

The Sexual Division of Labour

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When we talk about the sexual division of labour it is frequently assumed that we are interested in 'women's job opportunities' and no more. There is a tendency to regard the sexual division of labour as unproblematic. It is assumed to be trivial ('merely' a woman's issue) or marginal (the appropriate subject of anti-discrimination legislation). At the same time, it is treated as part of the 'natural', biological world. In this view, jobs are allocated as 'male' or 'female' either by direct reference to biology or on the basis of supposed biological differences in characteristics or abilities. So it is important to stress that we are concerned with the historical relationship between 'men's' and 'women's' jobs. The sexual division of labour is a social creation: it is not 'caused' by biology. And it is not marginal but central to the organisation of the capitalist labour process. This is as true of a 'new' industry like computing as it is of other parts of the economy.

It would be nice to believe that it was merely a remnant from the past, that was gradually being eliminated. But, as we shall see, this is not the case. The sexual division of labour is a fundamental structural phenomenon. It refers to the allocation of work on the basis of sex, within both the home and the workplace, as well as to that division between 'home' and 'work' which has been characteristic of capitalism. In considering the sexual division of labour in data processing therefore, we need to bear in mind not only 'who does the job', but its relationship to the wider sexual division of labour in society as a whole. This allocates to women the primary role of wives and mothers, regardless of what else they might do and, just as significantly, to men the role of breadwinners and hence deserving of favoured treatment in terms of wages and promotions.

What is the sexual division of labour in computing? Of the 70,000 or so computer workers in Australia women predominate only in the unskilled data entry section where they form 100 per cent (One writer commented that the only place he had seen men in the key-punch room was New Guinea - A.C.W., 25 May, 1979). This is so downgraded that it is not usually thought of as part of computer work 'proper' at all. Operating has been reduced to unskilled manual work but is, for various reasons defined as 'male' and paid much better. Though programming is supposedly 'uni-sex' it is predominantly male and the women tend to be concentrated in the lower ranks of the coders. Relatively few women move into systems analysis and fewer still into management. But they often appear in demonstrating, teaching or consulting work. That is to say, when women do move up it is into jobs that are consistent with the 'feminine' role, drawing, for example, on inter-personal skills. And they are more likely to be accepted in professional than business circles. As if all of that were not enough, their responsibilities for husband and child care, and the social expectations imposed by men, hamper them in what is already a very demanding career.

None of this can be adequately understood by considering the economic in isolation. The sexual division of labour in this obvious descriptive sense rests on the constant production and reproduction of gender in every aspect of our daily lives. The categories 'man' and 'women' are not merely biological but result from the ways in which biological differences are lived

and given social meaning. Since gender rests heavily on unconscious processes, we experience it (as we are 'meant' to) as part of our natural world rather than as socially created and reproduced. As a result, not only do we find it hard to see how it is used against us, but we actively co-operate. To overcome these blindspots it is important to be aware that the sexual division of labour is multi-dimensional: it does not belong only in a narrowly defined 'economic' sphere.

In confronting biological determinism, feminists have drawn attention to the broader social relations of production and implicitly criticised technological determinism as well. Thus feminist insights are not merely to be 'tacked on' to a pre-existing body of knowledge but should broaden and deepen the analysis overall. An understanding of sexual inequality requires an understanding of the organisation of the labour process and vice versa.

The sexual division of labour is central to the political economy of data processing. First, and most obviously, because women have been systematically disadvantaged at all levels of the industry. Secondly, because its sheer existence has worked to the advantage of management, using it both consciously and unconsciously. And thirdly, because it serves to remind us of workforce segmentation and is thus a necessary corrective to the elitism that has crept into much recent work on the labour process. In particular, the emphasis on deskilling has meant that previously unskilled work has been ignored, work that has, of course, been performed substantially by women. By making sexual inequality central rather than marginal to the analysis, we hope to engage with the deskilling hypothesis and move beyond it, placing it in a wider context.

Elitism and the 'Deskilling' Hypothesis

Since the publication of Braverman's Labour and Monopoly Capital (1975) the 'deskilling' hypothesis has come under increasing scrutiny. While it clearly applies to the destruction of old craft skills in some areas of manufacturing, there are doubts about how far it is applicable to the creation of new areas of unskilled work in the tertiary sector. More seriously, an analysis which focuses on 'deskilling' is likely to represent the interests of the most privileged workers to the exclusion of others - whether they be the 'labour aristocracy' or sections of the middle class. While it looks at how capital sets up new job hierarchies, it tends to treat 'workers' as a single category, ignoring the very deep divisions between them and assuming their interests are the same. This approach is insensitive to the fact that workers come from different classes and fractions of classes.

Such criticisms apply particularly strongly to work on data processing. It is presented as a craft-like activity which has become increasingly routine and codified. It is striking how often 'data processor' is used interchangeably with 'programmer' as if there were not always other workers in the industry. Yet, as Greenbaum notes, the first business computers in the early 1950s 'were used for purely repetitive clerical functions that previously had been done by electronic accounting machines' (1979: 13). She stresses that labour was drawn from the sciences and offered unlimited flexibility and high wages. What she does not say is that accounting machine operators were women and that computerisation meant a drastic reduction in the number of jobs available (masked, until recently, by overall expansion) and big changes in the working conditions of those who went into the new 'factory' areas as keyboard operators. Indeed, this army of women, who prepare the routine data for the computer, has been defined right out of existence. To talk about data processing as a craft is already to exclude the lower ranks, who were always there, and whose performance of the repetitive work enabled the programmers to experience themselves as 'free-wheeling, independent craftspeople' (Greenbaum, 1979: 65).

Thus it is that data processing is seen as a predominantly male domain and the issue of sexual equality is reduced to a question of how women can gain recognition in this male world. Speakers at a seminar on 'Computing in International Women's Year', after acknowledging data preparation to be a totally female area, went on to ignore it just as totally (ACS Newsletter Supplement, November 1975). It is true that data preparation is often physically separated from the computer, being carried out by companies set up specifically for that purpose. And in some cases (Ansett, Medibank), the processing work is actually sent overseas where wages are cheaper still. But if we accept that other divisions are socially created, we must examine the gulf between the keypunch women and all other computer workers. Are we to see this division alone as 'natural'? This illustrates the point that the sexual division of labour is seen as so 'natural' that we can wipe out half the labour force and not even notice it.

Another problem with treating the history of data processing in terms of deskilling is the failure to consider the class position of the programmers. While it may be true that their work has become bureaucratized and routine, this does not automatically give them a proletarian consciousness or place them in the ranks of the working class. They may have less job satisfaction, less freedom of movement and a less 'bohemian' lifestyle than they had in the past, but as a group they are still doing very well. While there was some slowing down of their salary increases in the early 1970s, since the latter part of the decade the industry has boomed and they have benefitted from it. In 1978 salary increases for data processing professionals kept well ahead of inflation and came a close third to mining exploration and the upper echelons of corporate executives (P.C.W., 2 March, 1979). While America recruits from England, Australia has relaxed its immigration restrictions to allow entry to six categories of computer workers (P.C.W., 21 August 1978). Because of their scarcity, DP professionals retain considerable bargaining power over pay and working conditions.

On the other hand, deskilling as an offensive of management cannot be dismissed on this basis. Higher pay only serves to distract attention from the more fundamental changes. Programmers are not about to join the working class en masse but they are experiencing more shared interests. This is particularly true of the low level coders, who come in with less training and whose salary and career prospects are starting to fall behind. Moreover, supply conditions are likely to change rapidly. A 1979 survey in New South Wales indicated that while there was currently a shortfall of experienced analysts and programmers, far too many trainees were being produced to meet future requirements (P.C.W., 11 May 1979).

Women and Programming

Women have moved steadily into the programming area to the extent that it is now claimed to be non-sextyped, though men still predominate (Game & Pringle, 1979: 18-21). In the United States they have moved into other areas as well: a 1974 study showed that they were 13 per cent of systems analysts, 20 per cent of programmers and 20 per cent of machine room operators (Greenbaum, 1979: 145). By 1980 this had increased to 23 per cent across these three categories. Similar figures are not available for Australia. It seems likely that the proportion of women systems analysts is considerably lower, due to a lesser acceptance of women in the business community. The Federated Clerks' Union, which covers some of the operators, clearly regards it as a 'male' job and in 1980 rates of pay were still based on the basic wage for 'adult males'. In programming, on the other hand, women have moved in in proportions similar to those in the United States.

Is there a relationship between 'deskilling' and the partial 'feminisation' of the area? In short, the answer is 'yes'. But the relationship is a complex one. Feminisation certainly does not 'cause' deskilling as many male trade unionists have been inclined to believe. And neither does deskilling automatically bring about feminisation, as we have noted in the case of the operators. To understand the position of women in the 'professional' areas of data processing, we need to look at the relationship between managerial decision-making and technological change, changes in the labour process and the particular difficulties, for women, of combining a 'career' in computing with domestic responsibilities and personal life. We also need to remember that while women are congregated in the lower ranks of programming they are pushing their way upwards. Their entry into the industry is as much a result (particularly in America) of liberal feminism and the extension of job opportunities as it is of deskilling. In the light of these complexities we need to go back and look at the historical development of the labour process in computing.

The Early Days

Ruth M. Davis, in accepting DPMA's last 'man of the year' award in 1979, enjoyed the observation that 'it is possible to indulge in reminiscences of the early days without being called 'senile' (Datamation, November 1979: 52). She recalled programming the SEAC back in 1951. At that stage she was one of very few women in a heavily male-dominated area.

Why should a 'new' occupation become sextyped so rapidly? We are offered the 'romantic' image of the eccentric, independent loner, stumbling into the field as if by accident. And women were not free to roam around computer-land, to explore new and strange territory - any more than we are to hitchhike or travel alone without the risk of harrassment. The field had a maths or science image, which also restricted women's entry - though a 1963 study found that only 45 per cent of programmers had a maths or engineering background (Greenbaum, 1979: 87). Greenbaum suggests that 'general prejudice seemed to be the biggest preventive measure', that women, whatever their qualifications were not wanted (Ibid).

This relates back to the wider sexual division of labour. The computer represented power and control and was thus seen as masculine. In the cold war era of the 1950s, when the differences between the sexes were accentuated, men were able to keep women out very effectively by drawing on the ideology that their place was at home having babies. It was assumed, in accordance with the contemporary definition of femininity, that women would not understand the workings of big machines like computers. One woman at I.B.M. said 'We felt like a circus attraction ... all those male heads peering round our office door and saying, "Sorry, I thought this was key-punching". Occasionally they were used as demonstrators with the clear message to customers, '.. the machine is so simple to wire and run that even the dumb blonde we've got in the demonstration centre has no problems' (Datamation, 1 November 1978: 227-229).

The operations area was always considered 'male' partly because of the heavy nature of the work and partly because it was so closely identified with the armed forces. The first modern computers were, after all, World War II projects funded by the military (Kraft, 1977: 23). Once an area becomes sex-defined this is fairly automatically reproduced. One reason for the longevity of the sexual division of labour is that gender is constituted in such a way as to make the sexes feel uncomfortable about working together, particularly if this involves physical contact. Bell had previously resisted male telephone operators for precisely this reason. It seems to be assumed that if men and women are working side by side, with any semblance of

equality, then the animal sexuality of the working class will break loose and anarchy will prevail. The situation between male boss and female secretary is obviously different, since any specifically sexual component will not challenge the relation of dominance and subordination. And middle class men and women have been assumed to be able to control their passions. However, in the working class, the rituals that daily recreate masculinity and femininity must largely be enacted in single-sex groups, at a distance from each other and with a measure of tension. Hence the 'macho' qualities associated with programmers and operators, and the ways they functioned in group situations to freeze women out.

But even in the early days some women were able to enter the industry and we need to ask why this was so. Dorothy Walsh has some interesting suggestions based on her own experience (Datamation, 1 November 1978: 227-230). She reminds us that there were many small computer consultancies in formation. These could ill-afford to indulge themselves in sexist stereotyping and were more likely to be mercenary and pragmatic. Some of them discovered that women could be employed more cheaply than men and were less likely to fuss about promotion. In Australia, women were still typically being paid only 75 per cent of the male salary. Even today women frequently earn around \$2,000 a year less than their male counterparts in the same firm. One woman who has recently divorced and returned to the industry recalled bitterly that in the past they had felt quite strongly that men should get the promotions 'since they had families to support'. A 1979 Computerworld survey in the U.S. found that male DP employees could expect to be promoted to a management position a good three years earlier than women (A.C.W., 30 March 1979). These companies also discovered that women were more patient and more attentive to detail. By the seventies these had been turned into near-universal stereotypes explaining and justifying women's employment! Walsh's company also discovered that women were more likely to work co-operatively to solve a problem than men, who were highly competitive.

Thus the first sexual division of labour in computing was between the 'professionals' and the punch clerks. Within the 'professional' area a minority of highly qualified women were employed in subordinate positions and heavily exploited. Eventually many of these women became restive and began to push for change.



Tightening Up

From the mid-1960s onwards management replaced its general opposition to women anywhere other than as punch clerks with a more selective discrimination. Women (and gays too) are actively sought out by some companies, not because they have grown more acceptable but because they are more pliable. But a shortage of skilled labour was the main reason for the change. Sexist stereotypes usually get revised (though never dropped) under such circumstances. To understand where women were placed within the industry we need to examine changes in the labour process and in recruitment policy.

Changes in data processing jobs are not 'caused' by technology in any neutral way. Management has control over technology and employs it in such a way as to maximise returns. This involves both increasing productivity and increasing control over the labour process. In the early period companies were willing to put a lot of their investment down to research and development. By the 1960s they sought a greater return on their money and increased efficiency. This was particularly true of the expanding number of first-time users. It was in this context that IBM System 360 was developed, the most popular of the 'third generation' of computers. Where the first generation had operated clumsily on vacuum tubes, and the second generation on transistors, System 360 was based on the integrated circuit, which included a number of transistors on the one piece of material. This streamlined model, with its greater speed and reliability, and ease of operation, was quickly accepted as a 'general purpose' computer for a wide range of business applications. In the past the work of operators and programmers had overlapped. In the first generation machines changes in the operating programme had to be made by actually rewiring the computer, a slow and cumbersome process. Now that the hardware and software aspects were more clearly distinguished a stricter demarcation could be set up between the two jobs. This combined with stricter security precautions to deny programmers entry to the computer room (Greenbaum, 1979: 16-17). The first step of separating conception (programmers) from control (operators) had been taken, and the operator's job had been reduced to a manual occupation.

In the second step, business communication was divided off from technical orientation. Thus systems analysts were employed to communicate with management and deal with business problems; programmers could then be left to deal with the technical details. Systems analysts have become increasingly specialised in their industry of employment and their identification is likely to be with the company rather than with the computer industry. That is, analysts are basically business people and their career path is now quite different from that of senior programmers. Within each of these categories came an increasing number of subdivisions. As Greenbaum notes (1979: 70), by the 1970s the roots of their jobs were not visible to most newcomers, who assumed that these divisions were fixed and inevitable. Yet all this happened in a mere two decades!

Systems analysts have been predominantly males from middle class backgrounds. Their job was defined as requiring creative thinking (male!) and business skills which men were more likely to have acquired. As we have seen women have not been welcome at the top of the business world. In addition, such workers 'are expected to act in accordance with the behavioural traits of bureaucratic structure' (Greenbaum, 1979: 146) and the model was likely to be male.

The 'operators' jobs were the most rapidly deskilled as the new hardware and software took over more and more of their functions.. The operators were

progressively denied any involvement in developing programmes. Their jobs were defined as exclusively manual and it became unnecessary for them to understand what the programmes were even intended to do. Given that the heavy work also declined, we might have predicted a greater movement of women into the area. However, it has remained largely restricted to working class men. Two reasons for this have been the shift work and the overtime involved. Management has been particularly resistant to the idea of men and women working closely together on night shifts. With overtime payments, the operators frequently make more money than the programmers. They could certainly feel superior to the punch clerks and they retained some of the 'glamour' of working with expensive equipment. Training was practically oriented and very much based on learning from one's work mates. This put women at a disadvantage since they could not be treated as 'mates'. It is also possible that as the job became more routine and limiting the operators projected an even stronger 'macho' style as some sort of compensation and expression of their identity. They had as a group become very isolated from other workers in the field, locked in with the computer as effectively as other people were locked out.

Programming remains the most complex area to assess. Managers were still in the embarrassing position of not understanding what their workers did and hence having little control over them. In order to have some measure of productivity, programming standards were called for. This was assisted by the development of programming languages like FORTRAN and COBOL which simplify coding procedures. This was taken a step further with structured programming. Finally implemented in the 1970s, management had been working on structured programming for two decades. Basically it is a framework which tells the programmer what instructions to use, what logic to follow and what routines to insert in the program. While this obviously implies deskilling and a loss of control over software production, it has been popular with programmers. As an aid to systematic thinking, it has a precision and an elegance that is to be admired. But, as Kraft suggests, it has been adopted not for its intellectual virtues but to make it easier to manage programmers. 'Structured programming', in short, has become the software manager's answer to the assembly line' (1977: 59).

Structured programming made possible a more formalised job-based fragmentation within programming and the setting up of complex hierarchies on the basis of skill. The work is controlled by the chief programmer or team leader and much of the coding work is extremely routine. That is, there is a higher proportion of support staff who come in at low levels of skill and are paid accordingly. In Sydney, the Department of Technical and Further Education is developing courses appropriate for these people.

This whole process is now going much further with non-procedure oriented languages and structured implementation. The former means that instead of telling the computer how to do what is required the computer itself is left to figure this out. This involves removing the description of data from the program and storing it with the data (Datamation, 15 November, 1978: 25-26). The latter enables a number of people to work on or review a program skeleton simultaneously:-

The sight of a programmer hunched over a coding sheet is often mysterious. Is that page being coded the second of three or the second of three hundred? .. The source library approach requires that coding be deposited in the source library on a daily basis. This makes the progress of coding visible and therefore reviewable on a daily basis. (Datamation, 1 November, 1978: 148).

Thus programmers are made interchangeable and placed under constant supervision. Management themselves have spelt it out quite nicely:

Our latest effort will utilise a top-down approach to the extent of requiring every stage of program development to yield visible output ... What we've devised is nothing new. Henry Ford designed the assembly line in the first decade of the twentieth century. All we're doing is applying the concept to the manufacture of application programs. (Ibid)

Despite this, management feel they are 'still in the unfortunate condition that software development is not science, it is a craft and our knowledge "is of the meager and unsatisfactory kind" (Datamation, 15 November 1978: 32).

Despite improvements, the productivity of today's programmers is no more than two or three times the productivity of programmers of a quarter century ago. In the same period, the price/performance ratio of computer hardware has improved by a factor of perhaps a million ... Further, the tasks are getting harder, as we learn how to solve one class of applications we tackle harder ones. The software problem is therefore a rolling crisis (Datamation, 15 November 1978: 27, 30).

The central problem is that software development has always lagged behind hardware. As the hardware becomes cheaper and more sophisticated there is every inducement to replace human labour with inexpensive and reliable pieces of equipment. But the cost of hardware is coming down so fast and applications extending so quickly that labour as a percentage of total cost is increasing anyway. The organic composition of capital is actually declining - something which is not supposed to happen! Despite the obvious deskilling, programmers are therefore in a good position to restrict the controls over their labour.

We have had to move a long way from the sexual division of labour in order to indicate that deskilling takes place against a background of constant flux, of continuous structural and technological change. Just as management thinks it has solved things new problems arise. We must therefore shift the focus from deskilling to what goes along with it. Deskilling is often experienced as its reverse - the acquisition of new skills, for example learning new languages which will eventually make the job simpler. At the same time as data processing became more standardised it was also experienced as more specialised. The 'jack of all trades' (sic) gave way to new hierarchical arrangements designed to keep people locked into particular job ladders through making minute distinctions between jobs. This created the possibility of a much more complex division of labour 'reflecting a stratified set of social relations' (Greenbaum, 1979: 99). It was aided by a recruitment policy with different methods of selection and degrees of education being used for entry into each ladder.

As jobs and qualifications became standardised and defined more women were recruited. The logic of this is taken to be so self-evident that no one ever stops to ask Why? As we have seen, a shortage of labour was the biggest inducement. But beyond this, men often became threatened by the entry of women to previously male occupations. At a conscious level this is expressed in terms of fear of competition and lowered wages. But there are other levels. Although gender is deeply engrained, it has to be maintained through day-to-day activity and is thus always in danger of being disorganised, with unsettling results. Insofar as masculinity is consolidated in all-male groups, men feel threatened or embarrassed by the appearance of women. They would prefer to keep them at a distance. (This is aided by the ideology that locates women first and foremost in the private, domestic

sphere). Now bureaucratisation supplies just that distance by creating set places for people and by minimising the obligation to interact closely in recruitment, training or the job itself.

In confirmation of this, women seem to have an easier time in large companies. There they have a chance to be compared with more people, and on a fairer basis, since there are fixed methods of appraising people and less reliance on personalities and individual impressions. They also have an easier time getting maternity leave. The fact there are proportionately fewer women in senior positions outside Sydney and Melbourne is probably largely because there are so few large companies elsewhere.

Women who want to 'make it' have to play company politics and this is difficult for them. On the one hand they must be tough. But they must also be attractive and fit the feminine stereotype. And above all they must achieve their ends without appearing to threaten the male ego. Most men will not easily tolerate this and will quickly retaliate with the accusation 'bitch'. Ironically then, the women have to fall back on relational skills that are typically feminine. It is notable that a high proportion of successful women have been in consulting work where, though the pressure is usually higher, they are separate from company politics.

To take the argument further, we might note that if you have a high proportion of women in the lower ranks, it makes the junior males feel a lot more secure about their promotion prospects. Given the declining opportunities implicit in deskilling, this is important. In a world where not everyone can possibly get to the top, they see only males above them. They know that even without discrimination in their favour the wider sexual division of labour will take its toll, with a high proportion of their female competitors dropping out to take care of domestic responsibilities. Management frequently carry out their recruiting policies with this balance in mind (Game & Pringle, 1979).

The remaining barriers to women thus involve more subtle aspects of discrimination and operate at ever deeper levels.

Peeling the Onion

In early 1979 'Women in Data Processing Inc.' was formed in New York specifically to help women move past middle management and 'crack the \$30,000 a year barrier'. They have set up assertiveness training groups to help women develop inter-personal skills and avoid the self-fulfilling prophecies of inferiority. These groups are being extended to other parts of the United States and seem likely to appear in Australia before very long. The preconditions are here in terms of an informal friendship network, an annual lunch, and a tendency to be more supportive towards each other than was the case in the past.

Nearly two hundred women attended a seminar in New York in February 1980 organised by Women in Data Processing. They spoke at length about the problems of 'Juggling Your Career and Personal Life', the theme of the session. Key topics included developing technical and interpersonal skills, overcoming stereotypes, using an office support system and dealing with guilt and stress. Though they claimed they did not have to be 'superwomen' (Computer Careers News, 25 February 1980: 3) the profile that emerges is very close to that. Women in the professional areas of DP have above average IQs for the area, are very highly motivated and self-directing. They work much harder than the men, to the extent that some had given up social life completely. Those who were married or had children spoke of another set of

problems. They can be called out at all hours to supervise their work going through the computer or to straighten out urgent problems. The long and unpredictable hours make the juggling act very difficult.

All the speakers reported feeling guilty about house cleaning and child care. Many had coped by having cleaning help or live-in housekeepers. That is to say, working class women take on the labour that makes their mobility possible. 'We have been socialised to be good housekeepers. We want to be social women - to be able to do everything ourselves without depending on other people', one speaker said. 'I now devote my time to things that will further me in my career (Computerworld, 18 February 1980: 16). Apart from having to overcome guilt and do a great deal of forward planning in their personal lives, these women have had to establish an appropriate self-image in the office: 'assertive' but not 'aggressive'. 'You have to change them from thinking of you as a capable technician to someone who can be trusted with any project'. Some women said it helped to have a male mentor in the office: 'you need to find someone for whom you are doing good work - you are helping them and they are helping you over the rough spots'. Women have to find ways of standing out, even if this means taking on additional responsibilities (Computer Careers News, 25 February 1980: 3).

Thus it remains true that:-

Women have never achieved positions of importance in the business world by accident. They have attained such positions by being clearly and undeniably far more qualified for them than any of the men who might represent alternative choices ... It would be quite a victory for women's rights if women could be made managers even when they were only equal (not clearly superior) to male candidates (Dorothy Walsh, Datamation, 1 November 1978: 230).

If the previous analysis is correct then victory will be slow. In the United States the situation is currently further advanced than in Australia. First, as we have noted, there is a labour shortage and hence a big demand for staff. Secondly, there is the almost hegemonic presence of liberal feminism. Women in Data Processing are doing important work in enabling women to gain confidence and technical knowledge as well as drawing attention to discrimination, including quite substantial salary discrepancies. They are also contacting companies to persuade them to employ women in senior managerial positions, and claim to be getting a good response. Thirdly, there is the question of affirmative action. It would seem that male business executives are resigned to some reshuffling of the power structure but that they would prefer to open the doors to white women than to blacks of either sex (New York Times, 6 March 1980). This is a timely reminder that the sexual division of labour is intimately connected to other ways of keeping the workforce divided.

The Future

Women have steadily moved, not only into areas of data processing which are becoming deskilled (by no means the whole of the industry) but increasingly into senior managerial positions. They are doing so, however, at a time when the industry looks set to undergo fundamental changes which will cause an upheaval of the labour process as profound as any to date.

What will make this possible, of course, is the maturation of Data

Base technology and the dramatic growth of semi-conductors. The 1980s will usher in a new era of very large scale integration with more than one million components per silicon chip (Datamation, 15 November 1978: 18). This is already creating a variety of new computer applications. In data processing 'microprocessors now abound in terminals, peripheral controllers, communication devices and small standalone computers. Semiconductor memories are rapidly improving the price/performance characteristics of computers of all sizes. It is interesting to note that today's intelligent terminals may contain as much memory as did second-generation business computers' (Datamation, 25 November 1978: 18). The microprocessor has made possible personal computing, intelligent terminals and networks and distributed processing. The likely result is that the communications and data processing industries will merge until the two are indistinguishable and the fully automated office will be almost unrecognisable.

What is never spelt out is that this signals the end of the road for keypunch operators. Recently quite a lot of attention has been given to the appalling conditions and the health problems that these women face. But their place in the overall structure of data processing is never assessed. Their work is not only arduous, repetitive and boring, but it is in the process of being phased out altogether. It may be unskilled, but it has also seen major changes over the years. As the diskette replaced the ubiquitous punched card, the number of strokes per hour increased steadily to a point where it has approached the physical limit. At the same time, the number of jobs has decreased. It is estimated that punch or accounting machines were replaced by only three-fifths the number of key-disk stations (Computer World, 17 August 1979). There remains a bottleneck at the point of actual input of information. In order to speed things up, and reduce staff further, optical character reading (OCR) is being developed. It already reads a wide variety of type faces and converts them into computer understandable data (Modern Office, March 1980: 30). This reduces many jobs to one simple operation. The micropad, which is already in wide-spread use, allows data to be handwritten directly into the computer. This ensures that duplication of effort is no longer necessary, that the need for specialist data entry staff is significantly reduced, while errors resulting from transcription or a mere lack of knowledge of the accuracy of the information being entered are virtually removed (Australasian Office News, August 1980: 7). The other form of input that will become common is the human voice. And given that all first time computer users now all use terminals, much of the remaining data entry will be taken over by other clerical workers as an automatic addition to their jobs. We are talking now about systems which allow the users of word processors, for instance, to perform data processing tasks without needing to be aware of it. It is important that the women on these machines do become aware of the extent of their increased productivity and demand a share.

In other circumstances it would be pleasing to see the drudgery of the 'factory' area disappear. However, the women working there are not being retrained. While they might have expected to be moved into word processors it is those who have typing rather than computer skills who are getting these jobs. In America some are recruited into the lower ranks of coding. But in Australia they are treated as the lowest species of clerical workers. They will be expected to quietly disappear into the home - and they are the group who can least afford that 'luxury'. Perhaps there will be a few openings as 'nannies' for professional women.

There are few signs that the sexual division of labour in computing is breaking down. Tendencies in that direction are being held in check and the new sexual division that is developing looks firmly entrenched. It remains to fill this out.

As the terminal itself becomes a computer, information can be punched in by people out in the field, merely by plugging into the nearest telephone. Retailers, banks, insurance companies and so on are already tapping this new potential. This is known as distributed data processing and has even wider implications for the way the work process is organised. The recent appearance of the IBM 8100, the Orbit, has been hailed as carrying a 'significance on a par with the initial System/360 announcement' (*Datamation*, 1 November 1978: 55). It marks 'a deviation from I.B.M.'s historical concentration on big mainframes and a centralized approach to 'dp' (*Ibid*). And it can be installed by the users, with a set of easy-to-follow instructions, in much the same way as a basic household stereo system might be set up.

These developments create the possibility of decentralising the workforce. Companies have an eye to the relative costs of furnishing someone to work at home as opposed to establishing an office in an expensive building. Already employees are asking explicitly about the availability of home terminals as a job benefit. Another possibility is the 'dispersion of corporations to satellite offices where people work three out of five days a week. It not only saves in downtown office space, commuting time and expense, but it could provide a happier, more integrated working staff' (*Datamation*, July 1979: 99). They also note that this could be a way of attracting staff 'without inflating salaries'. Once does not have to look too far to see companies tapping the supply of suburban housewives looking for part-time employment as a cheap and flexible supply of labour. It seems unlikely that these people would ever get unionised since they would work in complete isolation from their co-workers and their productivity could be continuously monitored. To which management blithely adds: 'It also opens up opportunities for handicapped people who, either because of physical or social constraints, cannot get out to where the jobs are' (*Ibid*: 100). This would seem to take the isolated, atomised worker to its logical extreme.

In Australia this system is about to be introduced in the form of small scale consultancies. Overheads are small and the cost of the terminals is now less than \$2,000 a piece. Women at home with small children will obviously be the first to try it out, since they have nothing to lose. I am not suggesting that everyone who goes into this business will deliberately exploit women. But whatever their conscious intention, this move has important consequences for the organisation of the industry as a whole. The most likely results would seem to be that the sexual division of labour be more firmly entrenched, through the location of women's paid, part-time work actually in the home; and a worsening of the position of other workers in the industry in terms of both income and control.

The scenario for the 1980s is therefore likely to be a drastic reorganisation of the labour process and of working conditions. The 'bottom rung' of punch clerks will be phased out, but the gap between management and the majority of programmers will probably increase. Some women will force their way into top management but their numbers will probably increase more steadily in the lower ranks. What happens in programming will be decisive. Though hardware has taken over some of the old software functions, the 'software crisis' continues to plague

management. They have not yet managed to improve on programmer productivity and control to the extent they would like. But they are very much on the offensive and it is likely that they will be making new uses of the sexual division of labour in the immediate future.

The computer workers are not well prepared for such an offensive. Few are unionised and those that are are spread across a number of unions, all fighting for the control of the industry. The data entry staffs belong to the Federated Clerks Union. So too do some operators (Eg at the TAB) and programmers (eg Alcan). The maintenance workers are in either the Electrical Trades Union or the Technical Services Guild. The programmers have been split between the T.S.G. and the Association of Computer Professionals (A.C.P.A.), which have had a number of confrontations recently before the Arbitration Commission. ACPA has been through a series of reorganisation in its efforts to gain registration as an industrial union.

As it is, these unions have done little enough for their members. The FCU has started looking at health problems, but in a very narrow way, for example in extracting a small increase in pay to cover 'fatigue' from the VDU screens. It has not taken up seriously the issue of loss of jobs, being satisfied to let '(un)natural wastage' take place. In the case of the Victorian TAB workers, this meant that their weekly working hours were reduced (evenly and fairly!) from twenty to four or five. Not surprisingly many found this 'unprofitable' and were forced to resign. Yet strict limits on the hours to be spent at VDU screens might be beneficial to both health and jobs. The union has noted that people's speeds decline by about age 25 and they tend to move on. But it has not taken this up. As for retraining, the union holds the view that the only thing keeping women back is lack of initiative. No efforts are being made to assist them to take H.S.C. or tech courses. ACPA seems to be in a perpetual identity crisis about its 'professional' status, and the role of the TSG is obscure.

The logic of the situation would suggest a need for one union covering all workers in the industry. Since this is unlikely it is at least important that they ensure that the unions cater to their specific needs. With their ingrained sexism the unions certainly cannot be trusted to do anything about the various levels of discrimination outlined. Local struggles will have to be waged. It will be necessary for women to organise separately, both within and outside the unions. Women in Data Processing is very much an organisation for women on the way up. While operators and data entry women are not formally excluded, they would not be likely to feel very comfortable. There are signs that a similar organisation will spring up in Australia in the near future. It is to be hoped that its membership and aims will be somewhat broader than its sister group in America. The problems of working women will not be resolved while the sexual division of labour continues to exist. Its perpetuation can only benefit capital.

* On deskilling and the division of labour in computing see also A. Game & R. Pringle, 'Women, the Labour Process and Technological Change in the Banking Industry in Australia', Intervention, No. 14, March 1981.

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