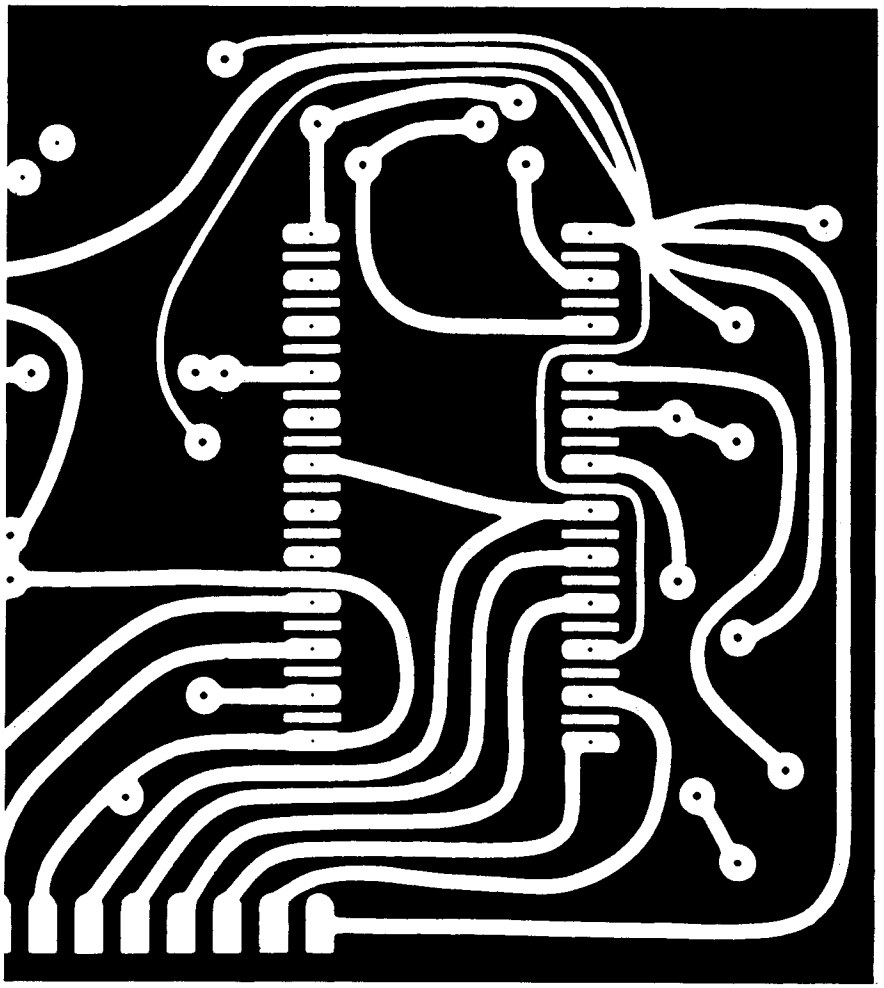

WOMEN AND MICROTECHNOLOGY

Heather Menzies

Il est grand temps d'organiser des mouvements d'action positive car sinon l'automatisation va de plus en plus faire disparaître les emplois spécialisés et amener un chômage alarmant parmi les femmes. Les chiffres font peur! Le chômage pour les employées de bureaux risque de monter à 33% d'ici à 1990. La majorité des travailleuses auront plus de 25 ans. Les diplomées d'Université ne trouveront pas d'emploi. Celles qui auront la chance de travailler devront faire face à des problèmes sociaux et émotionnels par manque de préparation à l'automatisation.

ON the front cover of the book, *The Techno/Peasant Survival Manual*, the authors describe a 'techopeasant' as someone who does not understand modern technology and is therefore in a position to be used or abused by someone who does. I suspect that we are all determined not to be technopeasants ourselves. We want to understand what computer technology can do to jobs and working. We *do not* want it to replace women workers or de-skill them. Rather, we want it to enhance women's employment opportunities and working environment.

Several studies, including an overview of OECD (Organization for Economic Cooperation and Development) reports compiled in 1979 by the Institute for Research on Public Policy (IRPP) of Montreal, have concluded that women are likely to bear the brunt of the negative employment effects of microtechnology. The *Siemens Report* (Republic of Germany) predicted that 40 per cent of office workers could become redundant through office automation. The *Nora Minc Report* (France) predicted

a 30-per-cent loss of employment in the tertiary sector in general and particularly among bank and other finance-industry workers. In the United Kingdom, the *Jenkins and Sherman Study* predicted that office and other computer-based forms of automation could boost Britain's unemployment rate to 25 per cent by 1990. Individual case studies there have revealed, for instance, a 33 per cent reduction in the number of secretaries and typists at the British Standards Institute after word processors were introduced. The reason lies in automated retyping and printing of computer-stored stock paragraphs called 'boilerplate.'

In a series of studies I did last year (published by IRPP as *Woman and the Chip*, 1981) I traced the process and extent of this negative employment impact in some Canadian industries. Projecting from the trends I observed and comparing these with the continuing concentration of women in, and seeking, clerical work, the unemployment rate among female clerical workers could escalate to as much as 33 per cent by 1990.

We could see the pattern in 1981. In the banking industry, where women comprise 70 per cent of employment (80 per cent of them in clerical positions), computerization has reached a fairly mature stage; banks can now offer automated teller machines and can finally enjoy major labour savings. Employment had been growing by about 10 per cent a year through the 1970s, well ahead of growth in the female labour force. In 1980, though, employment stagnated. It was a significant development.

In the insurance industry, where information handling has also been extensively automated and where 70 per cent of female employment is concentrated in clerical positions, clerical employment dropped by 11 per cent during the 1975-80 period.

MOST SIGNIFICANT of all, the cumulative negative employment effect of computerization seems to be a seriously reduced, overall clerical employment-growth rate at a time when women's labour-force participation rate is both continuing to rise and expected to continue doing so.

. . . WOMEN MUST GAIN ACCESS TO COMPUTER SCIENCES BEFORE SKILLS AND PERFORMANCE STANDARDS WIDEN THE GAP IMPOSSIBLY. . .

Between 1961 and 1965, the female labour force grew by 20 per cent; clerical employment grew by the same amount. Between 1966 and 1970, the female labour force grew by 20 per cent again, while clerical employment grew by 23 per cent. Over the 1971-75 period, the female labour force grew by 24 per cent; clerical employment grew by 33 per cent.

Female labour-force participation is expected to continue growing at about the same rate at least over the next decade. The economic pressures are still with us, the rising cost of living, single parenthood and so on. Sixty per cent of women work because they have to. They are either single, single parents, or married to men earning so little that, if their earnings were removed, the number of families living below the poverty line in Canada would increase by 50 per cent.

I think I have demonstrated that we might have a problem here. I also hope we will see it not only as an employment-adjustment problem but also as a women's issue, for two reasons: computer technology is increasing employment opportunities in the occupations where women are least represented; on the other hand, it is diminishing employment opportunities in clerical occupations and in the related administrative and supervisory positions which women were using as career ladders.

My second reason is that, if women are to gain rather than lose by computer technology, changing attitudes must be part of the approach: attitudes of employers (male) who still dismiss women as a secondary labour force and insist that they prove in a courtroom their right to equality in the workplace and attitudes among women themselves.

From women's entry into the Canadian labour force as domestic servants a century ago to currently being concentrated, to an overwhelming 66 per cent, in clerical, sales and service occupations, women have been socialized towards support-staff, assistant and other 'helper' roles. Yet the computer is automating and de-skilling much of that work, everywhere from the factory to the office: clerical workers in insurance companies and banks; cashiers, telephone operators (reductions range from 30 to 40 per cent with semi-automated long-distance phoning). The automation includes administrative work traditionally associated with process and procedure, a promotion ground which women have gained only recently. It also takes in supervisory work since there are fewer people to oversee and computer monitoring automates a large measure of this familiar female stepping-stone to management.

AT FIRST people did everything by hand. Then mechanization removed manual work, leaving the worker with a craft. Within the confines of mechanization, craft itself was diminished to a series of procedures. Finally the procedures were standardized enough that they could be taken over by the machine as well.

Let me give an example of automation in the banking industry. First, a teller's daily records were manually recorded in ledgerbooks. Then keypunching and, later, data encoding were introduced. By that stage, work was done in central data centres. Now, bank branches are connected 'on line' with the data centre's computer. The teller

enters the transaction record herself, automatically, as she punches in the information on her keyboard for printing out onto a customer's pass book. Tomorrow (almost literally) as the automated teller-machines introduce us to self-serve banking, the customer will punch in her own transaction and everything else will be done automatically. We can see the decline and the final automation of clerical work.

It is also interesting to trace the shifting employment pattern. When computerization was introduced to the banks, employment grew at all occupational levels. At the clerical level, there was an overlap between the old paper-based information work and the new electronic form. At the more professional and technical levels, employment grew in response to the new services (such as on-line multi-branch banking and daily-interest savings accounts) which the advancing technology made possible.

With recent developments, clerical employment has relatively declined while professional and technical employment has continued to grow. For instance, the daily-interest savings service provided more work to professionals (accountants and computer specialists) but little extra work for clerical workers. The clerical employment decline would probably look more dramatic except that banks were sharing the diminishing workload by increasing part-time employment. Part-time hirings were double full-time hirings between 1968 and 1974.

As Automatic Teller Machines (ATM) become widespread over the next five years (shifting tellers into data centres where they will provide telephone back-up to the ATM terminals), the prospect of shift work raises questions about potential damage to family and social life and compounds the structural barriers to occupational mobility for women.

THERE IS ANOTHER, perhaps more insidious, distancing factor which *could eventually jeopardize all hope of occupational mobility:* the growing skills gap between clerical and professional information work. Work in planning, research and development, market and financial analysis and management decision-making (work in which women are seriously under-represented) is becoming more professional because of computer aids available in the computerized office.

. . . THE FACTORY APPROACH TO AUTOMATED OFFICES CAUSES ISOLATION FROM COLLEAGUES AND, OFTEN, PSYCHO-PATHOLOGY. . .

In one company I studied, the composition of the Information Systems Department shifted from 80 per cent clerical in 1972 to 45 per cent clerical in 1980. Of the 140 workers removed from the clerical ranks, only two joined the 110 additions to the professional-managerial ranks. They were replaced by computer scientists and other highly trained specialists hired from outside the company and representing what one personnel official termed 'a quantum leap' in skill difference from the former clerical workers. The other 138 clerical workers were given lateral transfers to as-yet unautomated departments, some even accepting demotions.

Meanwhile, armed with their computer skills, the new professional-management workers will exacerbate occupational discontinuity by extending the range and sophistication of their work and thereby escalating standards of performance. 'The ability to do (sophisticated computer modelling) generates the requirement that you do this,' the personnel manager told me. The effect could be the institutionalization of a dual labour market within the company: a scenario featuring a group of low-skilled clerical workers feeding data into computer systems, a smaller group of increasingly sophisticated professional users of computers and computerized information systems and a huge, hostile and unbridgeable skills gap between the two groups.

And when the company no longer needs clerical staff, 'They'll be sent off to wherever redundant clerks go,' the personnel official told me matter-of-factly. 'Unfortunately, that will be women. But it's a question of social responsibility versus running a company.'

AFFIRMATIVE-action programs, equal opportunities and, to a more subtle extent, equal-pay battles over the last 25 years have sought to break down job ghettos and integrate the male and female labour markets for equal occupational mobility. Such schemes, augmented with training opportunities both on the job and in institutions, are all the more required now as employment opportunities in the clerical, administrative and supervisory ranks decline, as the meagre mobility ladder which supervisory and administrative work represented for women collapses and as employment growth becomes increasingly concentrated in occupations traditionally dominated by men and increasingly enriched as computer technology advances.

It is critical that women gain access to the employment-growth areas *now* before the skills and performance-standards differences widen significantly. Now, it can rightfully be argued that a lot of the seeming 'quantum leap' of difference is due to attitude. For instance, in the department where the clerical-to-professional ratio changed so dramatically as computerization was extended from data processing to a full range of automated information systems, the top 50 executives in the department now have their own desk-top computer terminals on which they type and receive up to 50 per cent of the memos, mini-reports and other correspondence which

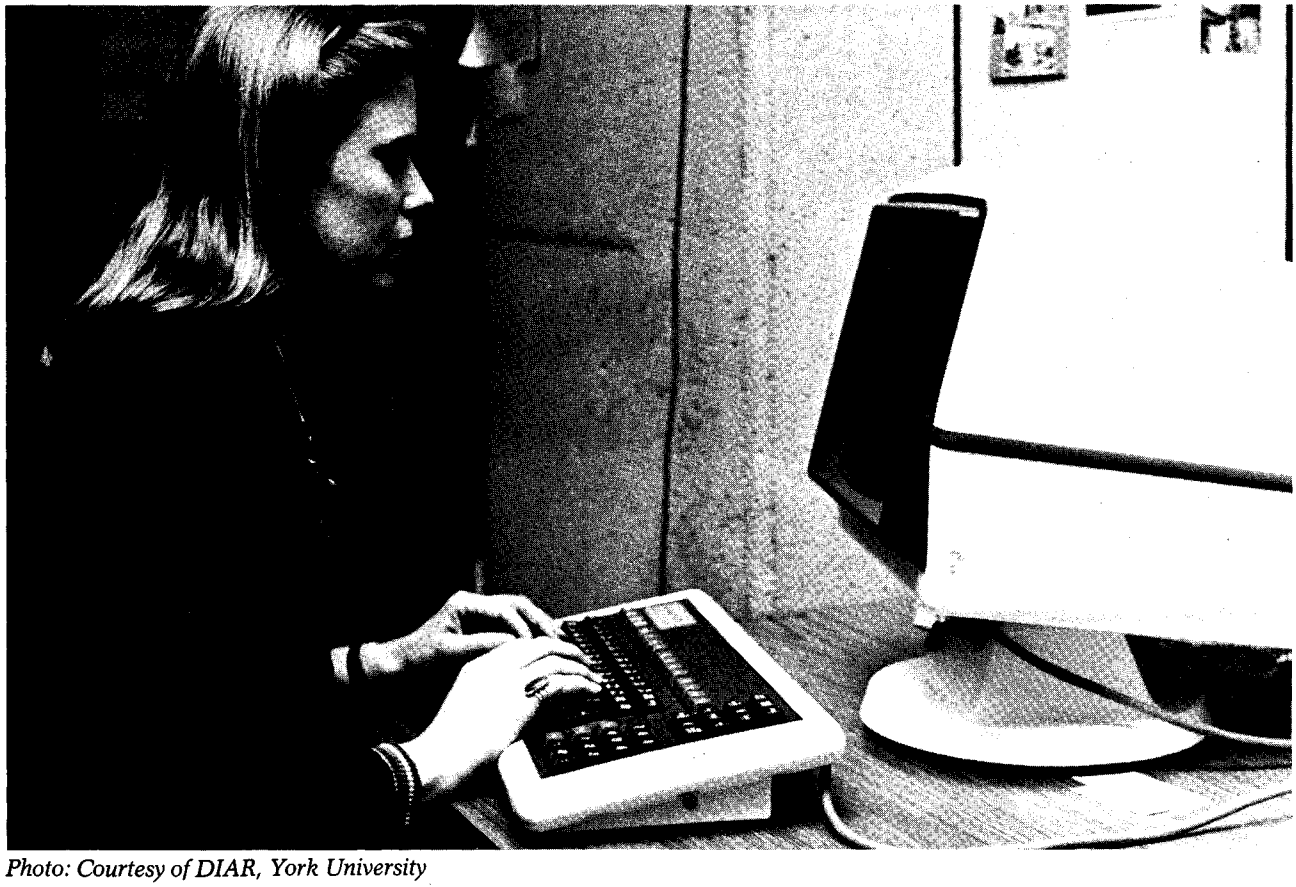

Photo: Courtesy of DIAR, York University

secretaries used to handle for them. The remaining two secretaries spend only about half their time on traditional secretarial work. One I spoke to spends the rest of her time on research and administrative work.

By another name, such a clerical worker would be considered a prime candidate for courses in computer programming or business administration and quickly move into some of the professional positions which will become increasingly available but ever harder to fill by outside hirings over the next five to fifteen years. But her boss still called her a secretary; nor could he conceive of her moving into a professional-management position: 'You can't make a doctor out of a nurse,' he said.

SUCH ATTITUDES might return to mock industry in the years ahead. Women might indeed be on a collision course between their continuing concentration in clerical occupations and industry's diminishing clerical requirements. But industry could also be on a collision course between the computer-fired upward reprofiling of its skills needs and the relatively unchanging profile of the expected labour force over the next decade or so.

The bulk of labour-force growth anticipation for the 1980s will not come from young university graduates, but from the increased participation rates of women 25 years and older, in other words, women who have already completed their schooling, who are either returning to the workforce or will stay on through child-rearing years. In 1979, less than 10 per cent of the female labour force had a university education. Further, women's concentration in clerical occupations remained a fairly consistent 33 per cent of the female labour force during the 1970s. As well, the government's training programs for women are predominantly geared to teaching traditional clerical skills.

What would involve relatively little training if affirmative-action apprenticeship and training programs were initiated now could become a costly employment-adjustment program for government and industry in the years ahead, as industry strives to fill a crippling skills shortage.

Before summarizing what I consider to be the major areas on which policy action must be taken, there is one other theme I should like to touch on. It is that the *net* employment question in this period of technological change is not a subject for research but for policy action. As several research reports (including the *Nora Minc Report* to which I previously referred and one published last year from the International Labour Organization (ILO) in Geneva) have concluded that the final employment outcome of computer technology will depend on how it is applied and in whose interests.

We are part of that choice. Should computer technology be applied towards the three needs which employment has traditionally ful-

filled: earning income, developing and expressing our abilities and achieving stature in our own and other people's eyes? Or should the technology be used primarily as a cost-cutting competitive tool, industry's main reason for technological change?

Recent experiments in Europe demonstrate that both sets of objectives can be achieved, and to the mutual advantage of management and workers. Some have resulted from technological-change clauses in union contracts, clauses requiring consultation, or from health-and-safety standards, which go beyond such minimums as employer-paid eye examination for persons using video-display terminals to include 'quality-of-working-life' considerations. The Tavistock Institute in the United Kingdom has developed what it calls a socio-technical model for implementing technological change. It takes into account 'quality of working life' as well as quantity of output as objectives of the corporate system to be enhanced by the new technology.

Utopian? Not really.

THERE ARE ESSENTIALLY two approaches to the automation process: one, with a master-plan implemented from the top down and featuring centralized computer power and related decision-making. The alternative is a decentralized approach with individual departments acquiring computer-based facilities and expanding outward in pace with their developing computer skills. In such an approach, a secretary in charge of customer-complaint letters in a consumer-products company might develop a filing system in her word-processing unit which later allowed her to have all letters scanned for references to, say, legibility of package instructions. After some manipulation of the data, she might produce some interesting market research, worthy of promotion or a least a job reclassification. The advantage of this approach would be that the threat of a skills shortage in a bi-polarized labour market could be avoided.

In my research however, I found a lot of the top-down, central-control pattern, in keeping with the personalities who spearheaded the office of future transformations. These were engineers and systems analysts who tended to view the office as a factory producing information rather than as a service and communications centre. They also focussed less on information as a resource in itself than on the process of compiling information and transmitting it to decision-makers. In other words they applied computer technology to reducing the cost of producing, distributing and storing information, not necessarily to enhancing what you can do with information.

In her report, *Drowning in the Pool*, Janice Manchee provides a vivid account of working conditions under such a factory approach to office work, with a pool of word-processor operators working on anonymous correspondence in isolation even from fellow workers but with every movement and every error monitored by the central computer. Some of the operators were on drugs from the strain. Some broke down and cried, regularly. Others developed the habit of chattering to their machines.

A 1980 REPORT from the ILO in Geneva describes these symptoms as an increasingly prevalent psychopathology associated with office automation and one which is generating international concern. The report lists what the workers have lost: autonomy to vary work pace, diversity of work pattern, personal contact with the people who originate the work, communication and responsibility within the workplace.

The income objective of employment is being met; the other two are being *savaged*.

At this point, one could launch into a passionate prescription for humanism in the workplace. However, we seldom change the world by single strokes of passion, certainly not in Canada. Change comes from gradualism. The power of change comes from process.

There are obvious agendas for action, to summarize a few; a comprehensive employment-adjustment program for women to help them move out of assistant information work into professional computer-assisted information work. Such a program could integrate existing programs such as affirmative action and outreach. It could include educational leave, coupled perhaps with wage subsidies; training, with extra funds allocated from a special technology training tax; manpower centres for women, providing computer-skills training and counselling as well as job placement. Counselling will be needed not only among women conditioned to doubt their aptitude for computer science but among industry leaders as well. Finally, public information programs are needed to alert women to the diminishing employment prospects in clerical occupations and to the new career opportunities emerging with computer technology.

In addition, women's lack of union protection makes it urgent that the Labour Act be amended to require, among other things, compulsory consultation, even collaboration, on the process of implementing technological change. Such a measure could help lay the groundwork for the decentralized scenario I spoke of earlier.

These changes will come about only with the utmost effort and commitment on the part of women. We must present briefs, draft policy papers, lobby, ask pointed questions at conferences. We must do whatever we can wherever we work, in government, business and labour, to ensure that women are not 'technopeasants' in Canada's computerized society.

Suggested Reading:

Heather Menzies,
Your Job and the Computer
James Lorimer and Co.
available April 1982
(what to do about automation)

Science Council of Canada, Ottawa,
Who Turns the Wheel?
(women in science education)
(free) February 1982. Call Janet Ferguson (613) 996-1263

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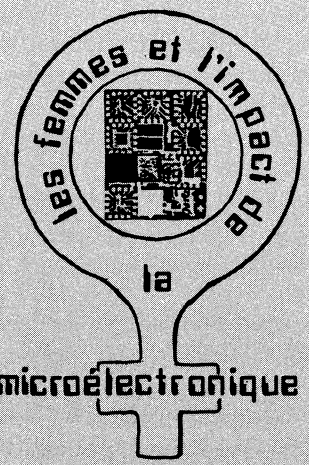

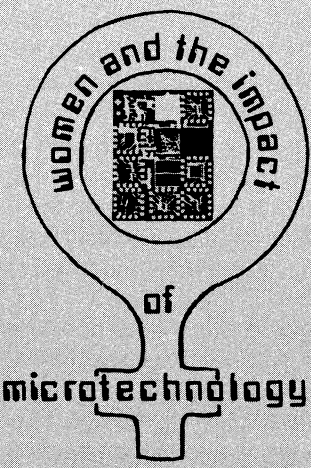

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