to perceive me as supportive of women workers and interested in what they said, without fear of feedback to their supervisors or bosses; therefore, I contacted interview participants through the labour movement and personal networking.

#### **F. SELECTION OF ACTION RESEARCH PROJECTS**

Part of the multimethod study focused on action research projects in the 1980s and 1990s that were carried

out from a feminist and union perspective. These projects offer theoretical and methodological insights about actions taken by and for women workers. Action research projects that were studied, using documentary analysis and interviews with action researchers, represented a variety of different workplaces where women worked, and primarily focused on the impact of technological changes from the perspective of women workers. All the action research projects that were chosen for more detailed examination were conducted from a feminist or union perspective, either by women's groups or within the labour movement. Often these studies were also based on an understanding of technological changes as contradictory and ensured that social relations of work remained visible. In this section I define action research, and provide a brief background to the TIRF and TARP funded projects.

Most of the action research projects studied that were part of the Technology Impact Research Fund (TIRF) focused on information work in unionized and non-unionized public and private sector workplaces. Some selected action research projects that were part of the Technology Adjustment Research Programme (TARP) focused on manufacturing and printing occupations. These projects were chosen because the action research projects, and action researchers themselves, offered important insights into action research as a

political process to mobilize workers and to address changing technologies and people's work lives. This particular research design allowed me to link theory and method in a multimethod study, and gain information from a range of different contexts.

Action research is described by Shulamit Reinharz in this way: "these projects attempt directly to change people's behaviour while gathering data in traditional and innovative ways. They intervene and study in a continuous series of feedback loops" (1992:181). Marcy Cohen's description of the goal of Women's Skills Development Society projects points to a critical element of action research: "The goal, because we were a community-based organization, was not to do research for the sake of research, but to do research to change and to educate" (AR-Marcy Cohen)<sup>3</sup>. The connections between theory and action are apparent in action research projects in the ways that feminist activists, unionists and academics usually work collaboratively to rethink theory, and link empirical studies with strategies for action.

In the context of my research I also refer to feminist and union action research<sup>4</sup>. Although these projects come in a variety of forms and approaches, they do have two things in common. Feminist action research projects specifically address what are defined as the needs of women workers, and

are often carried out by women's groups. Union action research projects primarily address issues for union members, usually include women workers, and are often carried out within a union. I do not draw distinct lines between feminist and union action research because there is some overlap in perspectives; therefore, some of the union action research I studied could also be grouped with feminist action research.

Projects in this study were part of two Canadian state funded programs, the Technological Impact Research Fund (TIRF) in the 1980s and the Technological Adjustment Research Programme (TARP) in the 1990s. While details of TIRF and TARP programs varied, both were based on a rare funding requirement to take the perspective of workers to gain an understanding the impact of technological changes on the labour process. State funded research on technology often overtly supports a management view of technology as inevitable progress that is beneficial (Schenk and Anderson 1995). Both the TIRF and TARP programs were short lived funding opportunities for conducting action research from the perspective of workers and the labour movement.

In 1984, the Technological Impact Research Fund (TIRF) project was approved by the federal Liberals as a pilot project across Canada. Priorities for funding support were labour organizations and other interest groups or

individuals directly affected by technological changes (Labour Canada 1989). In the mid 1980s, technological change and women's work were on the feminist agenda, and several women's groups and unions were successful in gaining TIRF funds for action research on women, work and technology issues. In the first three years of the program 48 projects were funded and 81% went to labour organizations, with 14 including women workers (Labour Canada 1985). An evaluation of the program by Labour Canada (1985) noted that labour, women's groups and government departments viewed TIRF as a unique program, and as part of ways to shape technologies. Nonetheless, in 1985, the federal Conservative government replaced TIRF. They introduced a new Technology Impact Program, in which funding support shifted from labour organizations and groups representing workers, to joint labour management projects that often obscured workers' interests (Labour Canada 1985).

In 1990 the Technology Adjustment Research Programme (TARP) was established in Ontario, and it continued until 1995. TARP was envisioned by the first Premier's Council in Ontario in the late 1980s and finally established in 1990. The program was funded by the Ontario government and administered by the Ontario Federation of Labour (OFL), as specifically union coordinated action research.

In August 1995, the TARP funds for the OFL, that had

been confirmed for another 5 years by the New Democratic Party, were cancelled completely as one of many early funding cuts when the Conservatives gained power in Ontario. TARP was planned as a continuing project and contracts that were signed by the NDP were not honoured by the Conservatives. While the funds lasted, many action research projects were carried out on trades and manufacturing work in male-dominated private sector unions, which led to some criticism from women unionists and feminist academics. Also, a few projects specifically focused on the work women do.

#### **G. STUDY OF ACTION RESEARCH**

The analysis of selected action research projects was based on documents that trace the development of the TIRF and TARP program and particular projects to place the action research in an historical and social context of Canada, particularly Toronto, in the 1980s and 1990s. These topics were contextualized by reviewing relevant political and economic documents.

Action research projects selected for this study focused on the impact of technological changes from the perspective of women workers (Appendix XII). They included a range of strategies to ensure input into worker education, policy implementation, and contract negotiations related to technological change. Analysis of project documents provided

methodological information, empirical findings, and descriptions of actions taken by and for women workers on technological change issues.

Questions about political goals of studies, long term consequences of projects, personal experiences of conducting action research, and links between social research and political action were not readily answered from project reports and available documents. These questions were addressed in semi-structured interviews with 12 action researchers who were directly connected to the projects included in the documentary analysis study. Action researchers were selected for interview based on their involvement in action research projects that specifically addressed women and work. As well, I interviewed OFL coordinators actively involved with the development and implementation of TARP. Most of the action researchers included in the study are still active feminists and unionists.

The interviewees included six action researchers who were involved with TIRF funded action research projects in the 1980s, and six action researchers who were involved with the TARP projects in the 1990s (Appendix III). All interviewees agreed to have their name connected with the projects they worked on. Instead of an informed consent form, a verbal agreement to the conditions of the interview

was discussed before each interview. In all instances, I discussed my interest in taping interviews during the initial contact phonecall when an interview time was arranged. When the prearranged face-to-face or telephone interview was conducted, I again verbally requested consent to record the interview for research purposes, and only turned on the tape recorder after consent was granted. At the end of the interview a letter of thanks (Appendix IX) was either handed or mailed to participants. This letter explained the project, reassured participants I would use discretion when citing interview material, and encouraged them to contact me if they had further questions.

The interviews were either face-to-face or telephone interviews using an informal semi-structured format, and were an average of 3/4 to 1 hour in length. Face-to-face interviews were taped using a microcassette, and telephone interviews were taped on an answering machine. I was familiar with the official documents from the TIRF and TARP projects in which interviewees had participated; therefore, interview questions focused on other aspects of action researchers' projects. This included the way that projects were structured, explicit and implicit political goals or action research, short and long term success of actions gained, and personal experiences of action researchers (Appendix VIII).



Interviewees were encouraged to go beyond analysis of the projects in which they were involved and place their work in a political context that was meaningful to them. These interviews with action researchers were easy to conduct for several reasons. The participants were enthusiastic about the action research projects they had participated in, willing to share their insights into the politics of technological changes and work organization, and recognised that I shared their interest in action research as a means to link social research to political action.

The aim of this part of the research was to gain insights into feminist and union action research from the experiences of those directly involved with these projects. Also, most of the action researchers interviewed have remained politically active within the women's movement and the labour movement; therefore, these interviews were an opportunity to gain an understanding of how technological change and women's work lives are addressed in a broader political and social context. This was another indication that these women believe they can shape technology.

#### **H. ANALYSIS OF GROUP AND INDIVIDUAL INTERVIEWS**

Material from both group interviews and individual interviews was processed similarly. Transcripts in the form of computer files were produced from recorded interviews,

and themes were identified so that quotes could be selected for analysis. In this section I provide details of the processing of group and individual interviews to reveal the analysis of interview material as a process that employs inductive and deductive strategies that are characteristic of qualitative studies.

Information worker group interviews were listened to and copied after each interview. At times this reflexive process altered the next interview, in terms of the way a particular question was phrased, the order of the questions, and the way I responded as interviewer and moderator. Once all the interviews had been completed, full transcriptions were prepared for analysis.

The process of transcribing group interviews into computer files was more difficult than individual interviews. First, there are multiple voices that must be traced, and the integrity of the threads of participants' stories must be maintained. Second, reviewing group dynamics in an interview process is an important consideration to draw out the rich information that has been recorded. To be sure that these two elements of group interviews were captured, I carefully prepared the group interview transcripts myself to become very familiar with both content and group dynamics of each interview. This process of becoming absorbed in my data was time consuming, but an

important way for me to process group interview information.

Since group interviews were semi-structured, the transcripts were analyzed initially to draw out all relevant themes from the material through an inductive process. A short list of themes for group interviews in general (Appendix X) was developed by analyzing the longer list of themes that had been generated from reviewing each group interview independently. Transcripts were then carefully reviewed to select detailed and insightful quotes according to the list of themes (Appendix X). The quotes selection process involved marking appropriate text of transcript computer files, then copying marked text to quotes computer files. This process meant that approximately 33% of interview transcript material was sorted into quotes computer files, where further analysis and quotes selection for inclusion in this dissertation occurred. Pseudonyms were assigned to participants (Appendix II), so that all quotes were identified according to interview number and participant (e.g. IW2-GAIL refers to Gail who was a participant in group interview #2). These quotes formed the basis of group interview data for subsequent analysis and explanation of the multimethod study.

After each face-to-face or telephone interview with action researchers, tapes were listened to and copied. After all interviews were completed full computer transcripts were

prepared for analysis. Action researcher interview transcripts were prepared through a transcription service. While the interview questions structured the information that interviewees shared, in a semi-structured interview the responses also expand into areas that are of specific interest to the interviewee. To ensure that all topics of interest were captured in the interview analysis, the transcripts were carefully reviewed and a list of themes produced from each interview. Analysis of interviews was done manually rather than by using a computer software program. Not only was this manual process practical because there were only 12 interviews to analyze, but also it meant that rich detail from responses to open ended questions were maintained. Themes from each separate interview were then compared to develop a list of general themes (Appendix XI) that formed the basis for selection of quotes from the interview material using a similar process to that described above for group interview data. Then, each interview was again carefully analyzed and quotes sorted according to the list of themes (Appendix XI) that had been developed for analysis. All quotes were identified according to a general notation AR to indicate action researcher interview material, and the name of the interviewee (e.g. AR-Marcy Cohen). Further analysis of selected quotes provided the basis for interpretation of the action researchers'

interview data for the multimethod study.

## **I. CONCLUSION**

A multimethod approach provides a basis for analysis using triangulation of data, a process that Marshall and Rossman describe as "the act of bringing more than one source of data to bear on a single point" (1989:146). Different methods employed on the same topic reveal different layers of information; therefore, data obtained from one method can inform the interpretation of another. This means of triangulation of data from a multimethod study, with one set of data brought to bear on another set of data, provides the basis for a methodological critique because it is possible to draw out strengths and weaknesses of different approaches for studying, in this case, changing technologies and women's work lives.

## **ENDNOTES**

1. One group interview with information workers in a college educational institution included a man of colour, pseudonym Ivan, selected for the group by a union steward who set up the group. While Ivan's responses were generally similar to the women information workers in similar work settings, when there were relevant gender differences they were noted in the analysis of interview data.
2. In an interview with Pat McDermott about action research with office workers for OPSEU (McDermott 1987), she noted that: "I never really interviewed

anyone ever in the workplace, we always went out to lunch because they wouldn't talk, and my best interviewing started to be in people's homes. They had to move off the site, away from the building" (AR-Pat McDermott).

3. Quotes from action researcher interviews that were part of the thesis research are cited as: (AR-Name of Interviewee).
4. I began to add a qualifier to action research when I realised that the term is now being used to describe management driven projects that are more likely to reinforce the status quo than have any goal of social change (Weiskoff and Laske 1996; Zuber-Skerritt 1996).

**CHAPTER FOUR**  
**WOMEN'S SKILLS: INFORMATION WORKERS'**  
**PERSPECTIVES ON THEIR WORK LIVES**

**A. INTRODUCTION**

Skill, "as both social construction and objective phenomenon" (Choiniere 1993:73), is a gendered concept that describes particular knowledge and expertise that is both valued and ignored by employers, unions and even workers themselves. The ways that women's skills are understood by women workers, and misunderstood by unions and employers, therefore, may reveal more than they hide. The issue of when and in what contexts does technological change lead to deskilling described by Braverman (1974), as opposed to a combination of skilling and deskilling described by recent labour process and feminist studies (Armstrong and Armstrong 1990; Crompton and Reid 1982; Penn and Scattergood 1985; Webster 1993) is in need of more elaboration. The complexity of women's work lives and the importance of listening to what women workers say about their work is highlighted by a participant in a group interview in this multimethod study:

Well, I'm always taken when people talk about their jobs and you start listing what you do. There's an enormous amount of work that no one ever understands (IW7-JUDY)<sup>1</sup>.

In this chapter, a critique of literature on the concepts of skill and skilled work provides a theoretical grounding for the group information data. Then, material from group interviews in particular is organized from general descriptions of an average day of work for information workers, to more specific information about the meaning of skills and skilled work, and women's contradictory experiences when seeking work, to acknowledgement and disrespect that participants received from significant others. Often experiences that information workers in this study shared also highlighted the contradictory nature of information work. At times, the dialogue that emerged amongst participants also provided clues to ways women workers took action, individually or collectively, to partially resolve contradictions they experienced in their work lives.

In this chapter, I draw on a feminist research conducted for this thesis to gain an understanding of how women's skills are related to and transformed by information work. As well, I look at how information workers use their skills to act to shape technology and the limits on these acts. Since I take a feminist perspective for this research, I assume that the best knowers are those who did the work; therefore, descriptions from participants in group interviews are the substantive material for this analysis.



My aim was to listen to how information workers made sense of work they did for pay, at home and in their communities, how they interpreted technological interactions in their lives, and what links they made between skills and technologies in their work lives. A key element of my analysis is to take Choiniere's methodological concern seriously and pick up "contradictions apparent only to those actually performing the work" (1993:61). The rich qualitative information from group interviews exposes some contradictions experienced by women information workers in this study, and some actions they take. In group interviews, the contradictions that women experience are brought to the surface, though how they partially resolve these contradictions is not always talked about or even understood. In particular, women experience as skilled work that which their employers define as unskilled, although certainly some aspects of the work they see as requiring fewer or different skills than before. If women workers can articulate the contradictions that they experience then they probably attempt to partially resolve them. It is this point of entry that leads me to then add to this analysis the information from action research that often takes these same contradictory experiences as the place from which resistance and change may be generated.

## **B. PERSPECTIVES ON SKILL**

Beechey describes one perspective of the concept of skill as "complex competencies which are developed with a particular set of social relations of production and are objective competencies" (1982:63), while another perspective on skill refers to "control over the labour process" (1982:63). While these perspectives point to objective components, they also include the notion that skill is a social construction that Armstrong and Armstrong emphasize: "varies with the sex of the workers, the power of the workers, the time, the place and the economic conditions, indicating that skill is not merely some objectively determined set of characteristics" (1990:61). The problem of the concept of skilled work from many feminist perspectives is that it is a concept used in workplaces to describe some male-dominated work as skilled, based largely on political and economic considerations within the workplace. As a result, much of the work dominated by women and people of colour is described by sociologists and economists as unskilled, or perhaps semi-skilled.

Beechey emphasizes the importance of the meaning of skill: "if one is interested in the reasons why particular categories of labour (for example, female labour, black labour, migrant labour) have generally been excluded from skilled occupations" (1982:64). I argue that skill and

skilled work do have meaning to women workers in female dominated work, but women are seldom asked what these concepts mean to them and the work is often defined by others as unskilled. This point was highlighted by Gail, a group interview participant who was an information worker in a unionized community college:

My temptation often is to say 'Do you want to sit in my desk for 24 hours. Do you wanna know what it's like to be on the line of fire and really know what working is all about.' The temptation is always there to say 'Do you have the slightest idea what I do?' And the answer would be 'No' (IW2-GAIL).

Gail experienced the contradiction directly. What she saw as skilled was at the same time defined as unskilled by others.

Braverman explains the way changes in machinery and technologies are a means for capitalists to transform workers' skills, in terms of knowledge and expertise, in a variety of ways. Marx's (1987[1887]) analysis of machinery in capitalism traces the shift of control of craft knowledge away from workers to capitalists, as part of the process of mechanization in industrial capitalism. Braverman (1974) and other labour process theorists documented a further shift in technical and trade knowledge to the control of managers. This occurred by continual encoding of workers' skills and knowledge into machinery and technologies as part of automation and computerization. This literature is often based on information that is from the perspective of

workers, but generally only male workers. Men's power in craft guilds and trade unions usually legitimates them as experts on work, and their understanding of skill is usually acknowledged and used as the basis for analysis (Cockburn 1985).

Debates in sociology of work literature often centres on the notion of skill as a measure of objective job requirements, and "recent studies have attempted to capture the complexity of skills using multiple measures" (Krahn and Lowe 1993:270). Worker's skills are then quantified based on criteria like formal education, technical knowledge and years of work experience, that are essentially agreed upon by management and unions. This approach is problematic because the process of quantification of skill is based on men's work as the norm and standard of skills for all work. With male-dominated work as the norm there is an emphasis on machinery and tools, and the type of education and training formally recognized in trades and industrial manufacturing work. In many sociology of work studies that quantify skill, the notion that skill is socially constructed, particularly based on class, gender and ethnicity, is seldom taken into account.

Women and work theorists (Armstrong and Armstrong 1990; Beechey 1982; Gaskell 1987; Walby 1990) have argued that many aspects of women's work, like caregiving and clerical

jobs, remain hidden when measured against men's work as the norm. Part of the problem with a concept of skill to describe work women do is that machinery and tools of tradespersons and process operators are difficult to compare with those of, for instance, caregivers and information workers. Since the notion of skilled work is most frequently linked to formal training that is often part of men's work but less obvious in women's paid work, the work women do is seldom categorized as skilled. In female-dominated work, quantifiable formal training is often limited in many jobs. Instead, in female-dominated work there frequently is a pattern of informal self-learning and brief on-the-job training from coworkers which is not readily quantified. This complicates the deskilling/skilling debate that is central to technological change. When women do the work, it is often by virtue of female domination defined as unskilled; thus what they do for pay is undervalued and unrecognized.

In a Canadian context, the question of whether skill does describe work that women do became part of a political struggle in negotiations over the Ontario Pay Equity Legislation in the 1980s. The implementation of pay equity in Ontario involved the controversial requirement of measuring women's work based on skill, effort, responsibility and working conditions, usually in the form

of a 'gender-neutral' job evaluation system. In this process, skill generally included a combination of experience on the job, and education and training required for the job (Ontario Pay Equity Commission 1988:25). In practice, gender-neutral job evaluation brought to light how women's skills are experienced as contradictory in the sense of work experienced as skilled was defined as unskilled. This is not necessarily contradictory in the Marxist sense because it is not simultaneously skilled and unskilled - although there is a contradiction between how the work is experienced and how it is defined and valued.

Many feminists, unionists, and pay equity committees discovered women's skills that were not well understood were not easily measured using traditional job evaluation systems. Methodologically the pay equity process was based on understanding women's work from the perspective of women doing the jobs. The details of women's work became a focus of attention in many workplaces due to the pay equity process, but not 'resolved contradictions' in the Marxist sense. This feminist approach to studying the details of women's work, for instance nurses' caregiving work, meant that as part of the process, undervalued and invisible skills became visible, revalued and remunerated (Ontario Pay Equity Commission 1991).

In Jane Gaskell's analysis of clerical or information

work she admits "the skills involved in these jobs are unclear, unrecognized and learned haphazardly" (1991:150). Unfortunately, Gaskell's analysis of clerical work is based primarily on the political economy of training programs. Even in a legitimate job training program, trainers and trainees may, in fact, ignore, misrepresent or just be unaware of what clerical workers actually do for pay once they find a job. Gaskell never asks women clerical workers themselves what they do for pay and what skills they believe they have to offer employers. In my view, there may be a serious gap between what women are trained to do and what they actually need to do once they are in jobs.

The observations, reflections and insights of information workers in group interviews for this multimethod study indicated that people skills and computer skills are objective competencies in their work lives. The previous invisibility of information workers skills complicates resolving debates around more skills and less skills that occurs with technological changes they experienced. How women in this study make meaning out of these competencies is influenced by feedback from significant others in their daily interactions with coworkers, bosses, potential employers, family, and friends in the social context of their everyday work lives. Information shared by participants in these group interviews pointed to a struggle

to maintain a sense of competence based on mixed messages from significant others about what constitutes skilled work. As participants gained an understanding of the mixed messages workers received from bosses in particular, and the contradictory experiences of deskilling and skilling that they faced on a daily basis, they also gained insights into the social relations that structured skills and technological changes.

### **C. AN AVERAGE WORK DAY FOR INFORMATION WORKERS**

The design of the group interviews in the multimethod study intentionally included participants who had information work experience in different work settings. Questions in group interviews began with considerable discussion about daily routine of information work, technologies used, and activities at home and in the community (Appendix V). There were similarities in participants' general descriptions of their average work day, and many of the tasks conformed to a standard definition: "Office work involves the sorting, retrieving, filing and processing of information" (Women's Skill Development Society 1986:3). Nonetheless, this general description is missing some details that were emphasized by almost all participants in this study. Information workers in the group interviews described: a hectic daily schedule



with many overlapping tasks; multiple demands from people they prepare material for; pacifying bosses, coworkers and clients; and endless domestic labour at home. Participants also often expressed a clear idea of what a job well done meant to them.

These women who do the information work understand what they do. These women see their work as skilled at the same time as others define it as unskilled. They struggle to defend these skills, to make them visible. They are knowledgeable about the demands of the job, but less successful in getting others to recognize their skills.

Lois<sup>2</sup> described sorting and filing aspects of her work in an engineering company:

My experience in the office has been working with managing and maintaining files, order files and preparing them, and keeping the record of the job orders, and making sure they're all up to date, and checking with the people who do the work and making sure it's all recorded (IW3-LOIS).

Nora emphasized the number of people for whom she prepared materials in a non-profit agency:

So I took care of the machinery, I did the ordering, I did support for 8 or 9 people. You know support and secretarial work for 8 or 9 people, phonecalls and I had to arrange meetings, calling everybody, getting them together either face-to-face or whatever (IW4-NORA).

Zora described work for temporary agencies as: "most of my jobs are paper work, about 65% of my job is paperwork" (IW5-ZORA), and the tasks that she read from her resume included:

filing, photocopying, preparing invoices, greeting customers, processing forms, data entry and picking up products. Lois, Nora and Zora all provided details of the range of tasks they carry out at work on a regular basis.

Participants from college work settings emphasized an assumed nurturer role and overlapping of tasks. Lynn describes her work as: "working on switchboard, doing accounting things, numbers jobs and the regular clerical [work], answer the phone, and run and fight whatever fire there is. And pacify people" (IW1-LYNN). Gail, who worked at a community college, provides a vivid description of overlapping tasks:

So there's a lot of packing and lifting, a lot of front line contact with customers on the phone, a lot of interaction with other members of the department and several others involved in finding information out. From my perspective, I do a fair bit of computer work, and as I say it's a real mixture of things. I also do the inventory, ordering of office supplies and manuals, and also the inventory control. I'm the shipper receiver for the department as well for most materials that come in for all of our seminars (IW2-GAIL).

In a public service office dealing with housing legislation, Lisa highlighted customer service tasks in her work day: "generally speaking there's a lot of telephone work with clients calling in and me calling out to clients." (IW8-LISA). For Ella, who deals with complaints from tenants and landlords in another area of the same workplace, pacifying callers stood out in her mind:

My day is basically speaking to the public on the phone... And, um, I also, um, do a lot of data entry in between, on the application tracking system... Anyone who has interest in our legislation, our work, can come to us for answers and I will be the one that they will speak to... Basically that's what I do. I just sit there and take abuse from the public. Have them yell at me, and then I have to pat them. I'm more like a social worker (IW8-ELLA).

Many descriptions of an average day's work placed emphasis on overlapping of tasks and pacifying people, so that the place of computers may not be emphasized. Yet, repeatedly, workers in the group interviews described computers as ever present in their workplaces. In a public service office Ella said: "We all do everything on computers. I keep a log all day [of] incoming calls, but it's computerized. The minute we walk in we have to log on" (IW8-ELLA). In a university setting Anna pointed out that: "I'm on the computer all day, all day" (IW7-ANNA). Ruth included: "A lot of computer skills, I'd say about 80% working on the computer" (IW6-RUTH). In a university setting, participants described use of computers for word processing as well as for a communication and resource system: "I use Wordperfect, E-mail and the internet. Everyday" (IW7-JUDY). At times in this particular workplace, their work even included maintenance: "We're surrounded with equipment and we have to fix it on occasion, so we're part maintenance people" (IW7-ANNA).

For most feminists, analysis of women's work is not

confined to paid labour. I extended the notion of work beyond the paid workplace in order to see what participant's understanding of their work and technologies they used was outside the confines of paid work. This feminist approach also takes into account domestic labour and community activities as part of women's work lives. In other words, a day's work for most women is not limited to paid work because it continues as domestic labour at home and with community-based activities. In the group interviews, information workers were asked about their work at home and in their communities, and whether they saw links between their paid work, domestic labour and community activities (Appendix V, questions 2 & 3).

Several women in the group interviews described their responsibilities for domestic labour: "Make supper. Help with the kids" (IW5-ZORA); "Oh I have my two children and I also have my cat. I also do a lot of folk art or flower arranging" (IW7-ANNA).

For other women participants, their community activities were also important for personal and political reasons. Nora described how her interest in non-profit organizations related to her community activities while living in a housing cooperative:

For the last thirteen years I have been in a coop and I've been on the maintenance committee. And I've also been on the Board and in the last few years I'm on the

on-call committee... All the activities that I was doing in the community were related to non-profits and to social justice (IW4-NORA).

Lisa described a hectic schedule where the lines between paid work and community activities overlap. Also her skills at work become resources she used in her community activities when she volunteered with a choir:

Very involved with one particular semi-professional choir as business manager... So, yes I am quite busy. Paperwork at home on the dining room table in the evenings. All sorts of five minute breaks I'll take maybe twice a day and I'll do my phonecalls with regards to this function... Some of the paperwork I need to do... And I'm the one with the PC skills on this particular working committee (IW8-LISA).

Hana's participation in her church indicates a similar overlap between paid work and community activities in terms of computer skills, but also has the added dimension of caring work in community service:

Well, I'm involved in my church activities... I type on my lunchhour, come early on mornings and I type... I'm also involved in community service with the church... but it's mostly done on Saturdays and Sundays, the running and visiting and what have you... So the administrative things like typing and so on I do during the week... They always put me as secretary because I have secretarial skills (IW8-HANA).

Lisa and Hana's descriptions, that include volunteer work overlapping into their paid work time, also help explain some of the difficulty I found setting up group interviews that fit into information workers time constraints at work.

After a hectic day at paid work, participants in group interviews also described the double burden of paid work and

domestic labour. In my research, however, it was women participants who were single parents who stressed this part of their work lives. For Ella, who is a single parent whose paid work was in a public service office, her daily responsibility for young children and maintaining contact with family members filled her evenings, the caring and people skills are part of her activities within her home and community:

At the end of the day I'm stressed, I'm tired, I have to go home and see about getting dinner or whatever. Make sure my kids eat... By the time I'm finished with that, it's either to write out cheques for bills or someone is calling me on the phone. I have to chit-chat a little. I have to keep in touch with my family. I'm the only one in Toronto here. My mum is in Trinidad... watch some TV and sleep. No time to go anywhere... and sometimes I'll want to take a few quiet moments and pray (IW8-ELLA).

Ella described a day in which paid work and domestic labour are continuous with little time to relax. Ella's family responsibilities extended from single parenting, to household finances, to maintaining contact with family members at a distance. Ella's daily routine is complex including a range of skills, acknowledged and assumed, and framed within many time constraints.

When Gail returned to work at a community college after parenting full-time, she described the way the separation between work and home was at first blurred until she consciously set boundaries between her paid work, domestic

labour and community activities:

I used to take a lot of work home. A lot, I used to work a 10 hour day and then take stuff home on top of that... The department was growing and the personnel weren't growing with the work load...[Now] I try to leave home separate. I have three children, I am a single parent, and I also am a literacy tutor... I have a lot of diverse interests so, therefore, it's important for me to escape from here in some shape or form... I should have more of a life than I do, but sometimes it doesn't feel like I've got one. I try to divide it up as much as I can, but sometimes it gets a little tricky (IW2-GAIL).

While Gail faced the double burden of work continuing from her paid work to her domestic labour, her coping strategy included creating a break between her job at the community college and activities at home and in her community. This glimpse into Gail's daily activities also points to a complex daily schedule and involvement not only in paid work, but also in domestic labour and active in her community.

From the group interviews, descriptions of an average work day lays out a set of tasks and skills used by information workers, some context in which the work is done, and identifies the double burden of domestic labour many women experience. The complexity of women's work lives and the constraints on their time also stood out in the small group interviews. When participants moved on to a discussion of skills and skilled work in different work contexts (described in Section D), then a more complete understanding

was gained of the social relations of work, and ways that technological interactions are part of information workers' daily work lives. They see work in both sectors as skilled and to some extent this becomes the basis of their actions. They struggle to make the skills viable, partly through actually employing these skills in other aspects of their working lives. At the same time, the complexity of their lives limits their capacity to struggle.

#### **D. PEOPLE SKILLS AND COMPUTER SKILLS**

Most participants in the group interviews agreed, at times with persuasion from other participants, that they are skilled workers and they usually described their expertise in terms of people skills and computer skills<sup>3</sup>. While a distinction between people/social skills and computer/technical skills may reflect an oppositional understanding, it was the way information workers described what they did at work. Fran, who had worked in the hospitality industry, said: "I consider myself skilled, with good people skills and with good information skills, but not good technical skills" (IW3-FRAN).

In the context of making sense of skill and skilled work in group interviews, information workers used their own words and workplace jargon to link technologies to social relations of work. Group interview methodology encouraged



dialogue among participants while they constructed the meaning of skill and skilled worker for their particular workplaces, and then decided whether or not they are skilled as information workers<sup>4</sup>. Responses in group interviews to questions about skill and skilled work offer insights into the way information workers understood their work experiences.

Before participants generally agreed that people skills and computer skills made up the work that they did for pay, usually there was some confusion about whether skills only referred to use of computers. This distinction between people skills and computer skills was made by participants in different interviews, not as a result of interviewer prompts. With further discussion of work experiences, however, lines between what were understood as people skills as opposed to computer skills often became blurred. The dynamics of group interviews, in fact, may have encouraged this progression from simpler descriptions to ones that implied a more complex understanding of skills and skilled work.

People skills (often described as social skills in academic literature) was the term used most often by participants to refer to telephone work, customer service, organizational tasks, and for handling interactions with their boss and coworkers. Participants often recognised that

people skills were key to their work. Barb, who worked in a community college said: "I know in my position the people skills are probably far more important on the daily basis than the computer skills" (IW1-BARB). There was hesitation about accepting these interactions as skills per se by some group interview participants, apparently because they can be so taken-for-granted as part of a nurturing role expected from women in female dominated jobs. This ambivalence about the notion of people skill is evident in Anna's response to her coworker who used the term people skills with ease to describe work in a university setting:

I feel mature I'll tell you that. You know there's a lot involved. It's not just skill. I mean sitting down there at your keyboard. You gotta have a lot of finesse, you've got to be very diplomatic with people. So I would say mature and experienced a little as well as skills... You're right there, people skills (IW7-ANNA).

In a college setting Gail emphasizes that "People skills are big here. Major, big time people skills" (IW2-GAIL). For Ella, the role of pacifying clients stood out in her work in a public service office for housing legislation: "A lot of people skills and you have to learn how to call angry callers... Because some of the landlords end up crying, some of the tenants end up crying and you have to, you know, talk to them" (IW8-ELLA). While women participants often described the nurturing role of people skills, Ivan who was the only man in this study, emphasized communication

to describe people skills:

Mostly I find people skills are important, just gotta be able to communicate and try to keep things civil and going in the right direction. Yeah, I find most of the things I do get involved with are dealing with people and communicating, you know people skills situations (IW2-IVAN).

At first when participants described their work, they often referred to either people/social skills or computer/technical skills: "People skills, communications skills. For me, personally, it's a little less on the technical side" (IW8-LISA). Lois who had worked in private sector settings, even distinguished people's abilities in this way: "It's true, some people have a knack for it and others, no matter how hard they try they can't, they're not machine people. People people are not machine people" (IW3-LOIS).

In settings in which group interview participants worked, computer literacy was seen as integral to their jobs. In practice, many participants who placed priority on people skills also described their work as 'on the computer all day long'. This points to the contradictory experiences for information workers who themselves value people skills that were often invisible, while at the same time computers skills that they took for granted were what others valued. For instance, Gail who describes people skills as valued also reflected on her return to work at a unionized college

setting after a break to care for her children: "In all cases without a computer you'd be stuck... I'm not into typewriters any more... I had a computer at home before I started working, so I was already comfortable with them" (IW2-GAIL). There is a contradiction that workers experience between these two experiences because they see people skills as central, others do not.

According to Lynn, a union steward in another college, future openings in information worker positions in her workplace would always include computer skills: "there's some positions that aren't computer literate. But if the jobs ever were vacant, if they were posted, they would include computer skills. You'd find that it would be required, it's important" (IW1-LYNN). In the same workplace, Rita noted that computer literacy became evident when union members with more years of seniority had their jobs eliminated. Then these same workers had the right to be reassigned to positions of information workers with less seniority, who lost their jobs. At the time, Rita noted that the difference between the workers who were reassigned to positions for which they were not always qualified: "I think the only time this really became evident at the college was during our recent layoff stuff. So there's quite a few people who are way up there, but they have no skills" (IW1-RITA). And by 'no skills', Rita is referring to computer

skills that were required for the positions to which the information workers were reassigned. In this instance, people skills were seemingly taken-for-granted. While referring to job descriptions for these positions may contribute to this analysis, I relied on participants' perceptions of contradictions.

While education and training time are often used as general measures of level of skill, it was not an issue that was stressed by group interview participants in discussions of skill and skilled work. In the context of the group interviews, a specific question about training was asked in reference to technologies used at work. Even though some mention of training was made in response to more general questions, training for people skills was not an issue discussed by participants. Training is a frequent measure of skill in many jobs, yet for many information workers the training is uneven and not always linked to the notion of skilled work. Formal training is used as a measure of skill, yet often hides important skills. This too is experienced as contradictory, and here the reskilling thesis may hide more complex processes at work if measured by education alone.

When skills training was discussed it was defined by participants in terms of computer skills not people skills. In response to a question about training for technologies they used at work, particularly computers, there was some

distinction between training in private sector workplaces, college and university settings, and public service departments.

Some participants with experience in private sector workplaces described in-house computer skills training when new systems were introduced into their offices, but made no reference to people skills training: "Well, people were retrained, they were retrained on the equipment" (IW3-LOIS); "Oh, yes. There were special times set aside for training and there was a transition period that was a little bumpy" (IW3-FRAN). At the time, though, the importance of training was not necessarily stressed to the workers. For instance, when Fran reflected on training opportunities she had been offered in a private sector workplace, she now realized that she had not recognized the importance of training to her work life: "Now, if I was a person who really gave a hoot, I would have taken a course or something and said, 'Oh Boy an opportunity to learn', but I didn't know what I was supposed to do with it" (IW3-FRAN).

Anna's comments about training are interesting because she moved from private sector work to a university setting and believed that training was an individual responsibility, and one that her coworkers disregarded:

I sought my own training. Basically it was before I came here... And the girls that were already in here, they didn't have any training at all... Well they knew

the xerox and the fax machine, but as far as the capabilities of the word processing packages they didn't take any courses. What they had was what they'd figured out for themselves... And I couldn't understand why they wouldn't take a course (IW7-ANNA).

Again, theories of less skills or deskilling of women may ignore skills learned informally, leaving women in contradictory situations. In this same non-unionized workplace, Judy made it clear that formal training for information workers was poor:

In these jobs? No, no training at all... It never occurs to these people to send people out to training. I don't understand. I find it really ironic in a learning institution that they don't encourage learning in the staff... However, there is a whole staff education program. It's bullshit, it really is... when you go they give you a half day to learn a word processing program. You know how useful that is? (IW7-JUDY).

In unionized workplaces, group interview participants generally assumed that training was part of a job, even though there were obvious differences in quality of training that they received. In college settings, training was offered when new computer systems were introduced: "If you wanted it you could get it and that kind of training was offered across the board" (IW2-GAIL). Yet, training that was offered when new computer software was introduced was often too brief: "I'd like to see more in-depth training. We get a lot of 2 or 3 hour courses, it's almost a waste of time, you can't use it... like using Windows" (IW1-LYNN). Often no computer software training was offered: "Seat of the pants

training in some cases... Here's Wordperfect 6, what the heck do you do with it?" (IW2-GAIL). Nonetheless, participants credited unionization for any training they did receive: "I think because of the union people are allowed to get trained during the day. I think if it wasn't for the union you'd never be able to do that" (IW1-BARB).

Participants who were unionized public service workers described training as routine: "Any time a new system is introduced we will get the training on it. Each of us will have in-house training" (IW8-ELLA). When new computer software was introduced training continued: "Tons of training... And it's still ongoing because there are new word processing packages being introduced and we had a session a few weeks ago" (IW8-LISA). Once again computer skills training is acknowledged as a necessary requirement when new systems are introduced, but no obvious people skills training was mentioned.

In the group interviews with information workers, then, there was some agreement about the distinction between people skills and computer skills as a way for participants to understand what they do for pay. In unionized workplaces the situation was different, because some routine computer training was more likely to be offered to information workers. When their workplace was restructured or they were job hunting; however, their contradictory experiences with



the concept of skill and skilled work was evident. They experienced both deskilling and reskilling, yet in each case it was skill they described. They valued the people skills that their jobs required, yet it was computer skills that counted. They recognised the need for training in all skills, yet only received training in computer skills, people skills training was overlooked. Information workers' experiences and understanding of skills to keep jobs and skills to get jobs exposes the social construction of skills in particular ways.

#### **E. WHO NEEDS WOMEN'S SKILLS?**

Participants who were unemployed information workers often focused their attention on hiring criteria in discussions of skills and skilled work. This is hardly surprising because job searching was the focus of their attention when at the Women's Employment Centre where I conducted the interviews. According to the information workers in this study, and supported by de Wolff's (1995) study of information workers, gaining employment in information work in the Toronto area was difficult in 1996. The information on job searching in this section was primarily based on unemployed women's accounts in group interviews. I did also check the job board at the Women's Employment Centre and newspaper advertisements for the

Toronto area to confirm the trends in hiring that were described to me in the group interviews. From interview participants' experiences in this context, they were able to shed light on the different meanings of skills to workers and to employers.

For some unemployed participants in this study, job hunting meant that they faced a reality that some jobs have become obsolete. For instance, Fran just wanted a permanent, rather than casual part-time, clerical job to give her some financial security:

I thought there would always be a place for me. A niche in this whole. There's always room for some low little person, not low, but a person who can do their job adequately and, in fact, do quite well at times at a certain level (IW3-FRAN).

Zora questioned the changes to file clerk and data entry temporary jobs in which she was often employed: "To me filing isn't gonna go because there's not everything you can file in the computer... I don't see everything have to be computer. I don't see it that way" (IW5-ZORA).

When Nora reflected on her work experience in Revenue Canada she realised a job she did in the 1970s is now obsolete:

I realize that the reason that I can no longer get a job at the income tax is because that whole department, that was probably the largest department, that's all gone. And that's because of technology. All those returns are now computerized, they're in a central place now... These jobs don't even exist any more (IW4-NORA).

Unemployed participants in the group interviews may describe their jobs as complex and involving a mix of people skills and computer skills that they learned to value; yet when they searched for work they discovered that most employers only expressed an interest in computer skills: "You have to know computers today. Whether its Wordperfect or accounting software or graphics, and if you don't you're lost, you're absolutely lost" (IW4-MARY). For unemployed women in this study, people skills seemed to be ignored or simply invisible as hiring criteria. The message these unemployed women received from employers, therefore, was that people skills that they themselves often described as the most rewarding part of information work, were not apparently marketable skills when they searched for paid work. The contradiction that they experienced was over something between what a job demands in their view and how employers perceive skills that are required. In fact, they often found themselves reskilled in a particular way that conflicts with their definition of the work.

As unemployed participants in the group interviews struggled to make sense of how to get a job in the Toronto area in 1996, their discussion became more specific. From their recent experiences job searching, they had found that employers were not necessarily interested in their knowledge and expertise in general computer skills, but only in

knowledge of the most recent software programs. For instance, Zora realised that she could not assume that many years of work experience with computers was still relevant when she sought a job in the Toronto area:

I have over 20 year office experience, and I still can't find myself a decent job. OK I went to do Lotus and DOS, most places are asking Windows, I don't know one thing about Windows... Most places you need Powerpoint and Words, I don't know anything about that. I use Data Base and Wordperfect (IW5-ZORA).

According to women in this study, computer skills that participants in group interviews had described to me as complex, involving a range of technical and organizational expertise, were described to them by employers as merely technical criteria such as: discrete software programs; the shift from DOS to Windows computer operating systems; and a list of the latest word processing and spreadsheets software programs. Nora's experience reflects this situation when she said: "You know in the past I was pretty good at picking things up and finding things out for myself because I love the technology you know" (IW4-NORA). Nonetheless, Nora also recognized her limitations: "I find out that Powerpoint, Word for Windows, Lotus, various data base programs, all these other programs are out there and you need to know them" (IW4-NORA). The issue is not that Nora finds computer skills difficult to learn, it is that she had thought she had enough skills to find work: "I thought I'm pretty cool,

I'm pretty hot stuff, you know. I can just pick these things up... I thought this is great I have so much talent to offer them" (IW4-NORA).

A chronic problem described by unemployed women in this study was lack of access to computers and training programs. For instance, Mary managed to get into a 5 month computer course to learn Windows, Excel and Lotus software, but then found that even with many years of computer work experience in earlier programs, only work experience not training with current computer software counted: "So now I have the skill, and I came back into the workplace, and at which point she [employer] said 'How much experience have you had?' You're sitting there and, Oh dear!" (IW4-MARY).

Most unemployed women in this study told me that they did not qualify for subsidy for job training, and also said that they could not afford computer courses that were available elsewhere:

I don't have the money to go and get those courses, and I've been looking like crazy...to try and get into a training program for computers. Otherwise you have to pay for the program... They're expensive, \$105-145 per course... And you need to know like 4 or 5. You need to learn Windows, I don't know where to learn that because I don't have the cash to put into learning (IW4-NORA).

Some unemployed women in this study described efforts to learn the latest software by gaining access to computers through volunteer work. For instance, Zora said: "I tried to get into the United Way... because they had a computer and I

could get experience. But they don't have any vacancy right now. But I'll keep trying" (IW5-ZORA).

Unemployed women in this study described lack of access to computers and affordable training as a key reason that they were unemployable in information work in 1996. For Nora, this connection between computer skills and employability meant that she felt she was losing her skills because she had no access to a computer:

Some days I feel really like I have a lot of skill to offer but not any way to show an employer... Oh, I don't know. Sometimes I feel like, you see I felt like a really very highly skilled person and a very versatile person and all of a sudden the skills that I thought I had are certainly not anywhere near enough... You see I'm losing my skills because I have practically no access to a computer (IW4-NORA).

Nora sees the need for specific training yet also see this as a narrow definition of skills required.

According to unemployed information workers in this study, when each computer software program was described as though it was a discrete skill, they were left with the impression that they could not keep up with skills that are required to get a job. When group interview participants described their work in general, computer skills referred to use of specific software programs as well as an understanding of how computers are part of work organization that includes social relations, not only technical skills. Also, information workers in this study described being able

to, or expected to, pick up technical and computer skills as part of information work. With the rapid turnover of software programs in workplaces and the introduction of Windows environments into most offices in metro Toronto (de Wolff 1995), unemployed women who participated in the group interviews were left with the impression that only specific computer skills or software programs count as skills, even though from their own experience they realize that information work is far more complex. This leaves these unemployed women in this study struggling to catch up with ever changing computer software programs, yet with limited or no access to training or appropriate computers. Their people skills that they know are a major part of any information work are invisible in the hiring process that they are exposed to in metro Toronto in 1996. While employers describe the workers they are looking for in terms that implied deskilled work to information workers, the information workers indicated that they do not think they are hearing a complete description of the positions that are open. This may be a case of deskilling as a part of hiring to create a more disposable workforce. It may also be a situation where undervaluing of people skills, which information workers know are part of their work, is reinforced in hiring contexts when skill is understood only as computer skills connected to machinery. Certainly, the

complexity of information work that participants describe is made invisible when they job search. Computer software programs that they otherwise describe as easily learned become a limiting criteria in new jobs. The people skills that they know are learned through experience become invisible or assumed in the context of hiring.

#### **F. DOES MULTISKILLING SECURE UNION JOBS?**

Information workers in one group in this study (IW9) worked in a public service office that registered private property liens. In this specific context, group interview participants described a trend to multiskill clerical and information work as part of a downsizing strategy. Multiskill was the term that the interview participants used, even though some of the evidence in this section may more closely fit the concept of multitasking; that is, they did not acquire new skills or formal training. Instead, they were simply given more tasks to do. The practice of multiskilling that they described involved workers being trained in several jobs, so that they could rotate from one position to another. Information workers in this study pointed out that they usually remained in one job, but because they were cross-trained or multiskilled, they were expected to carry out other jobs when required. In this particular public service workplace, this downsizing process



also involved the replacement of manual registration with computerized on-line registration. The information workers in this study, therefore, had gained an understanding of the restructuring process in their workplace that is interesting for this thesis research.

Group interview participants in this public service office described the strategy of multiskilled work as a way to maintain some unionized jobs during major layoffs of information workers throughout the Ontario public service. Information workers who had remained after significant job losses in this public service department, job losses that they claimed were as high as 75%, were now part of a pilot project for generic jobs and multiskilling in a work team structure. According to interview participants, the introduction of multiskilling was done in conjunction with the union in an attempt to save some union members' work. This is an action strategy that workers agreed to, but it turns against them.

When participants from this reorganized workplace talked about skills, their perspective revealed an understanding of the way people skills and computer skills overlapped in the work that they did. In this work team structure that they described, some information workers spent most of their time processing registration documentation, while others did customer service and data

entry. All members of the team, however, were on-the-job trained in all work areas, described as from 3 to 8 jobs, and moved regularly to different sections:

We can work in another section of the office whatever their need may be. We can do the customer service, we can do the inquiry, we can do the data entry... We rotate every month, move to every section (IW9-LUCY).

Beth, whose job included technical computer support to other information workers in this group interview, described the flexibility expected of her multiskilled coworkers:

Say they have to do inquiries, they have to do the data entry, and sometimes the supervisor notices that there's a lot of incoming calls and there is a lot of calls in the queue, then they move them around. 'OK don't do data entry, come and [do] the phones'. Like you have to make the adjustment, you're in the middle of doing data entry and all of a sudden you have to stop what you're doing because there's a lot of calls (IW9-BETH).

For these information workers, acceptance of multiskilling was the only way they were able to maintain unionized public service jobs in the current trend to surplus workers. Agreeing to multiskilling was seen as a strategy to maintain jobs, but they discovered it was also to eliminate them. The term 'surplus' described lay-offs for these particular public service workers. The threat of surplus was immediate enough that my first attempt to interview this group was postponed at the last minute, because one of the participants had been surplus unexpectedly the day before. While they believe their

strategy to accept multiskilling saves their union jobs, at the same time they know their job security is threatened because they see their coworkers being surplused. In this particular economic context of downsizing the public service through neo-conservative policies in Ontario, the union efforts to save jobs by accepting work reorganization has been subverted by a strategy of surplusing, over which workers have little or no control.

Unionists in this group interview of public service workers pointed out that by accepting multiskilling, unionized information workers made their jobs more complex so that their skills were more valued. These unionists pointed out that they assumed employers will be discouraged from surplusing or contracting out union positions in which they have earned seniority rights. Among participants from this public service workplace, there was a perception that with more skills and knowledge of different jobs they are more valued workers. At the same time, these group interview participants stressed that the unpredictable management strategy of surplusing workers hung over them as a threat that was always present. In accepting multiskilling, they were taking action they saw as influencing the social processes related to technological change.

The economic value of multiskilling was quite visible to these information workers in this group interview:

"You've got more skills" (IW9-JEAN); "You're more marketable" (IW9-LUCY). What was less obvious to these information workers who struggled to maintain paid work, was that by agreeing to multiskilling they had also accepted an intensification of work. During the participants' discussion of multiskilling, the prospect of being surplusd was ever present for these women workers:

It's a good thing in the sense that with all the surplus that we have now, if people have some of our skills they can't come into our office to bump us, they have to know all our skills (IW9-ROSA).  
They have to know all our skills (IW9-JEAN).  
That's a plus for us (IW9-LUCY).  
That's a plus for us, because we are one of the first offices in the ministry to be multiskilled (IW9-ROSA).  
And this gives us an advantage because one person was surplusd out a long while back, she went to companies. And when there was two positions came open she came right back again because she had the skills (IW9-JEAN).

Indeed, multiskilling may become multitasking, more work, fragmentation, fewer skills required and trained for. While participants in the discussion of multiskilling may seem to take an individualistic approach to work, it did not appear to be the participants' agenda. Women in this context felt that they needed more and more skills in order to secure their union jobs, which amounts to intensification of work. This is an example of a specific context where the introduction of new technologies, in the form of the on-line registration system, could benefit workers and lighten their work. Instead, information workers in this group interview

described an intensification of work in the form of multiskilling, that they must accept in order to maintain full-time unionized work.

An interesting aside occurred in this group interview with women in multiskilled public service work that linked women's flexibility with multiskilling. Lucy linked gender and flexibility: "But going back to women as the skilled worker. This is my opinion. Women can adjust quickly, [they're] flexible, adapt better than men. Oh, with the exception of one or two men in our office" (IW9-LUCY). Beth also made a connection to domestic labour: "It's so true. Woman can really adjust, because don't forget most of us we have our family and our kids to look after" (IW9-BETH). Usually the flexibility to accomplish many overlapping tasks is taken for granted by employers. Yet with multiskilling, do these information workers feel that what they have always done without credit is now described as multiskilling and valued? While this notion may place multiskilling in a positive light for workers, it may mean that issues about intensification of work and job security are set aside by union locals in a struggle to maintain members' jobs. This reveals a contradiction that by simultaneously saving jobs for some by intensifying labour, this strategy also involves loss of jobs for others.

#### **G. WHO ACKNOWLEDGES A JOB WELL DONE?**

The social construction of women's skills, from the perspective of those in the jobs, includes the way that the power relations of work affects the valuing of work that they do. The literature on skills from a feminist perspective indicates that undervaluing of women's skills is a critical component in women's work (Armstrong 1984; Gaskell 1987). In group interviews, participants' responses to the question of whether their skills were acknowledged by coworkers, bosses, friends and family (Appendix V), the power relations they experienced provided important insights. I use the term boss, rather than supervisor or manager, because that is the term used most often by women information workers in this study to describe the person who supervised their work. Regardless of work context, participants' discussion of acknowledgement of skills exposed the often contradictory feedback that information workers received from significant others<sup>5</sup> in their work lives. In most workplaces in this study, information workers may not be in a position to be able to express their frustration with the power relations of work to their bosses, especially in non-unionized workplaces. Nonetheless, it is something information workers discuss among themselves and feel in quite personal ways. For instance, Judy's frustration probably describes what other women in similar

circumstances experience to some degree, but are seldom able to put into words:

Like it's a matter of you come in and you get spat at and then you're wiping it off all day, and you go home and take a shower, literally, well not literally but figuratively... I don't think anyone goes into our office to make us feel bad, to cut us down, to make us feel bad, but it seems to be just an unconscious agenda (IW7-JUDY).

Participants discussed how their work was frequently undervalued, and offered insights into the meaning of invisible skills. Even women in this study who generally described themselves as competent, referred to a lack of acknowledgment as a part of information workers' daily lives: "Lack of appreciation is always frustrating" (IW1-RITA); "Basically there's a really big lack of respect. There's a lack of respect for what we do and who we are" (IW7-JUDY)<sup>6</sup>. In reference to computer skills that were described as key to current information work, Anna noted that: "They're used, but they won't acknowledge them. No I don't think that they are acknowledged" (IW7-ANNA).

Among the group interview participants, there was general agreement that coworkers understood and acknowledged each others skills and expressed mutual support for one another: "Well among us, yes" (IW9-LUCY), "Among us, yes... I think a lot more than there ever used to be" (IW9-JEAN). Several participants were friends as well as coworkers and may have been more willing to express their mutual respect

for coworkers than if participants in a group were strangers from the same workplace. One way that several participants noted that coworkers' skills were acknowledged was by sharing knowledge, particularly about computers, "We help each other in that sense... You're not alone. If you don't understand something you can always turn to someone" (IW8-ELLA). Similarly, Ivan described 'internal training': "learn as you go... From the staff members, you know, maybe someone's got the experience and they teach you" (IW2-IVAN). This indicates that in situations where information workers have a reason to informally take action, that they do so in ways that are relevant to that particular context.

During another group interview, Lois and Fran described work situations where they had struggled alone to make their coworkers acknowledge their skills. Both Lois and Fran described their work in different private sector workplaces as 'lowly' or 'at the bottom of the totem pole'; however, they also had a clear sense of what Bonnie Thornton Dill (1988) describes as making their job good for themselves.

From Fran's perspective:

You make something out of your job and then other people will say 'Oh, maybe that's not such a lowly job.' People will have respect for you. It's you, it's you who is doing it... but of course the job is as good as you make it (IW3-FRAN).

For Lois it was also important for significant others to recognize the way that she did her work:



there's always room for somebody at the bottom of the totem pole because nobody wants to do that work. You know. And when you work at it and you make something out of it, everybody wants your job. They think that there's nothing to it" (IW3-LOIS).

For many information workers in this study, acknowledgment from coworkers and family was an important element of their work lives, and an important strategy as technology changes. For instance, Nora contrasted feedback she received from coworkers and family: "When I was working my coworkers really acknowledged my skills and made me feel really good. My family has no clue as to what I know. They think I'm stupid" (IW4-NORA).

In another group interview, Gail described her experience with her family as more positive when she focused on computer skills:

My kids are almost as computer literate as I am. So yeah. I think that we feed off of each other. My kids recognize my skills... Yeah I think I feel more appreciated there. Sometimes I don't, like any mother... but most of the time I feel very much, I feel very much that the things that I do have some merit (IW2-GAIL).

Gail indicates a recognition of the importance of encouraging her kids to become computer literate, but also points to the positive feedback she gains by sharing her knowledge and enthusiasm with them. In the context of her home, Gail used her skills to take action.

In another interview, Ella said that it is important that her children acknowledged her strengths and see her as

a woman who stands up for herself at work, and gained respect from her boss:

Over the years I learn. I am raising two children by myself, I'm a single parent. I had to learn to be tough. I have to show my kids strength, I have to show them very little weaknesses. I have to teach them about life, what to expect out there. And if I just remain passive and have these people doing whatever they choose to me, not taking the initiative, then that's what my kids will pick up from me. So, they know mum is a fighter, they know mum is a go-getter (IW8-ELLA).

From the descriptions by women information workers in this study, the subjective aspect of skills stands out. Without positive feedback from others, it was difficult for these information workers to assess their competencies. The power relations of work meant that information workers in this study only described their coworkers as providing consistent positive feedback. For women, the extension beyond paid work to their homes and communities is also an important means by which these women workers gauged their competence, and developed an understanding of themselves as skilled workers, regardless of the feedback they may received from their bosses. Nonetheless, the contradictions they experience between work experienced as skilled, but treated as unskilled, does become a basis for action.

#### **H. WHO UNDERSTANDS INFORMATION WORKERS' SKILLS?**

While participants in group interviews described considerable acknowledgement of skills by coworkers and some

acknowledgement from family and friends, they painted quite a different picture of their experiences with their bosses.

The topic of acknowledgement of skills by bosses revealed that information workers in this study not only understood the power relations of work, but also recognized oppressive working conditions that often silenced them. At times, it is these very silences that subsequently form the basis for action. Participants' observations also raised the question of whether bosses understand the skills of information work.

In one group interview about a college setting, the dialogue between participants who generally expressed enthusiasm for their work became more cynical as they thought about acknowledgement from their bosses:

Oh I'm just thinking about do the bosses recognize my skills or do they...(IW2-IVAN)  
Do they even know what they are? (IW2-GAIL)  
Bosses are supposed to when you think of it (IW2-IVAN).  
I don't think they do (IW2-TINA).  
No, neither do I. I really don't. I think it's a distinct lack. Sometimes you feel like the peon lackie that just sort of is making things happen (IW2-GAIL).

Interestingly, Ivan wanted to believe bosses are respectful, while the women he works with are more sceptical.

In a dialogue between two unemployed women in a group interview, a point of discussion was whether acknowledgment of skills needed to be assumed or voiced:

Sometimes yes, and sometimes no. Sometimes they just take you for granted. Yeah (IW3-LOIS).

That's a sign that you're doing a good job because everything is functioning so well. Right? Because you've done everything accurately. They'll take that for granted (IW3-FRAN).

But they don't, yeah, there have been occasions when they'll say, 'Oh that was a good job'. But you know, if the job was so good I would like that little increase (IW3-LOIS).

In the two group interview discussions just described, there is a striking resemblance to the undervaluing women experience in unpaid domestic labour. Luxton summarizes this undervaluing of domestic labour as: "Aspects of a woman's job require a high level of responsibility but gives her little recognition or reward" (1980:197).

On the one hand, participants described an acknowledgment of women's skills from bosses for jobs well done as often hard to come by, so that they felt their work was unrecognised and undervalued. On the other hand, participants described that part of women's skills for information work included nurturing and appreciation of their bosses, similar to the supportive role a woman is expected to offer her male partner. Women information workers in this study described the way that they must nurture their bosses to some extent and yet not expect respect for a job well done. This contradictory situation reflected the information workers' subordinate position and the power relations of office work environments. Judy was particularly sensitive to the traditional secretarial role

that was expected of her:

But it's a one way relationship. That's one of the things I really resent about it... For some reason my [boss] and the other people for whom I work, and several people whom I do not work, will stop by my desk and tell me their woes, and be on their way. Now I am not free to go there and do that (IW7-JUDY). It's like a taxi cab bar tender (IW7-ANNA). Yeah, but they get tips. OK. You know there's an issue here for me (IW7-JUDY).

Fran described her work in private sector settings where there was a policy to offer appreciation to information workers in the form of gifts. Her comments indicated a keen awareness that gifts given paternalistically tend to reinforce a particular view of women information workers as subordinate and immature:

It was the policy to give some appreciation. But they did it in sort of demeaning ways, give everybody a little basket of Hershey Kisses, you know, and that's the level that we were at in that job. You were treated like children sometimes which I didn't, you didn't want to resent, you'd say 'Thanks a lot', but that's how you work. But the other company that I worked at, they weren't like that. They did treat you like adults and show appreciation by giving out little gifts, but not really in a condescending way (IW3-FRAN).

For Judy, who worked in a non-unionized university setting, positive feedback from bosses can also expose the power relations at play in offices. In this example, Judy described the power relations between herself and a woman for whom she prepares work:

She likes to say to me 'Your voice is like the voice of an angel', an angel doing the work. Anyway. But, I rather like Delores, and that's one of the things that goes on in these jobs is you establish a relationship

with somebody. This is how you get someone to work for you. You're nice to them and then they can't say no to you. Right. This is how the higher ups get things done (IW7-JUDY).

The public service workers who participated in this study consistently mentioned some appreciation of their skills from their supervisors and bosses. I am not claiming that public service workers have more appreciative supervisors and bosses, only that the two groups in this study appeared to have less frustration with their supervisor's than other interview participants. In my efforts to arrange group interviews in public service workplaces, several union stewards described such low morale that setting up a group interview was impossible. In this instance, perhaps gaining respect from supervisors and bosses made participation in group interviews more likely.

In one unionized public service setting, Ella was reassured by her manager's effort to recognize worker's abilities: "Our manager knows us in the sense that he walks around the office once in a while and... he knows everybody's full potential and their work" (IW8-ELLA). Several group interview participants noted that one sign of a less oppressive workplace was how the office operated when bosses were out: "We've had days when both supervisors and the managers are gone and his office goes along tickedy boo, you wouldn't even know he's not here" (IW8-LISA). A similar

observation was made by participants in another unionized public service setting, where the information workers explained that because supervisors were able to do the information work jobs it made a difference to their perception of worker's abilities: "Oh yes, they [Supervisors] have to do the work too" (IW9-BETH), "They even sit down and do keying, they even answer questions on the phone" (IW9-JEAN). In these two instances, information workers described significantly better working conditions when people they work for understood the work they did and the technologies they used.

The participants in this study who worked in college and university settings were acutely aware of problems that arise if their bosses lacked knowledge of what information workers do and the technologies they used. This issue was raised by participants in similar ways: "Anyway a lot of the people I've worked for, many of them either cannot or do not want to use technology, they claim to be frightened of it" (IW7-JUDY); "The point is they don't appreciate it [computers]. It just scares them and they won't change" (IW1-BARB); "you'll find very few managers who, if their secretary was not in, they would not be able to turn on the machine and pull a letter off for themselves" (IW1-LYNN). Even when computers were supplied, some participants said that their bosses did not necessarily use them: "Some of

them [bosses] rely on us to be the ones that are knowledgeable... My boss has a computer at his disposal and I don't think I've ever seen him turn it on" (IW2-GAIL).

When one's boss does not understand the technology then the work process is hindered because the issue of time expected to complete projects and documents is misunderstood. In this study, information workers point to the connection between bosses acknowledgement of workers skills, and their knowledge of work process and the technologies of information work. In a college setting, participants discussed their bosses in this way:

They don't care how it happens as long as it happens. And it doesn't matter whether or not it happens because you put in an extra 3 hours of overtime to make it happen (IW2-GAIL).

And if they do acknowledge that, that's nice (IW2-TINA).

That's a bonus, it's a bonus (IW2-GAIL).

A thank you would be nice once in a while (IW2-TINA).

One pattern described by participants was of a boss bringing them work that required considerable understanding of computer software to create documents, yet their boss had little understanding of what that involved for the information workers. Gail gave a vivid example of the effect of this on her working conditions:

That's frustrating, because for instance, my boss will give me a job and he'll figure it'll take a half an hour and I'll look at it and think. 'Good grief, this is going to take me a day'. You know this is like x number of pages of straight text and I have to read your handwriting. 'Excuse me. Give me a break!' And



he'll look at it and say 'Oh you can knock this off in half an hour' and I'll say 'No!' and he'll say 'And how long do you think it'll take you?' 'You'll see it tomorrow' 'What!'. Like it's supposed to be some great shock in this world that it actually takes time when you have not just that job to do but all the other stuff that comes your way at the same time. Phones ringing, somebody's saying 'can you type me up this, can you do this can you do that'. It's hard to prioritize sometimes when everybody's priority's number one (IW2-GAIL).

When participants did receive some understanding of the time it took to complete a complicated project, in other words acknowledgement of workers skills and the work process, it stood out as an exception:

He's one of the few that really understands, and gives me a reasonable length of time to do the job and doesn't get ticked off when he realises that I've already gone into a tizzy. 'Cos when I go into a tizzy then I make mistakes (IW2-GAIL).

When Lois described jobs she had done, she emphasized the importance of accuracy and attention to detail to her if not to her boss. The discussion of acknowledgement of skills sparked a memory of an occasion when her efforts were noticed. Lois' comments stress how important feedback from significant others can be for information workers, even though they are hard to come by:

Oh, can I just make another statement about appreciation? I had forgotten. I had prepared a monthly statement, you know, and it was set up perfectly on the page, perfectly centred, everything was distributed evenly, exactly across the page and my boss picked it up and looked at it. He just stood there and looked at it. And he said 'Oh my, that's a labour of love'. And you know that's one of the nicest compliments I've ever had (IW3-LOIS).

When information workers in this study took the opportunity to question who understood their skills their experiences pointed to the importance of context. For instance, whether work was in the public or private sector, and their boss, made a difference in terms of what actions are possible for women, even when they recognized their work as skilled and their relationships as power relationships. Women also took action designed to both enhance their power over the situation and to make their skills more visible. Often, however, this took covert and individual form.

#### **I. SOCIAL CONSTRUCTION OF WOMEN'S SKILLS**

Based on my assumption that information workers are the experts in the work that they do, I drew on material from group interviews to understand participant's interpretation of their work lives. When information workers described their daily routine in different work settings, changes in technologies at work were usually in the background. When information workers talked about their work in terms of skills, however, the delineation of people skills and computer skills brings technologies as embedded in social relations to the foreground. Then the picture of an information worker in an office surrounded by machinery and producing work for many people becomes more visible.

On the one hand, information workers described the

people skills of responsibility for communication, organization, and pacifying people as the most interesting and challenging part of their jobs. People skills were often hidden, taken for granted, and seldom included in training. On the other hand, information workers described computer skills that ranged from routine data input to complex use of software programs or visible aspects of skilled work. Computer skills training was often included in information work, yet participants often described their computer skills as misunderstood by their bosses, especially those learned informally. Participants who were unemployed women seeking information work discovered that only computer skills in terms of specific software programs were valued, and the people skills they knew made up most of an information worker's day were ignored in job searching. Participants who assumed multiskilled work as a means of securing their union jobs, while at the same time they unintentionally accepted an intensification of their work and often a deskilling of others work.

When information workers in group interviews for this multimethod study reflected on their daily interactions with coworkers, bosses, potential employers, family, friends, then people skills and computer skills were placed in the social context of their everyday work lives. When women were asked if they were skilled workers they described a struggle

to maintain a sense of competence based on mixed messages from significant others about what constitutes skilled work. What women describe as people skills and computer skills may be acknowledged by coworkers; however, gaining similar respect from bosses and family is hard to come by. The mixed messages workers received from bosses in particular led women to look beyond their own job and question work in terms of a social process to explain what they experienced on a daily basis.

In this chapter I analyzed women's skills by making the way that information workers interpreted their work lives the starting point of my analysis. The contradictions, both in the Marxist sense of things being contradictory in themselves and in the sense of conflicting views, that they experienced in information work provided the details for analysis of women's skills and revealed the complexity of people skills and computer skills that make up their work lives. The ability of these information workers to act on their own behalf, whether individually or collectively, is influenced by the context of their work, whether in the private or public sector, and the type of boss they work for who may limit their power. Some actions are covert and difficult to see. They may simply involve redefining the work. Some strategies lead to many small victories. The unionized workers who agreed to multiskilling as a strategy

that they believed would save members jobs discovered that it had only limited results within a particular economic context of Toronto in the 1990s.

These group interviews show that information workers are knowledgeable about the work they do, and understand the technologies they work with as part of social relations. They also indicate that they would like something done about their working conditions even if they do not necessarily know how to take that action or if the actions they do take have limited import. Since these information workers do understand the conditions of their work, this in itself indicates that their inaction is not necessarily based on ignorance, but on many other limitations on their work lives. The interviews also suggest that the work cannot be simply defined as deskilled, an assumption too often made when women do the work. Nor can new skills be solely defined in terms of computer skills or formal training especially when it comes to women's information work.

#### **ENDNOTES**

1. All names of group interview participants are pseudonyms to maintain individual's confidentiality. Quotes from interviews indicate the number of the interview (e.g. IW7) and the pseudonym of the participant (e.g. GAIL), so that interviews and participants can be traced throughout the thesis.

2. In this section participant's descriptions follow one after another, essentially they speak for themselves, so I add minimal information about each individual. Nonetheless, general information about each participant is cited in Appendix II.
3. The interview participants in general were able to speak for themselves and voice their opinion. Since the difficulty I experienced setting up the group interviews appeared to be based to some degree on whether workers felt safe to talk, those who became interview participants may reflect women who had gained some consciousness of power relations at work.
4. As researcher/moderator I observed the group dynamics in these situations, but tried to avoid the use of prompts as a form of intervention.
5. Significant others in the context of this thesis research refers to coworkers, bosses, family and friends.
6. While my choice of term is acknowledgement, similar terms often used by participants were respect and appreciation.

**CHAPTER FIVE**  
**TECHNOLOGICAL INTERACTIONS: WHO CONTROLS**  
**CHANGING TECHNOLOGIES?**

**A. INTRODUCTION**

In the critique of technology and work literature, I argued that Marxist and labour process concepts remain relevant to understanding technology and work from a feminist perspective. I also showed how recent labour process and feminist studies go beyond Marx and Braverman to develop more complex understandings of women's work that are not limited to paid work, nor to deterministic explanations of technological changes at work. In Marxist, labour process, and feminist literature the issue of technology and control was often conceptualized in terms of technology shaping the labour process and of workers and unions gaining input into technological changes. Shaping the labour process involves the use of technology as a means to transform work, control workers and reduce labour power.

A goal of the qualitative multimethod study that I conducted about information workers and action research in a Canadian context was to employ a feminist perspective to investigate changing technologies and women's work lives.

This chapter draws on different perspectives on technology and control in order to address questions about when, how and under what circumstances are technologies enabling and when are they disabling, or when they are both at the same time. On the one hand, technology is understood as a means for management to control workers. On the other hand, workers and unions may gain some input and some control of the technological changes they experience in their work lives.

The previous chapter (Chapter 4) was written from the perspective of information workers, with a focus on women's skills to get at the deskilling debate in the literature on technological change. Also, the experiences of participants in the information worker group interviews exposed some ways in which women experience these changes as contradictory in both the Marxist and non-Marxist sense. The next chapter (Chapter 6) describes ways action research from feminist and union perspectives is a means to link theory, method and practice in particular contexts in which actions were taken by and for women workers. I argue these provide an example of action that structures women's work. In this chapter I analyze technological interactions by drawing on material from both information workers group interviews and the study of action research projects in Canada. In this analysis connections are made between the everyday experiences



described by women information workers in group interviews, the contradictions that were drawn to the surface in that process, and the structural changes that are addressed by feminist and union action research projects.

#### **B. JOB LOSS AND INTENSIFICATION OF WORK**

In this section, I take examples from the qualitative multimethod study to demonstrate how the consequences of technologies in capitalism, though context specific, are often experienced by information workers as job loss and an intensification of work.

The shortening of hours of labour and job loss was experienced first hand by one action researcher and influenced her interest in the impact of microelectronics technologies on women's work. Ann Zelachow described effects of personal computers on library work in a university setting in the early 1980s:

Within about a month after I received the computer, I had learned how to download all those files, fix them up with WordStar, and produce a bibliography with no intervention from the secretary in one week. So I reduced six months' work to one week's work and it cut out the secretary entirely (AR-Ann Zelachow).

Not only are hours of work shortened, but she also anticipated job loss, shorter hours and less pay as part of computerization of information work in the context of downsizing. Later, as an action researcher, she provided

training to women in the context of a union sponsored program (Clement and Zelachow 1987). This was part of her attempt to ensure that information workers gained training and decision-making input during technological changes, in order to "encourage women to grab this thing and run with it" (AR-Ann Zelachow).

From the perspective of information workers I interviewed in the 1990s, the introduction of computers as a means to shorten hours of work and reduce the number of jobs was very much a part of their experience. Yet the process seemed beyond their control. In the context of an engineering company office, Lois, a group interview participant, refers to the impact of computerization on her work:

you can speed it up and condense the time and the assignments. Like, for instance, I had particular work I did, part of it would have taken five hours to prepare the work itself. And learning the functions and the codes in the computer would condense it to 2 hours (IW3-LOIS).

While the hours of work for particular tasks may be shortened by computerization and could lead to shorter work days for the same level of production, this seldom occurs. Computerization does not inevitably lead to a reduction in the work day, but rather is a means to increase production for the same labour costs. The net result is a dramatic increase in the production from each worker, but the length

of their work day and wages are not changed to benefit them.

The job loss that Mary, a group interview participant, experienced in a large insurance company indicates the way technological changes that are part of downsizing affect information workers: "I was working for ten years at [a large Canadian insurance company] and then they had a massive corporate downsizing and I was among about three hundred other people who were let go" (IW4-MARY).

Rita, a group interview participant, was aware that while technological changes at her work in a community college may lead in the direction of significant job loss, the process also depended on managers in the organization who controlled the change in technology: "Let's say they [management] had the process all correct and it was all computerized then there would be a lot of people out the door... That's not likely to happen soon" (IW1-RITA).

The most readily demonstrated consequence of computerization on information work is intensification. This intensification is usually out of the control of workers because the functions controlling the speed up of work are encoded into computer software. In a group interview, Fran described the intensification of her work with automated phone systems:

[In] the areas that I was in, it speeded things up and it made it possible for more calls to come in. Therefore you were just answering more calls more

quickly. You were dealing with a larger volume. So there would be more work (IW3-FRAN).

The process of speed-up also led to an increase in volume of calls, basically an intensification, not lightening of work occurred.

Another variation of intensification of work was also described by group interview participants who often made connections between technological changes in their workplace, an intensification of work, and subsequent job loss: "They reduce the number of people but they keep the same amount of work. That's when it starts to become stressful" (IW1-RITA). While technological changes potentially allow for a lightening of work, in this case a management strategy was to intensify work by reducing labour power. This strategy also frequently leads to health and safety problems from oppressive working conditions.

In another group interview, participants described in detail a striking example of changes in technology as a means to reorganize work that had occurred in a provincial government office that was a pilot project for restructuring. The technological changes that occurred led to multiskilling and job loss, while at the same time new technical jobs<sup>1</sup> were created. Workers whom I interviewed described their department as responsible for registration of private property liens, for instance for loans and car

sales and a variety of similar transactions, where ownership of private property was traced and registered. Over approximately a 10 year period, the registration process has changed from a manual paper process to an on-line electronic registration:

When they put it on-line, they put the data on-line, there's no paper. We call it electronic registration because they can do it on the screen instead of like talking to us... Because now if you have a regular PC at home and you have a phone line then you don't need to come in... You can just sit back in your office, you don't have to travel all the way... Well that's the way of the future. Technology (IW9-NINA).

In this situation the process of changing technologies produced more than deskilling. A new computer system was a means to eliminate jobs, and transfer of work from paid workers to unpaid clients: "See that was the big thing, we went from where we did everything, to why don't we get the clients to do a lot of their own work" (IW9-JEAN).

While electronic registration may speed up the process for the public, the impact of the changes are experienced differently by workers. Jean, an active unionist, had experienced these changes, particularly loss of information service (IS) jobs:

And I've been with the government 13 years. But when I came in we had, between day and night staff, we had a hundred people in IS alone, and we've got like 20 now. And the reason is because they have changed the technology and instead of [our] doing the work... now the work has gone 95-98% direct line, on-line, they're doing their own (IW9-JEAN).

In this context, the computer technology was not only a means to downsize a department, it was also a means to shift paid work from workers to machines and customers. This is similar to the use of bank machines to shift work from bank tellers to machines and customers that Armstrong identified in the 1980s (1984:148), and has become so widespread in the 1990s that the practice is seldom questioned.

While the job loss of 80% of information workers in this public service department is dramatic, Jean also recognised the reorganization from fragmented jobs to multiskilled work had some benefits in terms of variety of work. She describes work with the manual registration system as:

Straight data entry was what we did all day. And if we didn't do that all day we were on the phones all day. It was very stressful... But what they [management] did was they eventually switched it so we would key for half a day and be on the phones for half a day and that took a lot of stress off people (IW9-JEAN).

With the dramatic reduction in workers, group interview participants claimed that there was an increase in trust by supervisors and less overt monitoring:

We used to have posters of how much production you have to do (IW9-LUCY).  
No, we made them take them down... We had to sign in every time you walked in and walked out (IW9-JEAN).  
It's now like a trust or honours system... Part of this is because they realized they we have to trust people (IW9-BETH).  
And the managers, they get more out of people they trust (IW9-JEAN).

For the information workers who kept their jobs the contradictory nature of information work was evident. While a shift to an electronic system and cross-training reduced the drudgery of earlier fragmented data entry and telephone work of a manual registration process, their paid work was being quickly transferred to unpaid clients and in the process reducing the overall number of jobs. At the time of this research, unionized information workers were struggling to keep their jobs by accepting multiskilling. This response to technological changes conforms to Pat Armstrong's analysis:

Worker resistance to the introduction of new technology is considerably reduced during an economic crisis, as the employer proposals seem the only way out of the crisis and the possibility for a few to retain their employment in the face of a huge reserve army of labour (Armstrong 1984:144).

The research then supports the claim that technological change can lead to job loss, reduced worker control, and work intensification. At the same time, it can also reduce drudgery and increase worker's flexibility.

### **C. TECHNOLOGY TO DESKILL AND CONTROL WORKERS**

Braverman (1974) accounts for technological changes and the labour process by focusing on connections between scientific management, technological change, and the nature, conditions and relations of work. He argues that scientific

management of monopoly capitalism employ machinery (or technologies) to deskill work as a means to control the labour process (Braverman 1974:120). As jobs are deskilled, labour becomes more disposable, and managers degrade work by undervaluing workers and intensifying work. Recent labour process theorists (Beechey 1982; DeBresson 1987; Elger 1982; Lee 1982) recognised that while technological changes provide a means to deskill work within capitalism, at the same time new skills appear as workplaces are restructured.

In the multimethod study, the introduction of computers to clerical and office work led to deskilling, and workers were seldom warned about the introduction of new technologies into their workplace that transformed their work. Lois describes the way computers were introduced into her workplace with no warning and inadequate training for her to adjust to the changes in her work:

At the typist level, at the bottom level, no, you just acquired the information and work like hell to learn it... The equipment suddenly appeared and the people to train or teach you the codes would suddenly appear and uh... this code does this and that code does that, and you practice it and you learn it or you're out on your ear (IW3-LOIS).

For some action researchers in the multimethod study, the question of deskilling as part of the computerization of information work was not as clearcut as it may be with manufacturing work. While technological changes were a means to degrade information work and routinize women's skills,



Marcy Cohen pointed out that the process in information work was not clearcut because deskilling and upskilling occurred at the same time:

The whole thing with de-skilling, there's a group of people say yes and the other people say up-skilled, that is the basis for saying both things are happening, and that in the earlier stages it is de-skilling (AR-Marcy Cohen).

Cohen also pointed out that in the 1980s there was "an incredible ideological commitment in the Labour Movement to the de-skilling thesis" (AR-Marcy Cohen). From her perspective of education to mobilize workers, the deskilling thesis limited possibilities for seeing that some new technologies, with worker input at the stage of design and introduction, may be both enabling and disabling at the same time.

In some cases introduction of new computer systems also led to an elimination of skills from traditional secretarial work, because they were shifted from the secretary to the boss. To a certain extent, this is an example of clerical skills becoming obsolete for that job, while bosses' jobs are essentially deskilled because they take on the work of their assistant in the form of computer skills. Hana describes the demise of secretaries role in this way:

Because they're phasing out secretaries now. There's not the secretary coming in and taking shorthand anymore. They [bosses] just record things. Sometimes they make their own notes. So you don't have to do shorthand anymore, you don't have to sit in on meetings

anymore to takes notes, whether its short- or long-hand. That's a thing of the past. You know. He scribbles his own notes and then he comes upstairs and types it up himself, you know. Sometimes he doesn't speak to me for the whole day. There's no need (IW8-HANA).

In one group interview, public service workers described a shift from fragmented work which has become obsolete, to cross-trained or multiskilled work that they describe as an improvement in their working conditions over time. Ella described these changes in this way:

Because years ago this office was strictly specialized field and that was awful because I was held back in one position just typing. And I hated it and no one would listen to me... And he just got rid of that specialty crap and now everyone is cross-trained... You will have to have your own function, but you can jump into anyone's position and survive (IW8-ELLA).

In this situation Ella rejects fragmentation of work and views cross-training as an improvement, because it relieves the stress from routinized work and provides her with the ability to do more functions as a survival strategy.

#### **D. COPING AND RESISTANCE STRATEGIES**

While resistance at work is usually conceptualized in terms of formalized collective action, feminist researchers studying women and work have also raised the issue of coping strategies and individual actions as a step towards more formalized resistance (Armstrong 1984; Barker and Downing 1985; Choiniere 1993; Dill 1988; Luxton 1980; Pringle 1989;

Reiter 1991). The information workers in this study shed light on some coping strategies that they employed and ways that they tried to gain input into changing in work organization that they experienced. When action researchers in this study attempted to address issues of technological changes with women workers, in many case some form of coping strategy may have been their only experience with taking action and recognising themselves as part of the technological change process. As one action researcher noted an important step in this process is: "One of the things they discovered, is that they actually had more control over their workplace than they realised" (AR-Joey Hartman).

In a non-unionized university workplace the women information workers took individual action in a form of a coping strategy that involved regularly threatening to quit, but then returning to their work. Two interview participants discussed this coping strategy as:

We've both quit several times recently... Oh yeah, I quit in September and, when was the last time you quit (IW7-ANNA)?

I don't know, I remember stomping down that hall and I said don't call me (IW7-ANNA).

You gave me all your files at some point (IW7-JUDY).

Oh, that was recently (IW7-ANNA).

We're not kidding. You know. They never heard the word quit here before we uttered it (IW7-JUDY).

These two women obviously understand the conditions of their work and would like to make changes if they could. In fact, attempts have been made to organize in this workplace, but

with limited success. Attempts to organize workers were difficult, and led to one worker who led the group gaining while coworkers made no gains:

We have attempted to take collective action... But they're attempting to separate us. We tried to get a four day work week and that didn't work out. And what happened was I got a day off every other week, but they got nothing, you know... I don't know what the hell that's about (IW7-JUDY).

While this is a management strategy to contain a troublemaker and discourage union organization, it may also spark renewed interest in resistance from these workers and initiate a search for more concrete collective forms of resistance.

In many instances, information workers described the sense of being hooked up to the computers and phone systems that structured their work lives. While at work it was difficult to get relief from the machinery of their workplace, the coping sometimes occurred at home. One woman, who otherwise expressed enthusiasm for computers at work, emphasized the importance of being unhooked from phones and using computers differently at home:

Now that I'm working there are two rules when I come home from work. I don't answer the phones, the children answer the phone... I don't want to talk to anybody on the phone... The feeling of having that thing attached to my ear for more than the work day is repulsive to me. Um, I try to do things that are complete escapism, that absolutely do not have anything to do with work. With one exception, I'm a computer junkie, and I have a computer at home and for some unknown reason... my computer and I spend a lot of time together. But then I

do writing, all kinds of writing (IW2-GAIL).

Gail is obviously interested in computer technology and able to distinguish between skills for work and a means for creativity at home.

Gail also described a committee that management requested she participate in because of her understanding of computer systems, when new computers were being introduced into her unionized workplace. The Common Office Environment Committee was a management not union organized committee made up of staff persons, with a goal of determining the most effective allocation of resources during a computer upgrading process. While Gail had hoped to have input into technological changes, she discovered that once her knowledge of computer systems was used for the committee, there was a political agenda that management imposed on the decision making process at the end:

I'm on the Common Office Environment Committee, which... determined where the dollars were to be spent for upgrading computer equipment across the board in the college. It was a staff committee... we actually had a big budget to work with and were given a fair bit of autonomy on where those dollars went... The one thing that we discovered though, was that although we were supposed to have a fair bit of autonomy, there were strings being pulled from other places... We had allocated that x number of computers be purchased to go to this spot, and all of a sudden those computers were lifted and taken to somebody else. And that sort of thing, we had absolutely no control (IW2-GAIL).

Gail's workplace was unusual, because in most workplaces women information workers seldom have an

opportunity to offer input on technical decision-making.

The area of work that women more often consider themselves knowledgeable, and at times gain input into the decision-making process, is occupational health and safety. Nonetheless, as Gail points out this is one of the committees that has been set aside with reduced union membership due to downsizing:

We had a health and safety committee. I think it's kind of gone. It's like there's a person that kind of is responsible for health and safety now. It used to be a full committee until cutbacks occurred and we lost a fair number of staff and there just weren't the hours to free a person up to do a half day of health and safety a week or whatever (IW2-GAIL).

The health and safety issue that participants in different group interviews returned to was the discomfort and health problems they experienced from working at a computer all day. While this was an immediate concern to several interview participants, it was also a concern that women seemed unable to get resolved during current economic cutbacks. One group of public sector workers focused on this topic as they imagined improvements they could make to their workplace. After describing chronic back pain, Lisa laid out the problem clearly:

I'd include the proper ergonomic technology to accompany that technology, because the technology would be PC oriented, it would be Fax, PC, modem... You have to make your own ergonomic requirements out of what you've got... There's no budget, there's no budget for anything, never mind a proper chair (IW8-LISA).

In this public service department, when funds were available to purchase furniture, the workers were not asked about what they required so that aesthetics not function became the criteria for managers to select furniture.

Years ago when money was flowing for stuff like that, you know, our managers took our good chairs, good desks and everything and buy everything that looks nice and isn't practical. And today we really need practical chairs... They maybe like the look of it, but they didn't get our opinion on that one. Because if they had they would have found out what we need (IW8-ELLA).

The issue of union involvement, and the recent occurrence of the Ontario Public Service Employees Union strike in 1996 indicated that information workers in the group interviews for this thesis are interested in collective action. Ivan describes how his involvement in his union contributes to his paid work:

It helps me do my job actually. When I come in I can relate to it better because of the experience I've had with our union and things that work there and now I can communicate it to people better and increased my knowledge and self-awareness and stuff like that. Definitely a benefit, yeah (IW2-IVAN).

Similarly, Gail describes what she learned as in an experience that she had supporting a coworker in a grievance procedure:

Ours is not a particularly strong union in a lot of respects. But I did discover a lot by going through a grievance process with one staff member that was grieving a decision that had been made. I learned two things actually. I learned to shut my mouth which is probably a first. The second thing I learned was to listen very carefully to both sides and even though I didn't agree with one of those sides at all, I learned

to be very objective. That was hard for me because the party involved and I were not the best of buds and I didn't agree with things that were being said, but I shut up and I was there representing them... It was an interesting experience, but a difficult one, to be objective (IW2-GAIL).

While this example is not apparently about technological change, it does indicate a recognition of the value of collective action to support workers demands. Old union strategies do work on some technological change issues.

The OPSEU strike in the public service sector in Ontario affected information workers throughout Ontario. In one group interview with information workers, none of whom were union activists, the information workers described their involvement. Hana describes the strike in terms of job loss:

Well, we were on the line... Oh, I was very in favour of the strike. Or else I wouldn't have walked the line, I would have probably stayed home... But I came along because there were being unfair to us, they just wanted to get rid of us without any cushion, as she says, you know. Just throw you out, they don't care about you at all. So I was in favour of the strike. It was too cold to be foolin' around outside (IW8-HANA).

Lisa describes the strength of their local throughout the winter strike:

Isn't that coincidence, all three of us were on the line... Yes indeed I voted for the strike. I was in favour because at the time I thought it was the right thing to do, it was the best thing to do. Midway through, like everybody else I was cold and tired, but I had great leg muscles and uh, despite the smog that we breathed on Bay Street, still I don't know of anyone who got sick, there might of been the odd sniffle.(IW8-



LISA).

Perhaps it is Ella's descriptions, though, that best exemplifies the value of collective action to shift a person from accepting to resistance to changes in information work, and to give them a sense that with the tools they can participate in change:

During the strike, the first thing that went thorough my mind was 'I can't believe this is happening, I know this isn't happening, tomorrow it will be over', and you know. And it wasn't. It wasn't going away, we were cold, we were frightened, we were concerned about our jobs and our positions and whatever. But we knew we had to be out there, we had to fight for what we wanted. At least if we are going to lose our jobs let us lose it with some dignity and pride. And let us fight to the end for the jobs. When I say fight for the jobs, I mean... If we're gonna go at least we're gonna have a better chance. By being out there we give ourselves a little, that now we have a little cushion... I'm glad I walked the line, I'm glad I was there... I couldn't believe it. Oh, I say to [Hana] while we were on the line. I said to her I can see myself sitting on the veranda in my rocking chair, an old lady with my shawl around me and I'm sayin' to my grandchildren 'I remember the strike of... it wasn't '56 or '76, it was '96!' (IW8-ELLA).

While action through unions was more effective, women still attempted to influence technological change in other ways. The actions were limited by the power relations in these economic times but they did have some impact.

#### **E. PARTICIPANTS IN SOCIAL CHANGE?**

In this chapter I have employed concepts to analyze material from the feminist multimethod study. This opened up

some of the contradictory ways that women experience technological interactions in their work lives, yet many of these concerns remain unresolved in this form of analysis. To partially resolve various kinds of contradictions that women experience, I argue that women do take action to change their circumstances and the impact of technologies on the conditions of their work lives.

This chapter included descriptions by women information workers of some coping strategies at work, and attempts they made to gain input into changing technologies. Also involvement in union activities and a recent strike in Ontario point to information workers interest in changing their working conditions, even if they do not have the tools to make these changes.

In this thesis, actions taken by and for women around technological change issues are studied in terms of feminist and union action research in the 1980s and 1990s in Canada. In the next chapter some of the contradictions that have been exposed in the group interviews in particular are topics that were addressed in feminist and union action research projects that specifically target the needs of workers, particularly information workers.

## ENDNOTES

1. In a recent study in metropolitan Toronto, de Wolff indicates that "The only newly created clerical-related jobs that we came across were technical support positions. Because of the cuts to staff, workers are staying in the remaining jobs as long as possible" (1995:60).

**CHAPTER SIX**  
**TOOLS FOR CHANGE: ACTIONS TAKEN BY**  
**AND FOR WOMEN WORKERS**

**A. INTRODUCTION**

When I asked information workers in group interviews about the work they do, they described complex work and offered information about their particular workplaces. They recognised that changing technologies, particularly computer systems over which they had little control, were a means for management to shape their work lives. They also described an economic climate that stressed downsizing and massive reductions in information work in Ontario. This is a pattern that is not unique to Ontario, but part of a trend for information work throughout Canada (Osberg, Wein and Grude 1995; Yalnizyan, Ide and Cordell 1994).

To change this trend some information workers in this study expressed an interest in finding ways to take action and have more input into decisions about technological changes that affected them. In most instances, it is difficult to gain tools to take action around issues of changing technologies and the work women do. Nonetheless, if technologies are interactive processes in women's work

lives, then there are possibilities for organizing and taking action around technological change issues.

In this chapter, feminist and union action research in Canada is analyzed to trace how and when actions were taken by and for women workers around technology issues, and which strategies contributed to social change. Action research projects in this study span the 1980s and 1990s, when technological change issues were on and off the agenda of the women's movement and the labour movement in Canada. The projects studied in detail were either federally funded in the 1980s by the Technology Impact Research Fund (TIRF), or provincially funded in Ontario in the 1990s by the Technology Adjustment Research Programme (TARP). Most of the action research projects included in this analysis are complex and involve several different strategies to spark the consciousness of workers, union executive and management.

Action research projects selected for this study are generally grounded, explicitly or implicitly, in a feminist perspective or labour process theory. I define feminist action research as projects that specifically address needs of women workers, and are often carried out by women's groups. I define union action research projects that primarily address issues for union members, usually include women workers, and are often carried out within a union.

Since feminist and union action research starts from the perspective of workers, the contradictory nature of changing technologies in women's work lives often forms the basis around which organizing for change then occurs. This view supports a feminist approach described by Chandra Mohanty: "It is only by understanding the *contradictions* inherent in women's location within various structures that effective political action and challenges can be devised" (1991:66).

My review of TIRF and TARP funded action research documents and reports indicated that the research, strategies and actions were structured by the intended end point of each action research project. For the purpose of analysis, therefore, projects were separated according to whether the endpoint of the action research was to give tools to women workers in their workplaces and locals, or to provide specific information for unionists and the labour movement in general. On the one hand, projects that developed tools for workers emphasized technology education and training projects to directly involve workers, and the means for locals to develop technology committees, particularly for health and safety issues. On the other hand, projects that provided specialized information for unions and worker representatives to legitimize their demands to management, emphasized developing negotiating language and policy recommendations around technological

change and work. These strategies also provided a means for workers to take collective action beyond a specific workplace or local. John Anderson emphasized this aspect of TARP:

If you look at the OFL [Ontario Federation of Labour], there were very concrete changes around the policy around the information revolution, the information highway etc., there was a programmatic statement which was adopted last Congress, there was briefs which were presented to the CRTC etc. which could never have been done if that TARP project did not come into existence (AR-John Anderson).

## **B. ACTION RESEARCH AS A POLITICAL PROCESS**

Feminist and union action research differs from most academic research, because the ideological and political interest of the researchers is usually explicit. The projects selected for study in the multimethod study took the perspective that workers are knowledgeable, and addressed issues of technological change and work organization. Feminist and union action research is a political process because it contributes to organizing workers. For instance, action researchers in projects in the multimethod study also expressed a commitment to social change that benefits workers:

So I was able to use what I had learned about research and methodology and helping to frame questions to help some of these local officers make sure they knew what they wanted to get in terms of information, and then construct questions that allowed them to get at that information (AR-Teresa Johnson).

Another important aspect of action research projects in this multimethod study was inclusion of a process of information sharing and taking advantage of other researcher's expertise. In the TIRF project this aspect was an informal network between some researchers, but with the TARP project it was an integral part of the process:

Those meetings that would occur were really valuable, so people could talk about their research and just talk... It was both an opportunity for people to talk about preliminary findings and an opportunity to discuss methodology, direction, just an opportunity for people to come together and talk about tech change more generally... so you weren't working on your project in isolation (AR-Jane Stinson).

In the case of action research from a feminist perspective in this multimethod study, the focus of a project was women workers. Theoretically these projects were explicitly or implicitly grounded in a feminist theoretical perspective and mainly employed qualitative methodologies. A goal was to provide education or consciousness-raising opportunities to women workers, so that they would gain a voice, participate in collective actions, and perhaps initiate future projects: "I think we did heighten awareness, we did heighten people's ability to feel that they could challenge" (AR-Joey Hartman). For Pat Bird documenting women's voices was emphasized: "I know how seldom women's voices get recorded. So for me to be part of a project that helped do that, even though they were



anonymous, it was very satisfying" (AR-Pat Bird).

Most action research projects from a union perspective were grounded in labour process theory, particularly Braverman's deskilling thesis which provided an explanation for the transformation of male-dominated skilled trades work in manufacturing sectors. For Marcy Cohen, however, this commitment of the Labour Movement in the 1980s to a deskilling thesis limited their ability to see that: "there were aspects of the computerization which increased the reliance on the workers and created new sources of bargaining, new sources of power" (AR-Marcy Cohen). In the 1990s, as a staff person within a union, Cohen may be able to find those 'new sources of power' to bring issues of technological changes and information work to the surface.

I am working on the inside... I just asked permission to organize a workshop of clerical workers at 7:30 in the morning at the convention to do an initial round of asking what were key issues around tech change and clerical work... I called a workshop, it is given out to the 500 delegates at the conference, 70 show up. The leadership sees there's 70 people, this is an issue that they care about (AR-Marcy Cohen).

An emphasis on strengthening membership as part of the political process is evident in Cohen's example and a part of most union research included in the multimethod study. In reference to a TARP project on telework, Teresa Johnson explained that:

The question we kept asking ourselves throughout the exercise was, "what possible difference is this going

to make in the lives of union members?" Is it going to provide them with anything useful? And that was our constant test of what we were doing (AR-Teresa Johnson).

The union action research projects I selected for study included both qualitative and quantitative methodologies, and started from the perspective of workers not management. In the TARP project in particular, there was also an interest in developing research skills in the labour movement that was unusual: "one of the objectives of the project was to place research and analytical skills... in the Labour Movement. And that is, in my case, precisely what has happened" (AR-Teresa Johnson). This point is important because often research skills are undervalued by the labour movement, even though a valuing of worker skills is a priority. For instance, in Tech Change: A Handbook for Union Negotiators (Canadian Labour Congress 1995) research information from TIRF projects is described but with incomplete citations; therefore, original reports would be difficult to locate. In the TARP project, academics who were involved also benefited from the process: "I gained a tremendous insight into first of all, the impact of technology on the workers' movement, the impact on the union movement, [and] how it functioned" (AR-John Anderson).

Feminist and union action research challenges the notion that research by and for workers must be 'objective',

because the interests of the researchers are often visible. The process of self-reflection is often part of sociological research from a feminist perspective. Admitting one's subjectivity as a researcher is seldom explicit in technology and work research, particularly when research is conducted by experts from the perspective of management. Benston, White and Cohen emphasize a consequence of reliance on experts employed by management is that: "the results of any study is not neutral, and so the information available to workers most probably will not reflect labour's outlook or interests" (1987:24), as opposed to experts employed by unions who: "are more likely to be sympathetic to the point of view of working people... They still leave union members as passive observer while the experts fight it out" (1987:24).

In feminist research, however, reflexivity is often acknowledged and the relevance of contributing to social change is also taken into account. This does not mean that the methodology is less rigorous than academic research, instead the research questions are more often directed towards social change as part of the project. For instance, one action researcher I interviewed in the multimethod study stressed how commitment to union members structured their research: "This project was to give back to the union, and we didn't want to do abstract research that meant absolutely

nothing" (AR-Jan Borowy). This practical element of feminist and union action research makes these projects interesting from the perspective of understanding changing technologies and women's work lives as part of dynamic processes in which women can and do participate.

### **C. TOOLS FOR WOMEN WORKERS**

The process of consciousness raising in action research is often addressed through developing curriculum and implementing educational sessions and training programs that take the perspective of workers. This approach encourages critical thinking and an understanding of strategies for actions informed by a feminist and class consciousness, so that workers can then channel their energy into more concrete actions over time. This strategy also brings to the surface the various kinds of contradictions that workers experience in their day-to-day work, yet adds a structural analysis to what may otherwise be interpreted as only a personal problem:

You know how women needed to become assertive and change and adapt to the world of work. And we sort of decided that what we needed to do as well, was talk to women about what the work labour market was like, in terms of not just how they needed to change individually but the structure the labour market was like and what needed to change structurally (AR-Marcy Cohen).

From a feminist perspective, TIRF funded projects

conducted by Marcy Cohen and Margaret White for Women's Skill Development Society, as part of the Microtechnology Working Group project, were a model of feminist action research on changing technologies that offered tools to women as workers (Women's Skill Development Society 1986; Cohen and White 1987, 1986; White and Cohen 1988). Since these projects were conducted in the political climate of British Columbia in the 1980s, Women's Skill Development Society was affiliated more closely with the women's movement than the labour movement: "here we were this little community organization trying to work with front-line clerical workers and no institutional support from the Labour Movement" (AR-Marcy Cohen). During our conversation, Marcy Cohen expressed the need to work with unions and that the lack of coalition building between the women's movement and the labour movement was a feature of the particular right wing politics of a Social Credit government in BC in the 1980s. In the politics of the 1990s in BC, however, she described constructive links between the women's movement and the labour movement: "I think there is a real advantage in working in-depth in your own union, or where I am located now. I would really like to support and encourage that kind of an organization across the unions" (AR-Marcy Cohen).

Most of the action research projects by the Women's Skill Development Society placed emphasis on curriculum

development, educational publications and worker education. Benston, White and Cohen summarized that the purpose of the Microtechnology Working Group was: "to put the philosophy of the feminist movement in action - that is having research respond to and be shaped by the needs of women's experience in the community" (1987:29). The research was based on literature reviews, case studies, and surveys to specifically address the impact of technological changes in microelectronic technologies on the organization of women's work. Marcy Cohen described the way these projects developed:

Well, we had done this curriculum work around women and micro-technology, it seemed to be an area where a lot more work needed to be done. That most of the focus was on women and trades. That wasn't really where most women were working. And that we wanted to talk about clerical work and traditional work that women did in service sectors and so the first project we did was this comparative study of five sectors, looking at how micro-technology was changing work in private and public sector, union and non-union (AR-Marcy Cohen).

The approach taken by Women's Skill Development Society was based on the assumption that women workers can be agents in their workplaces, they can resist technological changes if they have the tools for change. The educational projects were based on feminist and labour activist strategies to give women workers an opportunity to gain a gender and class consciousness as a starting point for taking action, and for collective resistance.

Women's Skill Development Society's (1986) project, Working Women Enter the Computer Age (prepared by Marcy Cohen and Margaret White), was a curriculum based on reviews of and excerpts from academic, political, union and popular publications on topics like deskilling, enskilling, job loss, health issues, and workplace monitoring. Many of the articles in the Working Women Enter the Computer Age curriculum are sources that are often cited in women and work literature of the 1980s, but generally difficult to locate in the 1990s because they are in alternative periodicals or obscure publications. For instance, publications from 9to5 National Association for Working Women (1985, 1984), from alternative publishers (e.g. Tepperman 1976), and the Canadian Labour Movement.

There were two main points that Cohen and White emphasized throughout the curriculum and pursued in subsequent projects. They consistently linked the impact of technological changes of computerization of offices to work organization. Also computers were never described as neutral, or in isolation from management and workers, so that the people behind the machines were always made visible. The curriculum emphasizes that the organization of jobs is not inevitable:

Most of us are so used to our jobs being organized in a particular way that we rarely think about the fact that it could be different. But when management comes up

with a plan to reorganize work the options become more obvious. We realize that people actually make decisions about how work can be organized in a variety of ways, some of which are more beneficial to us workers than others (Women's Skill Development Society 1986:4).

Since Cohen and White always linked technologies, work organization and people, they also assumed women can and do take action if they have specific information upon which to base their organizing strategies. Cohen and White stress that workers must gain input in the early stages of computerization.

Another project by Cohen and White (1987), Taking Control of Our Future, included a range of case studies in different work settings and surveys of information workers, to address lack of resources available to confront the impact of microelectronics technology on clerical workers in Canada. The case studies conducted in British Columbia were detailed and identified several trends shaped by office automation that were similar to trends described in feminist academic research (Armstrong 1984; Applebaum 1990[1987]; Hartmann, Kraut and Tilly 1986). Cohen and White's case studies showed a widening gap between workers at the top and bottom of the clerical hierarchy; an increase in electronic monitoring; the relevance of equal pay as an issue for all clerical workers; health problems associated with video display terminals (1987:63). The trend towards a widening gap between workers in the clerical hierarchy included:



the integration of managerial/professional jobs with high level clerical positions; a reduction in traditional medium level clerical functions; and the development of a pool of low level data entry and routine clerical positions that are particularly vulnerable to automation (1987:64).

Since these case studies were part of action research projects rather than academic projects, the case studies were not seen by Cohen and White as an end in themselves because their view was that:

It is important for workers both to have access to research findings that validate their own experiences in the workplace, and to feel confident enough to initiate workplace research that reflects the experience of workers rather than the interests of management experts (Benston, White and Cohen 1987:28).

The case studies were a part of a continued interest in developing current and relevant educational materials for women and unionists to use to educate and mobilize women, so they could take action before, during or after the introduction of new technologies:

By building on the experiences of women workers, we hoped to develop a better understanding of how jobs could be reorganized to ensure that clerical workers benefit when new technologies are introduced... It is also our intention that, through the development of educational materials and workshops, these research findings will be used by women as part of their struggle to take more control over their working lives (Cohen and White 1987:1-2).

The format of Women's Skill Development Society publications was accessible to women workers and union organizers as an educational tool, so they were widely distributed in the women's movement in particular: "By

developing materials based on these research findings the [Microtechnology] group hoped to make the research accessible and interesting to women workers" (Benston, White and Cohen 1987:26). In the late 1980s, Cohen and White introduced the Women's Skill Development Society projects to activists and adult educators at women and work conferences and workshops, for instance ones sponsored by Organized Working Women (AR-Marcy Cohen), to further their goals: "It is our hope that this information can be used by clerical workers in their struggle to gain more control over their work environment" (1987:3). At this stage Cohen and White, like many other feminists in the mid 1980s, argued that women can and should have input into decision-making around technological changes at work to ensure the introduction of computers enhances rather than degrades office work. They encouraged women workers to organize at the stage of introduction of these technologies in order to ensure computers are not a means to further oppress women workers:

It is important to realize that there are alternative ways to use the technology and some meet human needs, for both workers and users of the service, better than others. Therefore it is important for workers to have input in the early stages of computerization when there is still a chance of influencing the outcome (Women's Skill Development Society 1986:106).

Cohen and White and others (Clement and Zelachow 1987; Hartmann, Kraut and Tilly 1986; Menzies 1989; Stevenson 1989) consistently stressed that workers must gain input

into decision making about technological changes at work, and that worker education was a first step in this process. Benston, White and Cohen also stress the importance of moving from worker education to workplace research:

"Initiating workplace research is a way for women workers to represent their own interests in the collective bargaining process, and to ensure that their issues are well-represented at the bargaining table" (1987:29). The model used in Sweden was often cited to reinforce the notion that with struggle worker's input is possible. As part of the Swedish model in the 1980s, employers must provide training and education about new technological systems to all workers whose jobs will be affected by technological changes (Cohen and White 1987:107). At that time in Sweden, worker input was also formalized so that:

Workers at the local level are recognized as the experts in terms of the organization of their work; they are primarily responsible for implementing and evaluating the technology agreements at a local level (Cohen and White 1987:110).

As part of the 1990s TARP initiative action researchers participated in a study tour in Sweden. A goal of this study tour was to gain an understanding of how workers gain input into decision making around technological changes and work organization to make technologies more enabling for workers.

Feminist researchers, particularly socialist feminists, predicted that job loss in clerical work after

computerization would be delayed rather than immediate (Armstrong 1984; Menzies 1989). Cohen and White also recognised that job loss that usually occurs with workplace technological changes is not necessarily evident with introduction of computer hardware or machinery; instead it occurs later with changes in computer software like word processing or monitoring programs:

We are led to believe that technological change occurs when new equipment is introduced. But the most significant changes often occur later when new software programs are developed that transfer decision-making from the individual to the computer program. It is very easy to be complacent about job loss in the early stages of computerization. This leaves workers unprepared and unprotected against job loss that might occur in the subsequent stages of technological change (Cohen and White 1987:129).

In the context of action research, Cohen and White connect the delayed job loss with difficulty with mobilizing workers to gain input into decision-making early, particularly at the stage of introduction of microelectronics technology. Cohen and White link the complacency around job loss among workers to the way initial introduction of computers produced less job loss than subsequent changes in computers, which are masked behind software changes that are practically invisible. During the process of computerization of information work, then, the more complex software programs that can appear to make work easier, also involve a subsequent replacement of workers by the machine or software

that leads to delayed job loss. By the time job loss occurs, information workers have adjusted to the new technologies in their workplace, and may attribute job loss to their own incompetence rather than an active strategy based on management's selection of computer software.

A general invisibility and undervaluing of software changes was also raised by group interview participants I interviewed in the 1990s, who described continual computer software changes that were supported by minimal training for them as information workers. At the same time, unemployed women in my group interviews who were job searching described a rapid upgrading of computer software that meant that their computer skills in earlier software programs became undervalued or obsolete.

The notion that alternatives are available to workers is a common element in projects that emphasize worker education and training as an organizing strategy to address technological change and work organization. For instance, with the introduction of new technologies, particularly computers, action researchers argue that workers can benefit if they are prepared to struggle to ensure their demands are met. Similar to Cohen and White's approach, other projects argued that the initial step of worker education is important for participants to gain the knowledge and understanding of changing technologies and their work.

Cohen and White stress the importance of workers gaining a gender and class consciousness through worker education that can lead to effective action to benefit themselves and other workers. This point is highlighted in Taking Control of Our Future by a description of Jo-Anne Belick's shift from anger with impending job loss, to organizing clerical workers in a public service union, the British Columbia Government Employees Union (BCGEU). Belick became active in her union, and completed worker education in technological change which she sparked her activism: "What I heard was exactly what has happened in my office. It scared the hell out of me but also gave me some direction as to what I could do about it" (Cohen and White 1987:99). The BCGEU technological change committee that Belick formed with "about nine clerical workers from different work sites" (Cohen and White 1987:99) pressured the union executive to recognize clerical workers issues. This BCGEU technological change committee also conducted their own members survey on technological change and work.

At the bargaining table, the union negotiating committee was able to use the survey results to demonstrate that clerical workers were not satisfied with technological changes they had experienced, and to negotiate terms for job security and wages for clerical workers affected by technological changes imposed by management (Cohen and White

1987:100). A goal of this form of union action research that was realized by the BCGEU was:

Besides individual action we need the collective voice and strength of the union to protect worker rights and dignity and ensure technological change is not designed to only benefit the employer (BC Government Employees Union Administrative Services Component 1985:15).

In the 1980s, for example, the Vancouver Municipal and Regional Employees Union (VMREU) conducted, with TIRF funding, a multimethod study that is an example of the development of an end user technological change process for workers, that challenged the usual top down process endorsed by management (Hartman 1987). Margaret Benston was one of the researchers for most of this project, so that many of the ideas she raised in her writings (Benston 1984, 1983) are applied practically as part of this particular action research project.

The VMREU project was designed to address the introduction of microelectronics technologies into members' public sector work, both women and men: "to get people to think more critically and to have a sense that they could have some role in accepting or rejecting the introductions that were being made" (AR-Joey Hartman). The project included management interviews, a membership questionnaire and interviews, a series of four worker facilitated workshops as part of a test group study, and the development of a prospectus of alternative technological applications

delivered to management for consideration (Hartman 1987:1).

The VMREU action research project was based on the assumption that "workers are in fact the 'experts' in their own workplace and that they can and should be central to the process of design of new technologies for that workplace" (Hartman 1987:1). Workers themselves were involved in the VMREU project not only as participants, but also trained to be workshop facilitators so that union members generated ideas about "what kinds of systems applications they would like to see introduced" (Hartman 1987:1). The workshop stage of this project was designed for workers to recognize the knowledge they had of their own workplace, then initiate future actions. Joey Hartman, the coordinator of the VMREU project, described the way the union members who became workshop facilitators gained an understanding of worker education and mobilization during the project:

Some of them started out being unsure. To watch them come back from their workshops sounding a little more familiar and a little more in control of it, quite excited about what they were doing... certainly we hoped that the 30 volunteers for example, would continue to be activists in the organization in the union, and continue to be workplace advocates (AR-Joey Hartman).

What is not obvious in the TIRF report, but discussed in an interview with Joey Hartman was the way union action research was an opportunity to organize:

And so we wanted to use it as an organizing opportunity as well as to throw a wrench in this idea that you



should just be able to go in there and impose this on people, without giving any consideration to what they think about it. And how is it useful for them?... we claimed that you need to educate people [about] what the options are before they can have any ability to say what they would like to exercise... I think we did heighten awareness, we did heighten people's ability to feel that they could challenge (AR-Joey Hartman).

In the short term, workers gained an understanding of how technological change and work organization was a participatory process, even though worker input was difficult to impose on decision making around technologies at a local level: "People started paying a lot more attention to their workstation design. Could we claim that was because of us? I don't know" (AR-Joey Hartman).

Some union action research projects led to fairly immediate concrete gains. For instance, York University Support Staff (YUSA) conducted a TIRF funded action research as part of a self-managed office automation project (Clement and Zelechow 1987), and subsequently gained a staff training centre for technical training. An action researcher for this project was critical of what she referred to as the 'women's movement's negative response' to computers: "There was a lot of whining at that point about the danger of technology. About how it was going to destroy people" (AR-Ann Zelachow). From Ann Zelachow's perspective, computers were enabling and potentially improved work: "I could see... really a tremendous potential for these new instruments, provided

clerical workers were given what they needed to have in order to, or equal, to design their own work" (AR-Ann Zelachow).

In light of problems with inadequate training in the 1990s described by university information workers I interviewed in the group interviews (Refer to Chapter 4), the YUSA action research project addresses an issue that remains relevant today. The aim of the YUSA project was to:

show that with appropriate assistance, staff could, by making their own informed decisions about the use of their personal computers, derive more from their work and advance their self-reliance (Clement and Zelachow 1987:4).

The action research included a survey to support staff, in-depth interviews of a control group of clerical workers and a group involved in a series of weekly meetings at the resource centre: "staff from different departments could discuss among themselves the problems they faced and how to tackle them" (Clement and Zelachow 1987:5), and a staffed technical resource centre was developed. The resource centre was available to YUSA members for: individual and group workshops on computer topics; access to personal computers for practice with software; a lending library of training materials; and a phone-in line for computer related problems (Clement and Zelachow 1987:7)

The initial action research project conducted by York University Staff Association was a response to the way that

personal computers were introduced into offices without adequate training for clerical workers. Similar to other TIRF projects, the initial action research provided the impetus for further action around technological change issues to respond to needs of workers: "They all had computers and they were all being stressed. They wouldn't have been aware, but more important the union wouldn't have the confidence in their vision to say we want a training centre" (AR-Ann Zelechow). According to Ann Zelechow, partly due to the earlier action research, the need for training for clerical workers became important enough for clerical workers that YUSA was able to successfully make a union directed training centre a key bargaining issue in 1987 contract negotiations:

I remember sitting and we put training down as an issue and we wanted to get reasonable training... And I remember at the strike vote clerical worker after clerical worker standing up and saying, I am trying to do my work before I get the training and I am willing to strike on it (AR-Ann Zelechow).

The union-directed training centre that was developed at that time remained a joint union-management project for several years: "What we did get out of it, finally, was after the project ended. We had set up a full training centre at York University" (AR-Ann Zelachow). In my interview with Ann Zelachow, she described a recent shift of control of the training centre from joint control to

entirely management controlled, partly because "there was a joint training committee which was weakened in the past few years because the union hasn't put energy into that" (AR-Ann Zelachow).

While much of the educational initiative that emerged from action research projects by and for women workers helped women adjust to the introduction of computers into their workplace, some action researchers also attempted to understand the educational requirements of unemployed women as a result of computerization of office work. In the mid 1980s Times Change Women's Employment Centre in Toronto was a service to specifically address the needs of unemployed women. The use of action research to link theory and practice is evident in Pat Bird's reflection: "From our point of view, it was an opportunity, I think our goal was to see whether our impressions... were borne out by a systematic look" (AR-Pat Bird).

Times Change used an action research project (Bird and Lee 1987), funded by TIRF, to conduct interviews with companies who hired clerical workers, and with unemployed and recently employed clerical workers who accessed Times Change services: "we wanted to compare women who were having difficulty finding work with women who actually had found work and to look at what employers had to say about the field, compared to what the women were saying" (AR-Pat

Bird). The interviews for the research were based on survey research with primarily closed-ended questions (Bird and Lee 1987: Appendix). This allowed the information to be collated into charts and guidelines, which were made available to employers and unemployed workers as an educational and information tool. Since Times Change provided a service for unemployed women the material from their research also had an immediate use:

it was one of the least disruptive Projects that we have done because we could immediately feed into the group that women were in. So every week, if we came back from a couple of employer visits, we could say this is what they told us and they could use that immediately in the groups (AR-Pat Bird).

These examples analyzed in this section all illustrate the way action research that takes the perspective of workers can lead to different educational strategies to mobilize workers. Since the action research is a process used to produce expert information, the strategies that are taken to provide tools to workers are based on consciousness raising and set in specific historical context.

#### **D. ORGANIZING WORKERS AROUND HEALTH ISSUES**

Health and safety hazards with introduction of microelectronic technologies were evident in the 1980s when researchers talked to workers about their experiences at work. Health and safety issues became a topic for research

on loss of autonomy at work (Karasek and Theorell 1990), and around which organizing and political action occurred soon after computers and new information technologies were introduced in the early 1980s (DeMatteo 1986; Meurer, Sobel and Wolfe 1987; Stinson 1981). While workers had been persuaded that introduction of computers into their offices would ease their work and provide more time for less routine tasks, research indicated that in reality most women clerical workers experienced increases in routine tasks, intensification of work and more individual monitoring of their work (Armstrong 1984; Braverman 1974; Hartmann, Kraut and Tilly 1986; Menzies 1984). In the late 1980s taking action on health issues was on the agenda for feminist activists and the labour movement, consequently strategies became part of action research projects on changing technologies and women's work lives<sup>1</sup>.

When action researchers talked to workers during their research, they often found that health and safety hazards of computer work were a central concern for women workers, and at times this recognition shifted the emphasis of a project. This occurred in a study of the impact of video display terminals (VDTs) by the Ontario Public Service Employees Union (McDermott 1987):

I sort of knew that health issues were there, but I didn't think I was going to even touch them. I mean it wasn't the focus. It became the overwhelming issue for

the women that stayed on the screens most of the time (AR-Pat McDermott).

In fact, women information workers readily made connections between health effects they experienced and the introduction of new technologies in their particular offices and it was noted that: "this type of research must be done so the respondents themselves can set the agenda for further research in this area" (McDermott 1987:101).

In the action research project on video display terminal (VDT) users conducted for the Ontario Public Service Employees Union (McDermott 1987), there is a distinct difference in the effect of the work based on whether the work is screen-based like most information workers' jobs, or screen-assisted like supervisory of management jobs. The class distinction in this work is striking, because for the screen-based workers health hazards are a serious problem, so that the work is disabling. Pat McDermott described her experience interviewing workers in this way:

I don't think I spoke to anyone in the screen-based work that didn't have serious health problems. Eye problems, shoulder, arm, muscles, stress, anxiety, stress, not sleeping well (AR-Pat McDermott).

In contrast, with the screen-assisted work the new technology made their work easier and is enabling. Introduction of the same technology in the same workplace, but to different workers produces health problems in one

group as their work is routinized and intensified. Another group, however, benefits from the new technologies that apparently assist them. In this project the way that introduction of microelectronics technologies can be experienced as both disabling and enabling is visible. Since the research included screen-based and screen-assisted work, the way that increased time on computers affects health stands out as an issue that workers wanted addressed. One way that the issue of stress from intensified work on a computer was addressed was that:

we got in the next round of bargaining, a mandatory ten minute break every hour... I remember discussions in negotiations around whether the break should be mandatory, i.e. the equipment should be shut off so that no one could work through the breaks and that, in fact, is what happened (AR-Pat McDermott).

In response to concerns about women's health issues, such as reproductive rights, workplace stress and radiation hazards, expressed by clerical workers that they interviewed, Marcy Cohen and Margaret White prepared Playing With Our Health. This publication was designed as a tool to inform women workers of hazards around them, their rights as workers, and how to take individual and collective action to address health and safety issues at work. One strategy suggested in Cohen and White's publication in order to address a reluctance of workers to take action was occupational stress support groups:



Support groups can be used to break down isolation, increase activism and personal control. Stress is reduced as workers learn to blame the conditions of their work rather than themselves for the stress they experience on the job (Cohen and White 1986:30).

This strategy encouraged workers and unionists to raise health and safety concerns of clerical and information workers by taking the initiative to ensure their interests were understood and addressed. This particular action research project, in fact, recommended that women workers themselves conduct a form of action research on health hazards they experienced at work. To facilitate this process, Cohen and White (1986) provided an introduction to interviewing and survey skills to be used to gain information as a basis for taking action around occupational health and safety issues. As a model for this kind of action, Cohen and White also refer to the women and stress survey conducted by the 9to5 National Association of Working Women (1984) in the United States.

Women workers can relate to health and safety issues because they directly feel the consequences of the impact of microelectronic technologies on their bodies. Discussion of the topic of health and safety led to insightful observations in the group interviews with information workers that I conducted, and is an area of changing technologies in which women have managed to successfully take action. Jane Stinson's experience as a unionist trying

to organize workers makes this point:

I actually think that there were probably greater successes dealing with the health and safety aspect because in some ways, it was a lot more tangible, easier to deal with, easier to tackle. It was easier to negotiate even though it was hard. Rough periods for VDP operators and ergonomic standards. Like saying it was workers' involvement in decision-making about how your workplace is organized which includes how technology is utilised (AR-Jane Stinson).

Jane Stinson was able to reflect on her experience working with the Canadian Union of Public Employees and noted that:

I think where we negotiated those provisions, I think in many cases they have stayed. It set health and safety standards and, also where we did negotiate better language around tech change generally, it is still there (AR-Jane Stinson).

In terms of action that was effective, health and safety issues appear to be an entry point into technological change issues that result in more long term results. Karen Messing's (1991) work as a feminist scientist and union activist in Quebec is an effective model of action research on women's occupational health issues. As part of a university based research group, Messing works on union initiated projects to produce data from biological and social research studies to support actions taken by and for women and unions on issues like reproductive rights and radiation hazards that are linked to working conditions (1991:321).

## **E. INFORMATION FOR THE LABOUR MOVEMENT**

When action research projects were designed to provide information the labour movement, there was often an emphasis on large scale studies and general patterns in one union or the labour movement in general, and less concern about one local or workplace in particular. Action research projects aimed at providing specialized information to the labour movement often included large scale surveys of union members to understand the pattern of the impact of technological changes on workers (Canadian Union of Public Employees 1985a, 1985b, Public Service Alliance of Canada 1987). An aim of this approach was:

Besides individual action we need the collective voice and strength of the Union to protect worker rights and dignity and ensure technological change is not designed to only benefit the Employer (B.C. Government Employees' Union Administrative Services Component 1985:15).

In some situations the goal was to produce materials, in the form of technology handbooks or guidelines, that could be used by unionists in their locals to generate interest in addressing technological change issues linked to working conditions (Public Service Alliance of Canada 1996; Canadian Labour Congress 1995, 1983). The information then contributed to collective bargaining and policy development within a specific union and at the Canadian Labour Congress.

The Public Service Alliance of Canada's (PSAC) action research project on telework, funded by TARP in the 1990s, is a particularly interesting project that connected the interests of workers, particularly women workers, with development of policy. Telework is described by Borowy and Johnson as: "Electronic homework, or telework, includes work away from the central office and takes place most often in the home" (1995:35), and employers persuade workers this reorganization of their work will increase flexibility for workers. Yet it also enables workers to be separated from a central office and from face-to-face contact with coworkers and management, and can lead to loss of union protection and job security (Public Service Alliance of Canada 1994).

While the PSAC was initially against telework that was made possible by new information technologies, when they interviewed their members the action researchers recognised the contradictory nature of the issue:

It was really done to develop education and knowledge in our members about this issue. Our big concern was that the employer had the audience with its message around these things, that this is good for you... what we wanted to do was present some balance. We had to be careful because our members said in some ways this helps our lives (AR-Teresa Johnson).

As a result of background research and interviews with union members PSAC produced an educational publication, Go Home... and Stay There? (1993), that was widely distributed to its members. This publication included a critical analysis of

the pros and cons of telework as a means to encourage members to think critically about the trend to telework.

At the same time, a strategy for the action researchers was to make telework a bargaining issue to ensure some rights and control for those who opted for the telework pilot project implemented by management. A PSAC Telework Policy was developed to ensure union input into decision-making around telework which included: telework must be voluntary, primarily done on a full-time basis, not based on piece rates, include training, have similar hours to non-teleworkers, and conform to the PSAC Collective Agreement (Public Services Alliance of Canada 1994:2). Teresa Johnson emphasized that developing bargaining language was one goal of the project: "We developed bargaining language on telework that is now in the bargaining package. It is going to go to Treasury Board for the next round of bargaining" (AR-Teresa Johnson).

As part of the TARP action research project, PSAC was able to make telework a union issue so that some of the needs of PSAC members concerning job security and maintaining full-time work as union members were addressed in contract negotiations. The TARP funded project meant there were funds for extensive research, action researcher Teresa Johnson claimed that as a result "our union led, in terms of the labour movement, on telework" (AR-Teresa

Johnson). She also noted that she continues to be contacted for input on telework issues in the labour movement both within Canada and internationally.

This particular project also demonstrates the value of action researchers sharing research and ideas. Part of the Technology Assessment Research Programme brought action researchers together regularly to share information: "It was invaluable. It was progressive and forward thinking and invaluable because we all learned from each other" (AR-Teresa Johnson). As a result of these frequent exchange of ideas, researchers made links between homework in the International Ladies' Garment Workers' Union (ILGWU Ontario District Council 1995) and telework in the Public Service Alliance of Canada (1993).

Both homework and telework are forms of home-based work that primarily target women and were partly made possible because of changes in technology that enable these forms of more flexible and casualized work (Borowy and Johnson 1995). In this case, the timing of action research projects provided the labour movement with expert information, so that actions based on educational publications, joint conferences, contract language and union policy (Public Service Alliance of Canada 1996, 1994, 1993) were developed, and contributed to an ongoing process to ensure worker participation in decisions about changing technologies and

women's work lives.

#### **F. STRATEGIES FOR ACTION**

Feminist and union action research projects are an important part of this feminist multimethod study on changing technologies and women's work lives, because they link theory, method and practice. Theoretically action research from feminist and union perspectives is explicitly or implicitly informed by feminist and labour process theory.

Methodologically feminist and union action research projects start from the perspective of women and workers and assume that their knowledge about technologies and work organization is valuable. They also assume women can and do make change and take action as the projects progress; women and workers become part of educational and training sessions. They contribute specific information, such as detailed reports about changing technologies and working conditions in their workplaces, as input on policy issues. With more specific details about workers' concerns, workers' needs are more likely to be addressed by the labour movement.

In practice, action research projects provide tools to women workers in their workplaces and locals in the form of publications, programs and committees. They also produce

expert information for unionists and the labour movement to develop strategies for contract negotiations and policies on technological change and work issues. Organizing around technological change is a difficult project for any unionist or action researcher, but does point to a site where resistance can occur.

At one level it is the intangibility of technology that can seem invisible, but at another level Jane Stinson points out that technological issues are: "not only less tangible, but really confronting the core of management's right... It is where they will bite you the hardest. Which is the sense that it is also an issue that is really political" (AR-Jane Stinson). This view was supported in a Labour Canada (1985) internal document that was an evaluation of the TIRF program in the 1980s, that described the program.

[It] provides resources, particularly to labour groups, to enable them to address the issue of tech change rather than oppose it out of blind fear... [it] has enhanced the department's image in the view of labour organizations and has been seen as indications of the government's interest in the social and human dimensions of technological change.

On one level action research was funded in the 1980s to appease labour groups in particular, and what I have shown is that some labour groups were able to use these funds to initiate changes that made workers participants in technological changes. On the other hand, this program that was funded initially by a federal Liberal government to gain



information from workers' perspectives was seen by the Conservative government simply as a way to improve their image. Soon after this evaluation by Labour Canada TIRF was replaced by a union-management partnership model program called Technology Impact Fund that shifted emphasis away from workers' needs. However, when technology issues are placed in the context of health issues that are more tangible for women workers, then the task of organizing workers to take collective action is easier in the short term, and more sustained in the long term.

This analysis points to feminist and union action research projects as an effective way to gain the specific information as a basis for workers to take action, and resist technological changes in their workplaces. The action research process brings technological interactions to the surface, so that people behind machines are made visible and strategies for action are tangible. Action researchers open up the various kinds of contradictory experiences that women information workers have described, because these researchers see such experiences as the place to initiate actions and resistance. The contradictions that workers experience are also partially resolved by actions taken by and for workers, particularly women workers, as they participate in changing technologies as a participatory process. Action research, therefore, is a place where

theory, method and action are linked in a dynamic process, and provides an opportunity to investigate the complexities of changing technologies and women's work lives. The fact that action research on technological changes is carried out by women's groups and unions indicates that it is a means to mobilize workers and, at least to some extent, shift power relations around technological change issues. Indeed, these projects themselves are evidence that women can and do take action to influence the processes involved in technological change. These overt, collective projects have the potential to link the more fragmented, individual and covert actions of the women who do the information work.

#### **ENDNOTES**

1. While these projects are placed in the context of the women's movement and the labour movement, a complete analysis of political actions around health and safety issues is beyond the scope of this thesis.

## CHAPTER SEVEN

### CONCLUSION: RETHINKING CHANGING TECHNOLOGIES AND WOMEN'S WORK LIVES

In this feminist sociology thesis technologies are theorized as dynamic social processes in which women can and do participate, albeit in structurally and ideologically limited ways. The qualitative multimethod study with information workers, and about feminist and union action research provides rich information and several kinds of data. This study covers several particular work contexts and actions, and points to the complexity of technological interactions in women's work lives.

Feminist literature on women and work adds to a Marxist and labour process analysis because of the way that feminist research is undertaken. Traditional research on technological changes at work makes a particular technology the starting point of analysis and workers, especially women, are not understood as participants in technological change. From a feminist perspective, the starting point of analysis is women workers who are assumed to have the best understanding of the work that they do. This means the social relations of technology in women's work lives is a

focal point.

The feminist qualitative multimethod research in this thesis was guided by theoretical concepts in which my work was grounded, and designed to inform further theorizing of changing technologies and women's work lives. The specific context of my thesis research was Canada in the 1980s and 1990s, and the focus was on women information workers in Ontario and the impact of microelectronics technologies on their work lives.

Since feminist research is based on linking theory, method and action, it is important to also connect knowledge and action. From this standpoint, then, just knowing is not enough because information needs to be placed in context and shared in order to mobilize actions that potentially benefit women. In other words, it is not until everyday knowledge of women's work lives is placed in context that meaningful strategies for collective action are made possible. It is this type of connection that is central to action research projects from feminist and union perspectives.

Group interviews with information workers were designed as a feminist project to look at how information workers understood technologies and social relations in the work lives. I show that information workers are knowledgeable about the work they do, and understand the technologies they work with as part of the social relations in which they are

embedded. The participants in these group interviews also indicated that they would like something done about their working conditions, even if they do not necessarily know how to take that kind of action or collective action. The details these information workers shared about their lives indicated complex work, they described overlapping tasks, people and computer skills, all set in the context of technologies as machinery and work organization. They also reorganized the power relations of work in many ways, yet seldom found a way to change them.

The information workers who were participants in these group interviews understood the conditions of their work in many situations. Nonetheless, while social theory does suggest women workers shape technologies, these women seldom found ways to resist, whether through individual or collective actions. Their apparent passivity was not based on ignorance, but on many other limitations in their lives. These included whether a workplace was organized, differences in public and private sector settings, time constraints, type of boss, and availability of tools necessary to take effective action. The context of their work limited the extent to which participants were able to act.

These group interviews also brought to the surface several kinds of contradictions women experience at an

everyday level, though how they resolved these contradictions was not always talked about or discussed in ways that indicated a clear understanding of the processes at work. I argue that if women information workers can articulate the contradictions they experience then they may develop means to partially resolve them. The action research projects from feminist and union perspectives, do see the contradictions that workers experience and see them as a means to mobilize workers. In this research, then, the group interviews were not designed primarily to address resistance as a means for women to make changes, though there was some evidence of coping strategies and collective resistance. Rather, they were designed to explore how women defined technological change and their place in relation to these changes. I was particularly interested in how skill was experienced and defined, given the debate in the literature on technological change. The place in this study that focused on resistance, or more realistically on actions taken by and for women workers, was in the examination of action research.

The point of entry, therefore, for analysis of actions taken by and for workers, particularly information workers, was a study of feminist and union action research projects on technological change issues carried out in the 1980s and 1990s in Canada. Actually getting at the issues around

technological change that are relevant to workers is in itself a complicated undertaking, simply because technologies are so embedded in social relations that it is difficult to make issues visible. This study of feminist and union action research demonstrated that information gained from conducting research from the perspective of workers, contributed to tools for women workers in their workplaces and locals, or provided specific information for unionists and the labour movement in general.

My thesis research, particularly the group interviews with information workers, showed that while women do see themselves as active in relation to the technologies in their work lives, they also see technology as determining and limiting their options. Moreover, complexity of their lives made it difficult for them to add more tasks to their lives. This relationship would be interesting to investigate further in a more extensive study that covered a range of women's experiences in paid work, domestic labour and community activities, employing a methodology to expose contradictions that women experience. Methodologically, group interviews as part of a multimethod study, or several detailed case studies, would be a useful format for investigating questions about the various contradictions related to changing technologies in women's lives. The dynamics allow women to share details of their lives and

think through questions with the benefit of ideas from other participants.

The group interviews with information workers also contributed to feminist theory on skill and skilled work. These particular information workers distinguished between people skills and computer skills. However, they struggled to address the problem of determining the personal and economic value of these skills in their work lives. In the context of group interviews, women were able to provide detailed information that went beyond measurable competencies to an understanding of the social construction of skills based on the power relations and economic context of their workplaces. While women understood that people and organizational skills were critical to information work, these skills were often invisible to employers. Clearly, skills are more than objectively determined capacities, as several theorists suggest. Interviewees were also faced with the definition of skills based on machines, especially computers and on what could be easily measured and valued. They reveal skills in general and computer skills in particular as complex concepts in women's work lives. A more detailed investigation that included women in different work would shed additional light on how women understand skill and skilled work in different contexts.

This thesis research addressed the issue of technology



as a means to control workers, particularly in the way that action research attempted to shift control from employers to workers. From a feminist perspective, the notion of control can be conceptualized in terms of power relations at work that was highlighted by women's descriptions of their work relations in the group interviews. However, technology and control are seldom conceptualized in terms of class, gender, 'race', and ethnicity of social relations. Instead, the emphasis on machines persists, as was evident in union action research in this thesis research. Methodologically, I have attempted to make the starting point of study women workers rather than the technologies in their lives. This approach to questions of technology and control, particularly monitoring of workers and occupational health, may reveal power relations of changing technologies and work that are hidden when topics are approached from the machinery as the starting point of analysis.

While the politics of feminist and union action research was a part of my analysis, it was not studied in detail. In terms of understanding how and when technological changes are relevant to feminists and unionists, an analysis of the political economy and a policy analysis of TIRF and TARP action research projects would be an important contribution to academic and activist projects. These forms of action research projects that focus on technological

changes reveal the way that technological change is a response by capital to workers, and how these power relations can be shifted to benefit workers, particularly women workers.

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**APPENDIX I**

**GROUP INTERVIEWS WITH INFORMATION WORKERS**

<b>TAPE #</b>	<b># IN GROUP</b>	<b>TYPE OF INSTITUTION AND PSEUDONYMS</b>	<b>INTERVIEW LENGTH</b>
IW-GP-1	3	COLLEGE - Unionized Barb, Lynn, Rita	1 HR.
IW-GP-2	3	COLLEGE - Unionized Gail, Ivan, Tina	1 HR.
IW-GP-3	2	WOMEN'S EMPLOYMENT CENTRE Fran, Lois	1.5 HR.
IW-GP-4	3	WOMEN'S EMPLOYMENT CENTRE Inge, Nora, Mary	1.25 HR.
IW-GP-5	1	WOMEN'S EMPLOYMENT CENTRE Zora	1 HR.
IW-GP-6	1	WOMEN'S EMPLOYMENT CENTRE Ruth	0.75 HR.
IW-GP-7	2	UNIVERSITY - non-unionized Anna, Judy	1.25 HR.
IW-GP-8	3	PUBLIC SERVICE - unionized Ella, Hana, Lisa,	1 HR.
IW-GP-9	5	PUBLIC SERVICE - unionized Beth, Jean, Lucy, Rosa, Nina	1 HR.

**APPENDIX II  
DETAILS ABOUT GROUP INTERVIEW PARTICIPANTS**

<b>#</b>	<b>PSEUDONYM &amp; GENERAL INFORMATION*</b>	<b>WORKPLACE</b>
IW-GP-1	<b>LYNN</b> , late 40s, white, Canadian, mother	College
IW-GP-1	<b>RITA</b> , late 30s, white, Canadian, mother	College
IW-GP-1	<b>BARB</b> , early 50s, white, Canadian, mother	College
IW-GP-2	<b>GAIL</b> , late 40s, white, Canadian single parent	College
IW-GP-2	<b>TINA</b> , mid 30s, white, Canadian,	College
IW-GP-2	<b>IVAN</b> , mid 30s, man of colour, Canadian	College
IW-GP-3	<b>FRAN</b> , early 40s, white, Canadian,	Unemployed
IW-GP-3	<b>LOIS</b> , mid 50s, white, Canadian	Unemployed
IW-GP-4	<b>MARY</b> , mid 50s, white, Canadian,	Unemployed
IW-GP-4	<b>NORA</b> , mid 40s, white, Canadian, single parent	Unemployed
IW-GP-4	<b>INGE</b> , mid 30s, white, Bulgarian,	Unemployed
IW-GP-5	<b>ZORA</b> , mid 30s, woman of colour, Caribbean-Canadian, mother	Unemployed
IW-GP-6	<b>RUTH</b> , early 30s, woman of colour, East Asian Canadian	Unemployed
IW-GP-7	<b>ANNA</b> , early 50s, white, Canadian, mother	University
IW-GP-7	<b>JUDY</b> , mid 30s, white, Canadian,	University
IW-GP-8	<b>ELLA</b> , late 30s, woman of colour, Caribbean-Canadian, single parent	Public Service
IW-GP-8	<b>HANA</b> , late 50s, woman of colour, Caribbean-Canadian, mother	Public Service
IW-GP-8	<b>LISA</b> , early 40s, white, Canadian,	Public Service
IW-GP-9	<b>ROSA</b> , early 50s, woman of colour, Caribbean-Canadian	Public Service
IW-GP-9	<b>LUCY</b> , late 40s, woman of colour, Caribbean-Canadian	Public service
IW-GP-9	<b>JEAN</b> , mid 50s, white, Canadian,	Public service
IW-GP-9	<b>NINA</b> , late 20s, woman of colour, Chinese-Canadian	Public service
IW-GP-9	<b>BETH</b> , mid 30s, woman of colour, Chinese-Canadian	Public service

\* General information was collected from observation and comments made during group interviews. Some groups shared more personal information than others. For instance, only when a participant mentioned being a mother or single parent is it included. No formal demographic information was collected as part of group interviews.

APPENDIX III

ACTION RESEARCHER INTERVIEWS

TAPE #	INTERVIEWEE	UNION/INSTITUTION	LENGTH
AR-INT-1	PAT BIRD	TIMES CHANGE - TIRF	0.5 HR
AR-INT-2	JANE STINSON	CUPE & PSAC - TIRF	1.25 HR
AR-INT-3	ANN ZELACHOW	YUSA - TIRF	1.25 HR
AR-INT-4	JOHN ANDERSON	OFL - TARP	0.5 HR
AR-INT-5	JAN BOROWY	ILGWU - TARP	1 HR
AR-INT-6	KAREN HADLEY	GCIU - TARP	1.25 HR
AR-INT-7	MARCY COHEN	WSDS - TIRF	1.25 HR
AR-INT-8	CHRIS SCHENK	OFL - TARP	1 HR
AR-INT-9	PAT McDERMOTT	OPSEU - TIRF	0.75 HR
AR-INT-10	TERESA JOHNSON	PSAC - TARP	1 HR
AR-INT-11	ELISSA PANE	SONG - TARP	0.75 HR
AR-INT-12	JOEY HARTMAN	VMREU - TIRF	1 HR

APPENDIX IV

FLYER FOR PARTICIPANTS IN GROUP INTERVIEWS

ARE YOU INTERESTED IN TALKING WITH OTHER WOMEN  
ABOUT YOUR EXPERIENCES AT WORK?

July 1996

I am conducting small group interviews, 3-6 women per group, with information and office workers about their experiences at work, at home and in their community. This is part of sociology graduate research I conducting at York University.

I am interested in different working conditions you've experienced, the impact of changing office technologies on your work lives, ways you've coped at work either alone or as part of group actions, and links you see between your paid work, domestic labour and volunteer/community activities.

The group interviews will be about an hour long. They will be held over the summer, during the day at **Times Change** offices.

If you'd like a chance to talk with other women about your experiences at work, think about joining one of these group interviews. I would like to hear what **you** have to say!

If you'd like to participate in this project, please add your name and a contact phone # to the list attached. Then I'll contact you soon to arrange a convenient time for you to join a group.

Jan Clarke, Sociology Department, York University.  
Home # 705-538-2940

THANKS!

**APPENDIX V  
SCHEDULE FOR GROUP INTERVIEWS**

**INFORMATION WORKERS - GROUP INTERVIEWS**

**INTERVIEW SCHEDULE**

**Before starting the tape recorder:**

- introduce myself and briefly why I'm doing this research
- introduce the project and format of the group interviews
- reassure participants of confidentiality of interview
- request to use the tape recorder for the interview
- ask participants to sign informed consent forms

**Before starting the interview, with tape recorder running:**

- ask participants for their names to identify voices later
- then start the questions
- maintain eye contact with participants as much as possible

**At end of interview:**

- verbally thank the participants for their ideas and time
- ask for feedback if they want to give some
- ask if anyone knows of other women who may be interested in participating in my research
- hand out thank you letters as participants leave

**APPENDIX V  
SCHEDULE FOR GROUP INTERVIEWS**

**FIRST I'LL ASK YOU SOME GENERAL QUESTIONS ABOUT YOUR WORK LIVES:**

1. To start with, how would each of you describe your average work day [the kind of jobs you've worked in]? Can you take me through a typical work day?
2. At the end of the day do you have other work to do at home, or are you involved with community activities?
3. Do you see connections between the kind of paid work you do, and your activities at home and in your community?
4. How important is paid work to you?

**NOW I'D LIKE TO ASK ABOUT YOUR KNOWLEDGE OF INFORMATION TECHNOLOGIES, AND YOUR EXPERIENCES OF CHANGES IN TECHNOLOGIES:**

5. Which information technologies (computers and telecommunications systems) do you use in your work?
6. What kind of training have you had on these systems?
7. How important is computer literacy to your work?
8. Are people you've worked for knowledgeable in the information technologies you use?
9. Do you think of yourself as a skilled worker?
10. Do you feel that your skills have been acknowledged? By your boss, your co-workers, your family and friends?
11. What changes in technologies have you experienced at work? Can you take me through one of these events and how you responded to it?
12. What have your supervisors expected of you when there've been changes in office technologies that you use?

**APPENDIX V**  
**SCHEDULE FOR GROUP INTERVIEWS**

13. When there've been technological changes in your workplace, have you experienced any improvements or any problems in your working conditions? Can you give any examples?
14. When you've experienced changes in office technologies, have you shared work knowledge, or perhaps coping strategies with your co-workers? Can you explain this with an example?
15. In places you work, what kind of input in decisions about information technologies would you like to have?
16. In response to the impact of technological changes in a work setting, have you been involved with any group actions? For instance, networking with coworkers or formal union actions.
17. In the long run, how have these group actions affected you?
18. Do you see any of the events you've described being connected in any way to your activities at home or in your community?
19. Are there any union or social activist or volunteer activities you're involved with on a regular basis?
20. Just out of interest, what was your response to the OPSEU Ontario public service strike last winter?

\* IF TIME ALSO ASK THE FOLLOWING QUESTIONS \*

**NOW I'D LIKE YOU TO IMAGINE YOURSELVES AS DECISION MAKERS...**

21. If you could design technologies to meet your needs at work, at home or in your community, what would you try to include?
22. What do you think might change for women at work, at home and in their communities if you did have more input into changes in technologies which women use?



**APPENDIX VI  
INFORMED CONSENT FORM FOR GROUP INTERVIEWS**

**INFORMED CONSENT FORM**

I, \_\_\_\_\_ agree to participate in a study of office and information workers conducted by JAN CLARKE of York University, North York, Ontario.

I understand that the study involves questions about my personal work experiences, and my views on the impact of technological changes on office and information workers.

I understand that the interview tapes and transcripts will be regarded as confidential, and written reports of the research will not identify me personally as an interview participant.

I have been assured that my participation is totally voluntary and that I may withdraw from the research at any time.

I understand that, upon request, a summary of the research will be available to me on completion of the research project.

Signed by participant: \_\_\_\_\_

Date: \_\_\_\_\_

Signed by researcher: \_\_\_\_\_

Date: \_\_\_\_\_

APPENDIX VII  
LETTER FOR GROUP INTERVIEW PARTICIPANTS

[York University letterhead]

**December 1996**

**To Whom It May Concern**

First of all, thank you for taking the time to talk with me. This interview is for research that I am conducting as part of a graduate program in Sociology at York University.

For this part of the study, I am talking to office and information workers about their experiences. I am interviewing women workers who use office and information technologies, and unionists who are involved with organizing information workers in Ontario. Of particular interest to me is your views on the impact of technological changes on office and information workers, how you have responded to workplace changes, and whether you feel your actions make a difference.

I am taping many of these interviews. The tapes, interview transcripts, and any copies of documents given to me will remain confidential and only be used for research purposes. I assure you that comments which may be used in my graduate work or future publications will not identify participants or their organization, unless you specifically waive this condition.

If you would like me to send you a summary of the final research findings, let me know. If you have further questions about my research, contact me at 705-538-2940 (Phone or FAX).

Sincerely,

Jan Clarke  
PhD Candidate  
Department of Sociology  
York University

**APPENDIX VIII  
SCHEDULE FOR ACTION RESEARCHER INTERVIEWS**

**INTERVIEWS WITH ACTION RESEARCHERS**

**INTERVIEW SCHEDULE - 1996**

**Before the interview:**

- introduce project in general
- explain that I've read the TIRF or TARP projects
- request to tape the interview
- turn on the tape recorder
- ask if name can be used in connection with the project
- remind person that to ask for 'off-the-record' at any time
- start the questions

**At end of interview:**

- verbal thanks for taking time & sharing ideas in interview
- hand interviewee thanks letter in face-to-face interview
- mail interviewee thanks letter after telephone interview

**APPENDIX VIII**  
**SCHEDULE FOR ACTION RESEARCHER INTERVIEWS**

**INTERVIEW SCHEDULE**

1. How did you get involved with the research/project?
2. What influenced the way the project was structured?
3. What were the explicit and implicit goals of the research/project?
4. Was the project aimed at giving workers tools to take action?
5. Was the project aimed at providing information to the state and/or management to legitimize a group's/union's actions?
6. What actions were gained from the project?
7. Do you think that the actions successful in the short and long term?
8. Did you experience a sense of participating in technological changes at work during the project?
9. What did you personally gain from participating in the project?
10. In what ways was the information gained from the project published or distributed?
11. If you had funds to study the impact of technological change on women workers today, what kind of projects would you like to see?

**APPENDIX IX  
LETTER FOR ACTION RESEARCHERS**

[York University letterhead]

Dear \_\_\_\_\_ :

First of all, thank you for taking the time to talk with me on [date] . This interview is for research that I am conducting as part of a graduate program in Sociology at York University, under the supervision of Dr. Pat Armstrong.

For this part of the study, I am talking to researchers involved in action-oriented projects on technological changes and work in Canada. Of particular interest are Technology Impact Research Fund (TIRF) projects conducted in the 1980s and Technology Adjustment Research Programme (TARP) projects conducted in the 1990s. I am interested in the methodology, research process, findings and actions resulting from these types of projects. A key concern for me is how collective actions are taken by and for women information workers to respond to the impact of technological changes, and whether these actions make a difference.

I am taping many of these interviews, and the tapes, interview transcripts, and any private documents given to me will remain confidential and only be used for research purposes. I assure you that personal comments which may be used in my graduate work or future publications will not identify you as a participant or your organization. If you specifically waive this condition in terms of connecting your comments to the particular research project in which you participated (e.g. TIRF or TARP project), I will use my discretion when selecting quotes from the interviews.

If you would like me to send you a summary of the final research findings, let me know. If you have further questions about my research, contact me at 705-538-2940 (Phone or FAX).

Sincerely,

Jan Clarke, PhD Candidate  
Department of Sociology, York University

**APPENDIX X  
GROUP INTERVIEWS TRANSCRIPTS ANALYSIS**

**THEMES FOR SELECTING QUOTES FROM IW-GP TRANSCRIPTS**

1. The average day's paid work
2. Work at home and community/volunteer activities
3. Skills for information work
4. What we get out of work
5. Acknowledgement, appreciation and respect
6. The boss and management
7. Changes in technology and work organization
8. Input into tech changes
9. Training and upgrading
10. Job insecurity and casualization
11. Coping strategies and taking action
12. Unions and labour movement
13. Taking political action

**APPENDIX XI**  
**ACTION RESEARCHER INTERVIEWS TRANSCRIPTS ANALYSIS**

THEMES FOR SELECTING QUOTES FROM AR-INT TRANSCRIPTS

1. Interviewees background and gains from action research
2. History of organization or union
3. Structure of TIRF and TARP programs
4. Politics of labour movement and women's movement
5. Details of specific project
6. What can be learned from action research
7. Actions taken around technological change issues
8. Predictions, insights and unintended consequences of TIRF/TARP
9. Specific information on clerical/information workers experiences

## APPENDIX XII

### TIRF AND TARP FUNDED ACTION RESEARCH PROJECTS STUDIED

TIRF and TARP funded action research projects listed were studied in detail. Sources also cited in reference section.

#### A. Technology Impact Research Fund (TIRF) Projects

Bird, Pat, and Jo Lee. 1987. A High Traffic Area: Today's Automated Office. Ottawa: Labour Canada.

Canadian Union of Public Employees. 1985. Computer Related Change in the Workplace: Results of a Survey of CUPE Locals. Ottawa: Canadian Union of Public Employees.

Clement, Andrew, and Ann Zelechow. 1987. Self-Managed Automation Project. Ottawa: Labour Canada.

Cohen, Marcy, and Margaret White. 1987. Taking Control of Our Future: Clerical Workers and New Technologies. Vancouver: Women's Skill Development Society.

\_\_\_\_\_. 1986. Playing With Our Health: Hazards in the Automated Workplace. Vancouver: Women's Skill Development Society.

Hartman, Joey. 1987. Worker Initiatives for Alternative Technological Applications. Ottawa: Labour Canada.

McDermott, Patricia. 1987. The Differential Impact of Computerization on Office Workers: A Qualitative Investigation of 'Screen-Based' and 'Screen Assisted' VDT Users. Ottawa: Labour Canada.

O'Toole, Colleen, and Jane Burns. 1986. Microtechnology and Women's Employment in Newfoundland. Ottawa: Labour Canada.

Public Service Alliance of Canada. 1987. Computers and CRs: The Impact of New Technologies on Federal Public Service Clerks. Ottawa: Public Service Alliance of Canada.

Stevenson, Janet. 1989. The Impact of Office Technologies on Job Enrichment and Career Advancement of Office Personnel. London, Ontario: University of Western Ontario.



White, Margaret, and Marcy Cohen. 1988. The Impact of Computerization on Temporary Office Workers: Some Empirical Evidence. Ottawa: Labour Canada.

Women's Skill Development Society. 1986. Working Women Enter the Computer Age: A Curriculum About the Impact of Computers on Women's Employment. Burnaby, B.C.: Women's Skill Development Society.

**B. Technology Adjustment Research Programme (TARP) Projects**

Hadley, Karen. 1995a. Riding the Digital Revolution. Toronto: Graphic Communications International Union.

\_\_\_\_\_. 1995b. Restructuring in the 90's. Toronto: Graphic Communications International Union.

\_\_\_\_\_. 1995c. Total Quality Management. Toronto: Graphic Communications International Union.

International Ladies' Garment Workers' Union (ILGWU) Ontario District Council. 1995. Designing the Future for Garment Workers. Toronto: ILGWU.

Ontario Public Service Employees Union. 1994. OPSEU TARP Report. Toronto: OPSEU.

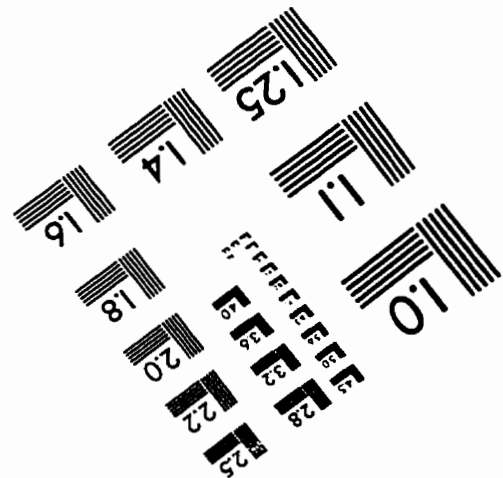
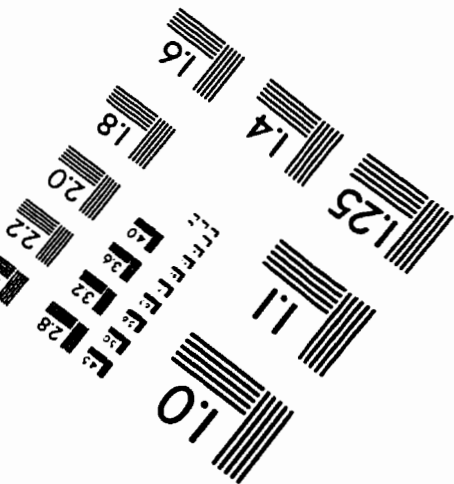
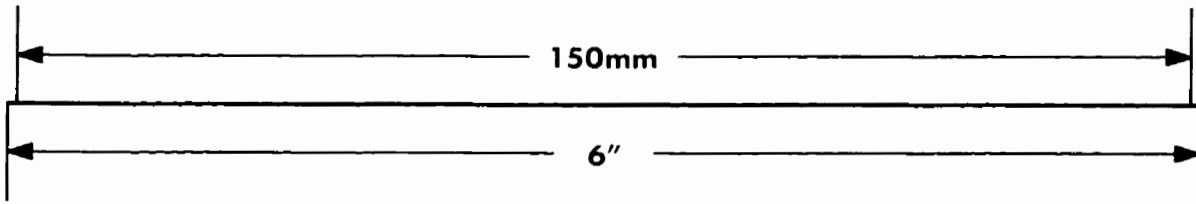
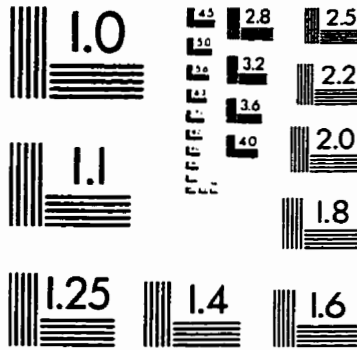
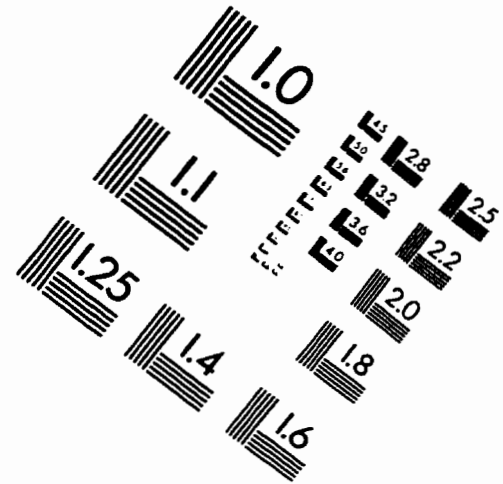
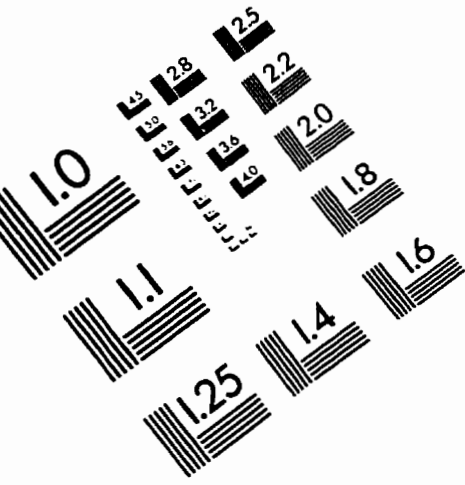
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Schenk, Christopher, and Jim Anderson (eds). 1995. Re-Shaping Work. Toronto: Ontario Federation of Labour.

TECHnotes: A Technology Bulletin for Ontario Workers. 1993-1995. Numbers 1-9. Toronto: Ontario Federation of Labour.

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