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Skill, Remuneration, and Employment in Production and Service Related Work in Canada: A Quality Assessment

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A Thesis

in

The Department of Sociology and Anthropology

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ABSTRACT

Skill, Remuneration, and Employment in Production and Service Related Work in Canada: A Quality Assessment

Marco Nerone

In this study, job structure is assessed in terms of workers' occupational status and mobility. Job quality is accounted for in this process on the basis of workers' perceptions of their skill requirements and job security, and on the basis of their level of intrinsic interest. The findings indicate that respondents perceive their skill requirements and job security in ways that do not necessarily correspond with their occupational status or mobility. They also indicate no strong correlation between respondents' occupational status or mobility and their intrinsic interest.

Given these findings, the issue is that one cannot evaluate jobs on a variety of dimensions and assume that these measure desirability. These measures do not insure that the workers view them in the same terms. Job quality may be more a matter of what the individual takes as the most desirable from among a range of often limited alternatives.

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CHAPTER 1

INTRODUCTION

This research deals with work inequality in Canada. It addresses job characteristics in terms of: 1) skill, 2) wage, and 3) job security differentials. The research seeks to determine the changes in these attributes and the nature of the changes as well as their consequences (see Daly, 1993:30-31; Montgomery and Stockton, 1994:218-219; Vallas, 1988:171). These considerations further spark interest in investigating the effects of these changes on workers' perceptions toward their jobs.

A central proposition with several hypotheses is derived from the theoretical discussion in Chapter 2. The central proposition is that occupational structure affects job quality. The hypotheses are the following: 1) the lower the occupational status, the lower the skill requirements, 2) the lower the occupational status, the lower the intrinsic interest, 3) the lower the occupational status, the lower the job security, 4) the lower the occupational mobility, the lower the skill requirements, 5) the lower the occupational mobility, the lower the intrinsic interest, and 6) the lower the occupational mobility, the lower the job security. One expects that the results of the data analysis support the hypotheses with respect to the theory.

In Chapter 2, a literature review of trends and interpretations of changes in skills, wages, and job security is provided. Chapter 3 is reserved for methods. In this chapter, the measures that test the hypotheses are outlined

and explained. In Chapter 4, the empirical findings are presented and explained. In Chapter 5, the implications of the core findings are discussed in light of the theory.

Throughout the study, a number of terms are utilized which require definition. These are presented in this section. To begin, a concentric organization is one that is not hierarchical but is rather fluidly structured. Chain of command boundaries that separate the managing from the managed are blurred. In this sense, managers and workers participate in the decision-making process as well as in the activity of doing the work. A hierarchical organization, on the other hand, is one that is pyramidically structured. Chain of command boundaries are heavily emphasized with the existence of superior to subordinate relations between management and labour. This implies that managers decide on the kind of work to be performed and the manner of doing it, while workers are made to follow the orders of management.

Lastly, the primary sector refers to that segment of the labour market where "good jobs" exist. Here, workers obtain considerable benefits in terms of skills, wages, mobility, and job security. The opposite is so for the secondary sector. More specifically, workers in the secondary sector hold "bad jobs." Their accessibility to such benefits as skills upgrading, raises in pay, career mobility, and job security is limited.

CHAPTER 2

LITERATURE REVIEW

Interpretations of Job Characteristics

It appears that the issue of job characteristics tends to reflect three strands of interpretation. These interpretations are the following: 1) there is a general upgrading of skills, 2) there is a general downgrading of skills, or 3) there is a general mix of skills.

The Upgrading of Skills

Fuchs and Bell argue that the growth of knowledge industries entails a societal change that is associated with the development and implementation of advanced technology, particularly microelectronics technology (Penn, 1990:18, 20). In addition, they suggest that the evolution of advanced technology requires "...an ever more educated workforce for its development" (Penn, 1990:18). Bell argues that " the central point about the last third of the twentieth century, call it the post-industrial society, the knowledgeable society, the technetronic age, or the active society, is that it will require more societal guidance, more expertise" (1973:263). Thus, Fuchs and Bell propose that the nature of job characteristics changes in that more complex skills are required from workers.

Zuboff (1988:57, 304-310, 413-414) argues that production and clerical work is affected by the automating and skills intensive aspect of technology. The deskilling of production and clerical work is reflected in the automating

capacity of technology while the enskilling of both types of work is reflected in the skills intensive capacity of technology.

In regard to production work, Zuboff (1988:23, 57) argues that the use of automated technology may deskill the worker for it can reduce the worker's required manual know-how and physical effort in the execution of manual labour. On the other hand, the use of skills intensive technology can transform the nature of production work from manual to abstract labour. More clearly, the worker may be reskilled to make use of the mind or cognitive capacity in daily work activities. "Abstraction, explicit inference, and procedural reasoning" (Zuboff, 1988:75-76), are the intellectual skills that the worker now employs in the performance of his or her work. The process of reskilling takes place when the production worker is required, is capable and is willing to employ the intellect in the performance of complex production operations such as manipulating process variables on a machine data interface. Out of this process, the production worker is enskilled (Zuboff, 1988:411-413).

In regard to clerical work, Zuboff (1988) and Braverman (1974), point out that the use of automated technology permits the separation of clerical work from the managerial domain. For Zuboff (1988), the clerical craft of interpersonal coordination and communication can be removed from the clerical worker under the auspices of scientific management. Consequently, clerical work is fragmented and routinized. More clearly, the clerical worker

might be required to think less and to perform more repetitious manually driven tasks such as the physical handling of office stationary, documentation and machinery. Here, Zuboff (1988:119) notes that contrary to production work where deskilling is reflected in reduced manual skill requirements, deskilling in clerical work is rather reflected in reduced intellectual skill requirements. On the other hand, the use of skills intensive technology may produce similar effects on clerical work as it does on production work. In this sense, the clerical worker is reskilled to make use once again of the intellect in daily work activities (Zuboff, 1988:156-159, 411).

According to Zuboff (1988:181-185, 216-218, 309-310, 411), the skills intensive capacity of technology is only exploited under the following conditions: 1) when managers provide workers with the opportunity to demonstrate competence in doing such work, 2) when workers are cognitively competent in realizing such goal, and 3) when workers are willing to invest their time in executing such task. For Zuboff (1988:304-310, 413-414), the first condition influences the second one. The third condition is independent from the first and second one since it is rather dependent on the worker's commitment to organizational change.

In this vein, Zuboff (1988:156-158, 304-310, 391-392, 411-412) argues that when workers are given the opportunity to express competence, it becomes possible for them to acquire and upgrade their competence with skills intensive technology to a level that may even surpass that of

management. Here, the worker becomes empowered. The skills intensive capacity of technology permits the worker to equip himself or herself with that "special touch" of technical know-how that quite often enables the incumbent to blur labour-management boundaries of intellectual ability. The result is that labour and management become intellectually interdependent. The organizational incentive, then, is one of joining forces to secure organizational productivity. On the other hand, when workers are not given the opportunity to develop competence with skills intensive technology, the result is a fragmented labour force.

However, the skills intensive power of technology can erode the effectiveness of managerial authority. The legitimacy of managerial authority can be compromised. Still management remains in the final instance the key determinant of quality in technological usage. More clearly, the deployment of technology as a skills intensive or automating tool, and the acquisition, upgrading and manifestation of worker competence with skills intensive technology, constitute workplace-based choices that remain dependent on managerial decision making. It is argued, then, that the skills intensive potential of technology, and the competence potential of the workforce, can only be operationalized with managerial and worker cooperation.

Zuboff (1988:395, 399, 401-402; see also Mintzberg, 1981:103-116) concludes that the evident fall-out of current workplace processes results in a concentric type of organizational structure. Both managers and workers

equally participate in a learning environment that builds and upgrades their intellectual skills with the skills intensive capacity of technology. Within such an organizational context, both parties integrate their intellectual competence in a collaborative effort to further the organizational goal of productivity with respect to global market competition.

Zuboff (1988:407, 411-412) notes that equal opportunity in learning does not imply equalization in intellectual ability. Rather, a segment of managers and workers acquire, develop and demonstrate greater skill than their fellow counterparts because they are more committed to organizational change. Such inequality in intellectual ability often leads to the emergence of a new hierarchical order. While some measure of hierarchy is inevitable in any organizational structure, the authoritative aspect of it is at best avoided in a concentric structure as organizational members continue functioning in their collective spirit of mutual interdependence despite differences in cognitive ability.

Briefly, Zuboff proposes that the mutual commitment of labour and management to learning and employing skills intensive technology entails a reskilling process. This process permits labour and management to participate interdependently in making productive use of technology in meeting the demands of global market competition.

The Downgrading of Skills

Braverman essentially argues that management's main objective is to gain greater efficiencies in production where greater control over labour is a consequence (Mann and Marx, 1993:144). A modern day version of Taylor's principles of scientific management is employed as a means to that end (Braverman, 1974:112-121; Mann and Marx, 1993:144; Penn, 1990:21). Work is systematically deskilled with a subdivision of tasks. New technologies such as the conveyor belt, the numerical control machine and computerization further the process of task subdivision. As Braverman contends: "...scientific management (or Taylorism) is the logical form of modern management and it entails the systematic subdivision of tasks and the incorporation of new technologies that are decreasingly dependent upon the traditional craft skills of the workforce" (Penn, 1990:21). Consequently, he adds: "skilled workers have gradually been stripped of the knowledge of and control over their work that they once enjoyed, and have been systematically reduced to alienated cogs in the machine of industrial production" (Mann and Marx, 1993:144). He concludes by arguing that "...it is social relations, not merely the availability of technology, that determine the character of the organization of production in capitalist economies" (Mann and Marx, 1993:144). Thus, Braverman proposes that all forms of work, from direct production and maintenance, to clerical jobs, are being deskilled in that workers are now required to think less and to perform more repetitious tasks on a daily basis.

Braverman's Marxist orientation leads him to criticize the adequacy of the capitalist system of economic production. His pessimism of the capitalist work process does not bring much hope to workers. He believes workers are bound to fail in their battle with management for work-related rights.

The Mix of Skills

Penn, Gasteen, Scattergood, and Sewel (1992) argue that one cannot claim out of hand that increased use of technology results in skill increase or decrease. Much depends on the technology itself and how it is organized in relation to labour.

For these theorists, the use of skills intensive technology tends to enskill direct production work. In this sense, human intervention in work operations is still required despite computerization. "The computer sets production variables such as temperature, pressure, and flow rates; before computer control they were set by the machine tender. The machine tender still performs some control and monitoring duties and is available in cases of emergency" (1990:105). On the other hand, the use of automated technology tends to deskill direct production work. More clearly, human intervention in work operations is considerably reduced with computerization. Apart from the setting of production variables, computers are even made to control and monitor machinery that produce goods (Penn, 1990:105).

The use of skills intensive technology tends to enskill mechanical maintenance work, as computerized machinery with mechanical controls still

requires human intervention in the manual handling of repairs and replacement of parts (Penn, 1990:72). The use of automated technology, on the other hand, tends to deskill mechanical maintenance work. Computerized machinery with self-diagnostic and self-regulating control systems is used to prevent many mechanical problems from taking place. The need for mechanical repairs here is thus reduced (Penn, 1990:72, 111).

Electronic maintenance work is even more enskilled with the move from the use of skills intensive technology to the use of automated technology as the need for circuitry maintenance increases (Penn, 1990:72, 111).

Finally, the use of skills intensive technology tends to enskill clerical work. Flexible computers equipped with complex software permit clerical workers to employ considerable intellectual discretion in the manipulation and analysis of information or data. On the other hand, the use of automated technology tends to deskill clerical work. Data processing machinery equipped with specialized software replaces the human intellect in the manipulation and analysis of data. Hence, clerical work can consist of simplified tasks (Penn, 1990:661).

Thus, Penn, Gasteen, Scattergood and Sewel (1992:661-662) propose that direct production, mechanical maintenance and clerical work is being enskilled with skills intensive technology and deskilled with automated technology, and that electronic maintenance work is being enskilled with both skills intensive technology and automated technology.

Doeringer and Piore (1985) argue that capitalists are the catalysts in the break-up of a once fairly homogeneous labour force. In this sense, the labour market structure is divided into two main submarkets: the primary sector and the secondary sector. To them, the primary sector is composed of workers holding relatively "good jobs," while the secondary market is made up of workers occupying relatively "bad jobs." Institutional barriers are erected to prevent mobility across the two labour market segments. Differences in age, gender, race, ethnicity, and class, appear among the two labour market segments. For instance, the primary market tends to be mainly composed of males, for it is here where jobs tend to bring the most work rewards in the form of high skills, high salaries, internal mobility, job security, and so on, to those occupying them. On the other hand, the secondary market tends to be mainly composed of youth, women, and racial and ethnic minorities, for it is here that jobs tend to bring the least work rewards in the form of low skills, low wages, little internal mobility, little job security, and so on, to those occupying them.

Doeringer and Piore (1985L169-177) provide a number of factors contributing to the creation of secondary labour markets. From an economic point of view, they provide employers with more flexibility in the use of labour while cutting down on labour costs. But their creation is also highly correlated with a considerable amount of discrimination.

Thus, Doeringer and Piore propose that labour deployment strategies of employers result in barriers to mobility. These barriers are subject to the nature of labour demands and employers' definitions of labour attributes.

Barley (1988) provides us with a more in-depth analysis of work phenomena. The socioeconomic, the social organizational, and the technological contexts of work phenomena come to be assessed and explained on a multidimensional basis. Multidimensionality is shown in Barley's (1988:52) attempt: 1) to explain the different forms of impact that the socioeconomic environment poses on work organizations, 2) to explain the social organizational reasons behind the use of particular technologies, and 3) to explain the nature of technology's constraints on users.

Barley (1988:55) employs the concepts of job autonomy, control, power and influence in his explanations of work-skills phenomena. He leaves aside the skills concept for two reasons: First, he regards the concept as being too narrow in focus in the sense that it does not capture the broad dynamism of work phenomena. Here, Barley (1988:55) points out that contrary to skills, power is an element of social relations that reflects a variegated set of continuous and constraining circumstances. As he states, "distributions of power not only reflect differences in skill and knowledge, but also differential access to the valued resources, the weight of prior institutional practices, and even current strategies of action" (Barley, 1988:55). He further believes that shifts in power relations influence how technology is applied. This research

strategy permits Barley to draw on "...the possibility that a technology may degrade certain occupations while empowering others, or that those who use a new technology may gain influence in some relations while losing it in others" (1988:55). For Barley then, "technologically induced shifts in the power structure need not be conceived as a zero-sum game" (1988:55).

Secondly, Barley points out that the application of the skills concept to differing levels of analysis is limited. He contends that, "...unlike skill, power offers an analytic focus that remains stable across levels of analysis" (Barley, 1988:55). He mentions past research to back up his argument. For example, he states,

> Research on social networks has shown that the concepts of dependency, centrality, prestige, and hierarchy can be defined similarly regardless of whether one focuses on relations of influence among individuals, groups, occupations, or organizations. Because these concepts offer an abstract currency for studying power relations, their interpretation remains stable across time and space. (Barley, 1988:55)

Barley argues that in redirecting the focus away from distributions of skill to the dynamics of power and influence, one opens the possibility of exploring the conditions under which technology comes to "...enhance or degrade a group's position in the division of labour..." (1988:55).

In essence, Barley's (1988:56-72) argument revolves around three contextual parameters. These include the following: 1) the "attributes of the technology itself"; e.g., the significance of technology's coded language, the flow of feedback information known as cybernetics, and changes in the technical know-how of an occupation known as technological innovation, 2)

the "attributes of the organizational and occupational milieu in which the technology is deployed"; e.g., structure of organizations, technological introduction, organizational control, unions and occupational professionalization, and 3) the "attributes of the larger socioeconomic environment"; e.g., product markets, labour markets and industry. Barley regards these three types of contextual parameters as "...factors that should condition social action and thereby affect a technology's tendency to empower or degrade its users" (1988:56).

Cappelli (1993:527-529) argues that the demand for more skilled employment in either the production or service sector correspondingly lowers the demand for less skilled employment in either one of these two sectors because of changes that occur in product markets, management practices, and technology. McMurdy (1993:29) similarly argues that the change in demand for more skilled employment inevitably pressures work organizations to make use of skills intensive technologies in the work process for meeting the demand. Cappelli (1993:527) argues that out of all this change, the probable outcome for working conditions entails a decline in wages for low skilled occupations with an increase in wages for highly skilled ones. Hence, the emergence of wage inequality.

In essence, Cappelli and McMurdy propose that changes in product markets, management practices and technology, reflect changes in demand for more skilled employment.

Working Conditions in the Canadian Workplace

Four main aspects of work can be deduced from the literature presented above. These aspects in their more abstract terms include the following: 1) the socioeconomic environment, 2) the social organization of work, 3) technology, and 4) job characteristics.

The socioeconomic environment refers to changes that occur in the marketplace. The changes could either be social, political, or economic. An example of social change could well involve the accessibility of women to labour markets traditionally open to men only. An example of political change could involve the legislation of tax incentives for entrepreneurship in order to stir up investment in a nation state. An example of economic change could involve the growth of service industries.

The social organization of work refers to the manner in which the work process is organized within the work establishment. Here, the working relationship that is forged between labour and management is of fundamental importance for it shapes the distribution of work responsibilities among the organizational members. Thus, in a corporation, work can be organized either hierarchically or concentrically.

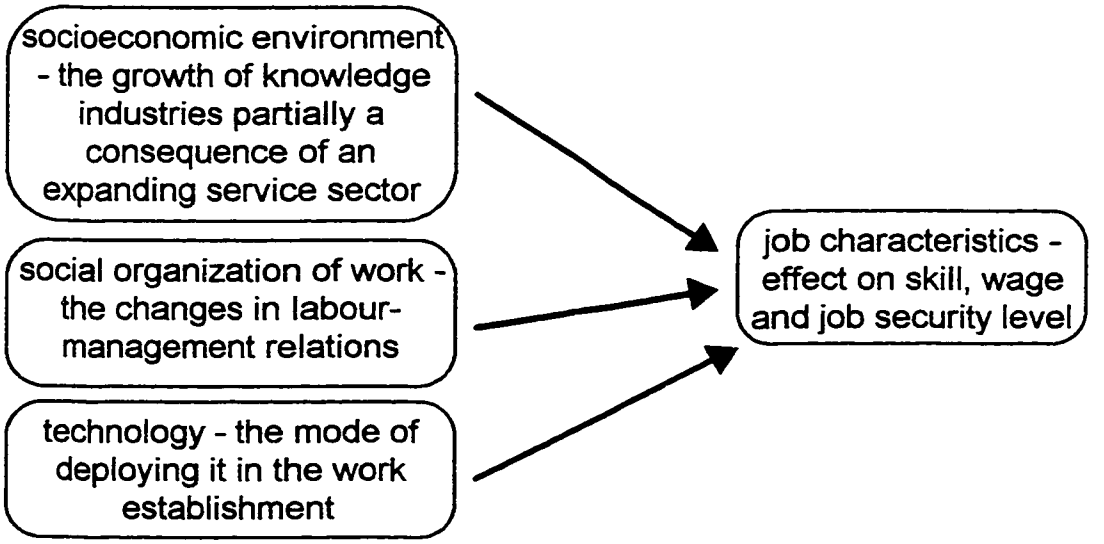
In the literature, technology is often associated with machinery existent in work establishments such as the conveyor belt, the numerical control machine, the computer, etc., although it is made clear that the issue is really one that deals with the manner in which technology is put to use in the work

establishment. As Zuboff (1988) and Barley (1988) imply: if technology is used in a manner that prevents the worker from influencing the processes of the work, then the consequence is one of alienating the worker. Conversely, empowerment is a result if technology is used in a manner that enables the worker to manipulate the processes of the work.

Finally, job characteristics are often linked to skill requirements, although, some of the theorists also bring in wages and job security as part of the picture. The suggestion here is that you cannot have one without the other. In other words, wages and job security are as important as skill requirements.

The above four aspects of work can be used to generate theories of working conditions for the Canadian workplace. One of these is that factors such as knowledge industry growth, changes in labour-management relations, and the modes of deploying technology in the workplace, determine for the better and/ or for the worst, job characteristics in terms of skills, wages, and job security (see Figure 2.1).

Figure 2.1 General Working Conditions in the Canadian Workplace



The issue of job characteristics, is not solely one of skills but also one of wages and job security. The following literature highlights to some degree these latter elements.

McMurdy (1993:28-29) argues that changes in the socioeconomic environment generally explain the pressure of work organizations to restructure work processes around skills intensive technologies.

To begin, it is argued by Au Courant (1990:4), Daly (1993:30), and the Economic Council of Canada (1990:14, 16) that the structural readjustment of most national economies is characterized by a shift of major employment from goods producing to service based occupations. In their "Study of Trends in Occupation Profiles and Industrial Structure," researchers from the Economic Council of Canada (Au Courant, 1991:5) report a decline of production jobs from 48.5% in 1961 to 32.4% in 1986 and a growth of service jobs from 51.5% in 1961 to 67.6% in 1986. It could be noted here that the decline of production work and the growth of service work entails a change that reflects both global and Canadian structural change.

Furthermore, it is argued by Au Courant (1990:4, 1992:9), Daly (1993:30-31), and the Economic Council of Canada (1990:16), that the increased demand for highly skilled workers is followed by a subsequent decline in the demand for low skilled ones. For instance, in their study of "occupational traits," researchers from the Economic Council of Canada (Au Courant, 1991:5) report that from 1971 to 1986, the share of jobs requiring some post-

secondary education increased by about three percentage points, whereas, the share of jobs requiring less than a high school education decreased by about four percentage points.

According to Au Courant: "overall, the Council's research shows that a growing number of jobs are demanding higher levels of cognitive complexity, task diversity, and responsibility" (1991:5). In fact, in their study on job loss with respect to the 1981-1982 recession, Picot and Wannell (1987:7-9) report that from about 1981 to 1985, the more educated job losers spent less time searching for another job than the less educated ones. Their findings indicate that job losers with a post-secondary education spent on the average 20 weeks for finding another job whereas those with an elementary education spent on the average 31 weeks - a difference of about 11 weeks more - for the same type of activity. These researchers associate the faster job attainment potential of the better educated job losers to their greater flexibility in adjusting to changes in labour market demand.

Daly (1993:30), Drache and Glasbeek (1992:212-213, 215, 220-223), and Mayo (1980:48-49), argue that the impact of technological change on the occupational characteristics of the production sector results in degradation. In this sense, production jobs are deskilled, wages are lowered, and more and more workers are laid off.

According to the authors of the report on National Occupational Classification of Employment and Immigration Canada (1993:iii-v), mobility

across occupational skill levels which require low to moderate education in association with some work experience or apprenticeship experience, is more possible for workers in blue-collar production jobs than for those in white-collar or clerical-sales-service jobs. For instance, for blue-collar production workers, vertical progression from low to higher skill levels is most often realized solely through work experience. On the other hand, for clerical-sales-service workers, vertical progression from low to higher skill levels is still realized, but more often than not, through additional training outside of work experience alone. In addition, workers in the highest skill level of blue-collar production jobs usually require on-the-job training while workers in the highest skill level of clerical-sales-service jobs usually require either post-secondary preparation or apprenticeship training in addition to on-the-job training. There are, then, lower skill mobility requirements for workers of blue-collar production jobs than for those of clerical-sales-service jobs.

Essentially, the lower skill requirement in the production sector, may be an indication of deskilling. The case that deals with unionized office workers at the Techspeak steel production plant in Toronto, further reflects deskilling in the production sector (see Betcherman, Newton and Godin, 1990). Here, labour and management engaged in collective bargaining to preserve skills, wages, and job security with respect to the introduction of office based computerization. The bargaining effort enabled both union representatives and managers to successfully resolve wage and job security related concerns.

In this sense, wages were preserved and job security was regulated with attrition. However, the issue of job skills remained a problem. Researchers report that there was no attempt by management to enskill clerical workers with the new technology. Rather, clerical workers were further deskilled. As Betcherman, Newton and Godin state:

> ...it should be pointed out that not all issues associated with technology were resolved...there appears to have been little attempt to enrich many clerical jobs beyond mere data-entry functions and according to the employees, much of the judgment and discretion were removed from their work. (1990:24)

With regard to wages, Daly argues that the ones who are most at risk in having their wages lowered are low skilled assembly line workers. Here, he states that "...as those jobs disappear, many forecasters predict that the income gap between highly paid, highly skilled employees in such leading-edge sectors as computers and telecommunications, and less-educated workers...will widen" (1993:30).

The government publication entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada (1996), provides a description of the following traits for the occupations of the National Occupational Classification of Employment and Immigration Canada (1993): job security, the age and gender mix of employment, and part-time and self-employment apart from full-time employment. The occupations represented here include the following: managerial, professional, clerical-sales-service, and blue-collar

jobs. Table 2.1 indicates the industrial sectors where job security is increasing and decreasing.

Table 2.1
Job security according to industrial differences, 1984-1994*

	Production Sector	Service Sector
Job Security		
-is increasing	21.4%	77.1%
-is decreasing	78.6%	22.9%
(N)	(42)	(105)

SOURCE: Computed from the 1993 National Occupational Classification Matrix, and computed from job descriptions of job security tendency in the report entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada, 1996. This report is based on the 1993 National Occupational Classification Matrix that is supplement to the National Occupational Classification of Employment and Immigration Canada, 1993.
* For more details refer to Appendix B, C.

According to Table 2.1, the tendency of job security to decrease is higher for the production sector than for the service sector.

Furthermore, Carroll and Warburton (1991:325), Dassbach (1986:58-60), Drache and Glasbeek (1992:208, 212-213, 215), Mayo (1980:48-49), Myles (1988:352-353), and Zuckerman (1995:68), argue that technological change in the production sector is indicative of a management strategy to reduce labour costs for purposes of restoring profitability. In their study on work and technology for the Canadian production sector researchers state that: "...many survey respondents indicated that technological changes were introduced for labour-saving reasons" (Economic Council of Canada, 1987:77; Harrison, 1984:186, 433). Daly states that "...executives say that because of technological innovations, they can increase production and reduce their payrolls at the same time" (1993:30). Here, Daly (1993:30) demonstrates the occurrence of the management prerogative by citing the case of the steel

industry. He states that: "in the steel industry, for one, producers have laid off almost 10,000 employees - since 1988" (Daly, 1993:30).

Betcherman, Newton and Godin's (1990) case of production workers in the "Gamma," "Delta," and "Epsilon" manufacturing companies in Canada attests in some degree to the above trend. In the three companies, management implemented technological innovations without prior planning and without necessarily consulting unionized labour. As a result, employees were mainly left untrained for the new technologies. There was no significant commitment on the part of management to train the workforce. Employees were usually not given the opportunity to acquire the needed skills for mastering the new technologies prior to and/ or following their implementation. Managers of the "Epsilon" company were especially able to make use of their workers' technical inexperience as a means for gaining a tactical advantage over the workers. Evidently, managers became powerful enough to pressure union representatives into making concessions that inevitably depreciated wages and jeopardized job security. But the managers equally beat themselves at their own game for they ended up losing profits in the final instance.

As Betcherman, Newton and Godin state:

> There is a rush towards technological change in many Canadian manufacturing companies, but the haste may be misguided. Some company executives, looking for a fast and easy way to...expand production levels, charge ahead with technological changes that are...improperly introduced into their plants. Such managers may end up as losers in the competition for efficiency and profits. (1990:47)

Finally, Daly (1993:30-31), Drache and Glasbeek (1992:213-214), Myles and Fawcett (1990:24, 38), and Myles (1988:352-353, 1991:352-353), argue that occupational degradation in the production sector is more generally reflective of this sector's structural disappearance from the Canadian economy as a result of socioeconomic environment pressures. McMurdy states that:

> ...the sudden convergence of new technology, global markets and an economic downturn has caused 'huge structural changes' as significant as those in the last century during the Industrial Revolution. As the manufacturing base that once defined the North American economy erodes or relocates to lower-cost, less-developed nations, it is being rapidly replaced by a so-called 'New Economy,' which emphasizes the services sector and knowledge-based industries at the same time as it demands a whole range of different skills from workers. (1993:28-29)

Picot and Wannell (1987:2, 20) argue that much of the erosion of the production sector through job loss has been due to the immediate effect of the 1981-1982 recession and to the longer term effect of changes in international trade patterns, consumer demand, technology, and other structural factors.

Betcherman, Newton and Godin's case of production workers at the Camco plant in Orangeville, Ontario attests in some degree to the above trends. They state that at the Camco plant, workers were involved in the manufacturing of appliance based products. Management implemented a productivity gain sharing program. Under this program, labour and management were to commit to increasing productivity in a context of fierce global market competition. The recompense that labour would receive for participating in the program would be that of increased monetary incentives.

Management would receive for its part an increased market share. At first, the productivity gain sharing strategy worked. Eventually, however, the decline in market demand for microwave ovens and humidifiers brought about an increase in the stock inventories of the Camco plant. The need to increase productivity therefore declined. The consequence was that the gain-sharing strategy no longer worked. Workers began to face occupational degradation in the form of lowered pay and bonuses and lowered job security. Management was now confronted with the reality of declining profits and with the prospect of labour unionization (Betcherman, Newton and Godin, 1990:35-41).

Overall, labour is usually unable to prevent management from determining the destiny of production work (see Cappelli, 1993:517; Economic Council of Canada, 1990:15; Zuckerman, 1995:68). While providing us with a definition of "Fordism," Burawoy (1985) argues that global economic restructuring reinforces the power of capitalism with the establishment of a competitive low-wage labour force. The benefit here is that capital can now be more easily moved across national boundaries. This opportunity for the capitalist countries implies the emergence of a new form of economic system known as "post-Fordism." Post-Fordism turns out to be hegemonic, because as in Fordism, capital and labour interests continue to be negotiated by the state. It becomes despotic, because labour is now compelled to make concessions on the basis of competition for investors. In

consequence, labour can no longer receive concessions on the premise of increasing productivity and profits. As Burawoy states:

> The new despotism is the "rational" tyranny of capital mobility over the *collective* worker. The reproduction of labour power is bound anew to the production process, but, rather than via the individual, the binding occurs at the level of the firm, region or even nation-state. The fear of being fired is replaced by the fear of plant closure, transfer of operation, and plant disinvestment. (1985:150)

Drache and Glasbeek argue that:

> The crucial factor for labour on technology issues is whether or not labour has a real seat at the decision-making table when innovations are devised and productivity is being defined. In Canada, this has not been the case, so far, in the heavily unionized goods-producing side of the economy. (1992:216)

Next, the fact that more and more highly skilled production workers are now crossing over into the service sector seeking paid employment, illustrates the decline in demand for more skilled production workers (Au Courant, 1990:4, 1991:5; Daly, 1993:30). As is shown by the Economic Council of Canada, "...with new opportunities being increasingly concentrated in services, people leaving jobs in goods industries often must change sectors to find another position..." (1990:16). According to the National Occupational Classification of Employment and Immigration Canada (1993), the expansion of the service sector over that of production is in part due to the greater diversity of skilled occupations.

A number of cases attest to the enskilling of Canadian production work, although, this appears to be rare. First, in the case of production workers at the Miramichi Pulp and Paper plant in northeastern New Brunswick,

Betcherman, Newton and Godin (1990:7-13) state that management initiated full scale technological modernization of processing operations and managerial control systems in the plant. Computer technology was introduced in a skills intensive manner. In this sense, a train-the-trainer approach was adopted to reskill the workforce for the new technology. More clearly, management provided the workforce with the opportunity to be retrained for better skilled and better paid jobs. Workers' acceptance of the managerial offer of retraining permitted both managers and workers to collaborate in learning the technical know-how of the new technology. Subsequently, both parties applied their technical know-how interdependently to improve product quality and productivity *vis-à-vis* global market competition of pulp and paper making. It is to be remembered that the success of the trainer approach at Miramichi was made possible not solely with the joint effort of managers and workers but also with the adjoining effort of the union, the advisory committee, and the government.

Second, in the case of production workers at Pratt and Whitney Canada, Betcherman, Newton and Godin (1990:27-34) state that management adopted the socio-technical approach to organizational change. The socio-technical approach was tailored to heighten the workers' collaboration and participation in the overall success of the organization. Computer technology already further served to integrate production, maintenance, engineering, and managerial control operations into one system of operation known as

computer integrated manufacturing. With computer integrated manufacturing, the managers provided an opportunity for workers to further exploit the skills intensive power of technology. Worker acceptance of the managerial offer permitted managers to delegate responsibility and allowed the workers to upgrade their skills through a process of multiskilling. Regarding multiskilling, workers were able to mutually acquire knowledge of all computer integrated operations which served to produce and monitor the quality of the final product. In addition, workers were given increased pay. The greater the skills acquired, the greater the pay. Evidently, managers and workers functioned as an operating core. They were both efficient in securing product quality and productivity with respect to global market competition in aeroengine production.

Third, in the case of production workers at the Essex Engine plant of the Ford Motor Company in Windsor, Ontario, Betcherman, Newton and Godin (1990:15-19) state that government, management, and unionized labour collaborated in minimizing productivity costs while preventing, for the most part, deskilling and layoffs. Computer technology was employed predominantly in an automated manner. Where work processes were further automated, a proportion of production workers came to be replaced by computer based numerically controlled machines and robots. Computer based numerically controlled machines were now made to automatically generate production materials while robots were now made to automatically assemble

the generated production materials in the form of a final product. With government retraining subsidies, it was possible for both managers and workers to reach a consensus with regard to having displaced production workers relocated to other work positions. As a result, relocated workers were made flexible with respect to performing a variety of task oriented duties. For instance, the reskilled segment of the workforce now monitored and assessed the performance quality of automated production processes with statistical process control technology. Other relative skills intensive duties were also carried out in order to meet the objectives of improving productivity and product quality *vis-à-vis* global market competition of car engine production.

Despite the Canadian instances of reskilling, the current trend could well be one of job degradation in the form of either reduced skills, reduced wages, or reduced job security. The fact that the above case studies were conducted during the 1985 to 1987 period, at a time when the chances for reskilling and job upgrading were still quite high for the Canadian production sector, warrants some attention.

Drache and Glasbeek (1992:213-214) argue that the Free Trade Agreement (NAFTA) has made it more possible for American multinational corporations to erode the Canadian production sector by moving American branch plants to Mexico. Drache and Glasbeek further state:

> It is apparent then, that Canada is not yet that close to the flexible, automated factory which can provide sufficient welfare and agreeable work conditions for all, a vision that is not that new. In 1946 there was a lead article in *Fortune* magazine by two prescient Canadians who saw the potential of transforming assembly-line production methods in much the

> same way as enthusiastic technology analysts do today. They argued that the full integration of workers with electronically controlled machinery would be both profitable and humane. They contended that work-upskilling and increased control could lead to nothing but improvement....This dream is far from being realized anywhere in the world. In Canada, it appears to be more remote and unattainable than in most industrialized countries. Much needs to be done to ensure that the inevitable deployment of the new work methods and devices generates greater economic welfare, security and job satisfaction. (1992:222-223)

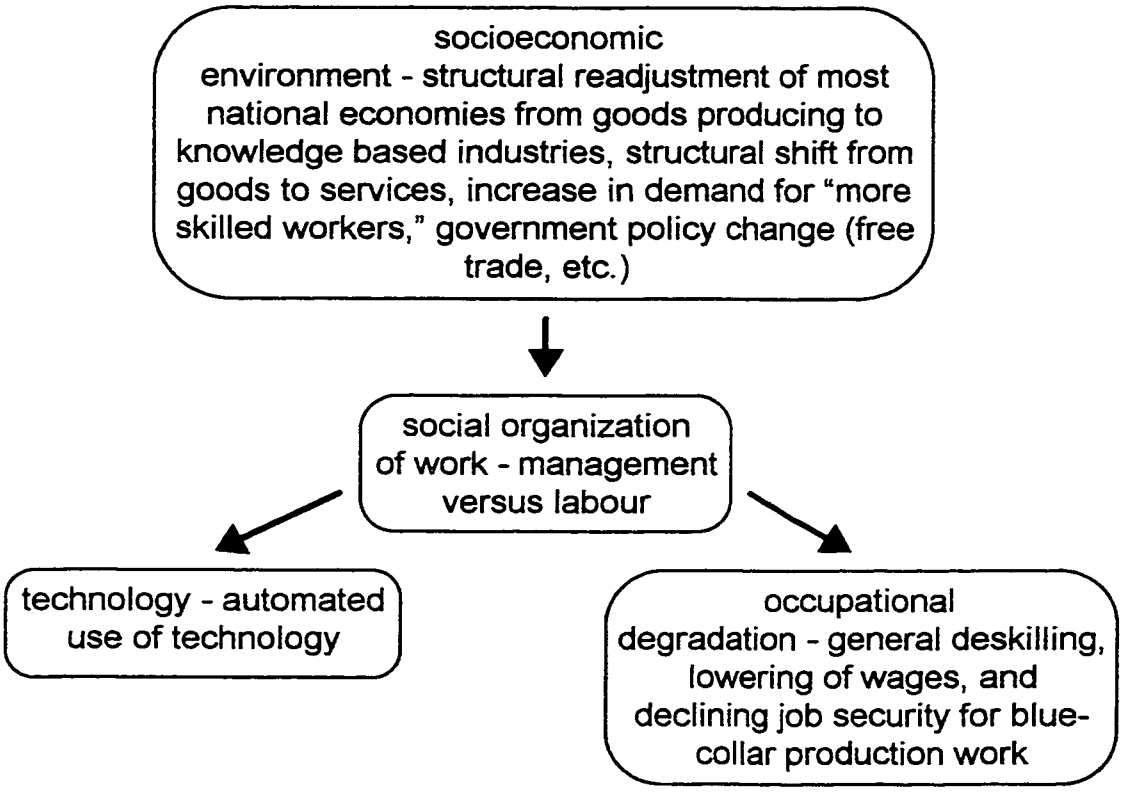
In fact, an update of the Ford Motor case reinforces the arguments with respect to production sector job degradation. Betcherman, Newton and Godin, (1990:18-19) argue that at Essex Engine, the relationship between Free Trade, overseas competition in car manufacturing and job insecurity came to be interpreted by both management and labour as nothing more than a rumour. However, in the final instance, the prospect of job loss became a constant threat. As Betcherman, Newton and Godin state:

> Essex Engine management and CAW Local 200 continue to have their differences, and potentially divisive issues may arise in the next round of contract negotiations. Both watch the trends in consumer preference and volume of sales in the auto industry as weather vanes to indicate what the future may bring. The possibility of layoffs or plant closures is a constant threat... . (1990:19)

Thus, according to this other theory of working conditions, there occurs a structural readjustment of many national economies from goods producing to knowledge based industrialization. In addition, there occurs an accompanying structural shift from an economy where employment is based predominantly on the production of goods to one where employment is based predominantly on the offering of services. There also occurs a seemingly corresponding increase in demand for more skilled workers. Finally, there are government

industrial policy changes such as free trade. All of these socioeconomic environment factors are currently enticing managers to make full use of automated technology to reduce the skill, wage and job security level of workers employed in blue-collar occupations in the goods producing sector (see Figure 2.2). The socioeconomic environment factors may be viewed as primary factors that explain the job degradation of production workers *vis-à-vis* technology.

Figure 2.2 Working Conditions for Blue-Collar Workers



For the service sector, Chinhui, Murphy and Pierce (1993), Drache and Glasbeek (1992:220-221), Montgomery and Stockton (1994:218-219), and Teulings (1995:309-310), argue that technological change results in an

amplification of occupational polarization. The already existing polarized gap between highly skilled, highly paid occupations (managerial-professional or "good jobs") and those of a lowly skilled, lowly paid nature (clerical-sales-service or "bad jobs"), seems to widen. There is enskilling and wage augmentation in the former occupations and a deskilling and wage decline in the latter occupations. In addition, the higher ranked occupations tend to be less susceptible to unemployment fluctuations than the latter (see Economic Council of Canada, 1990; Myles, 1988; Myles and Fawcett, 1990).

Following this line of argument are Krahn's (1992:122-123) findings concerning workers' perceptions regarding intrinsic interest in their jobs. This is shown in Table 2.2.

Table 2.2
Intrinsic interest as reported by workers in the service sector according to occupational differences, 1984-1989

	Managerial-Professional	Clerical-Sales-Service
Intrinsic Interest is increasing (1989)[1] - strongly agree	63%	42%
Intrinsic Interest (1984-1989)[2] - is more interesting	66%	59%

SOURCE: 1989 General Social Survey
[1] Data computed from Harvey Krahn, Statistics Canada 1992, Table 23.
[2] Data from Graham S. Lowe, Statistics Canada 1992, Text Table N.

Lowe (1992:100-101) indicates lower intrinsic interest for clerical-sales-service occupations (59%) than for managerial-professional ones (66%). There is only a 7% difference between the managerial-professional workers and the clerical-sales-service workers. What is perhaps surprising in Lowe's

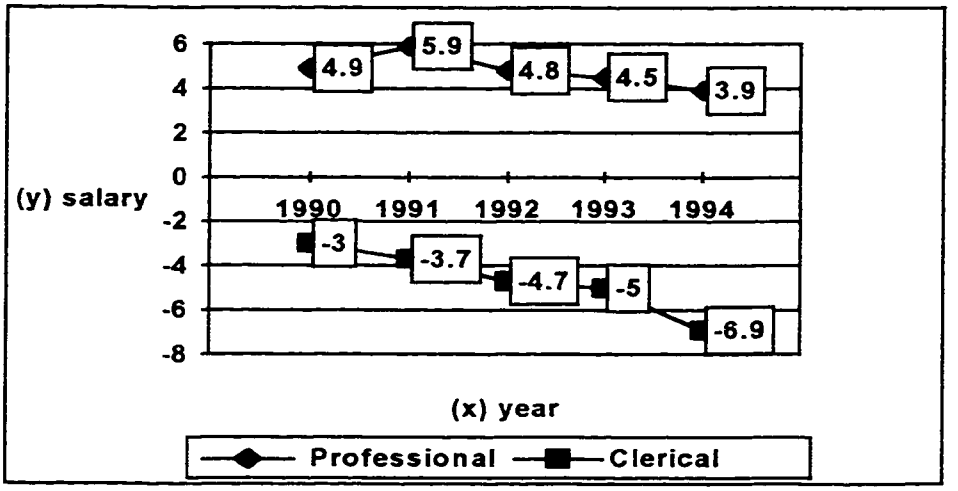
findings, is the high percentage of clerical-sales-service workers who find their jobs more interesting. It is quite possible for clerical-sales-service workers to create a sense of pride or satisfaction for themselves in jobs where conditions of employment traditionally tend to be of low quality.

According to the arguments on skill level mobility in the National Occupational Classification of Employment and Immigration Canada (1993:iii-v), mobility across occupational skill levels which require low to moderate education in association with some work experience or apprenticeship experience is more possible than mobility across occupational skill levels which require a post-secondary or university education. As shown earlier for clerical-sales-service workers, vertical progression from low to higher skill levels is often realizable through work experience and additional training. On the other hand, for these same workers, vertical progression to the highest skill level is made quite difficult because extensive post-secondary educational preparation at the university graduate level often tends to be the requirement for the transition to managerial-professional positions. There are lower skill mobility requirements and a greater possibility for vertical mobility for workers in clerical-sales-service jobs than for those aspiring for managerial-professional jobs.

According to the report by L'Institut de recherche et d'information sur la rémunération (1995:69), salary increases since 1990 generally tend to be lower for employees in both clerical and professional occupations. The salary

gap between clerical and professional employees is widened to the disadvantage of clerical workers (see Figure 2.3).

Figure 2.3Wage Level Disparities between Professional and Clerical Employees in the Service Sector, Quebec, Canada, 1990-1994



SOURCE: 1995 L'Institut de recherche et d'information sur la rémunération, p. 69.

Table 2.3 indicates the proportion of those employed full-time and part-time in managerial-professional and clerical-sales-service occupations in the service sector.

Table 2.3
Proportion of employed full-time and part-time workers in the service sector according to occupational differences, 1994*

	Managerial-Professional	Clerical-Sales-Service
Conditions of Employment		
-full-time	72.5%	32.1%
-part-time	27.4%	67.9%
(N)	(51)	(81)

SOURCE: Computed from the 1993 National Occupational Classification Matrix, and computed from job descriptions of employment number, conditions of employment status (full-time or part-time), age and gender tendencies in the report entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada, 1996. This report is based on the 1993 National Occupational Classification Matrix that is supplement to the National Occupational Classification of Employment and Immigration Canada, 1993.

* For more details refer to Appendix B, C.

According to Table 2.3, more clerical-sales-service occupations tend to be staffed by part-time workers (67.9%) in contrast to managerial-professional occupations (27.4%). If interpreted in terms of job security, this difference in condition of employment could be reflective of lower job security for clerical-sales-service workers.

From the literature, it appears that the difference in skill requirements between the clerical-sales-service and managerial-professional occupations is followed by wage and job security disparities. As Lowe argues: "...it is entirely possible that technological change is increasing the polarization between good jobs and bad jobs in the labour market" (1991:49; 1992:103).

Drache and Glasbeek (1992:220-222) argue that technological change in the service sector is part of a management strategy to widen the gap between highly skilled, highly paid occupations and those of a lowly skilled, lowly paid nature. The purpose of this strategy is to solidify the *status quo*. Betcherman, Newton and Godin (1990:43-46) state that at "Synerlogic," professional employees research, develop, and market software products. In the main, however, they provide consultation to clients who require advice on the use of purchased software. Since 1984, "Synerlogic" managers have been employing a human resource strategy whereby they recruit highly skilled computer specialists while compensating such personnel with professional development and with either greater pay for greater skills or providing incentives for self-initiated business undertakings. With such a human

resource strategy, "Synerlogic" managers have been able to keep their professionals well trained and committed to meeting global market competition in consulting services. As Drache and Glasbeek argue:

> The largest increase in job satisfaction will accrue to people who are highly skilled and whose ability to deal with new technology will be central to the service sectors' efficiency. Managers, scientists and computer experts will be given a good deal of discretion and increased job satisfaction as they design and operate information-based technology. They will be well placed to know and understand the processes they administer. But these people were never the most alienated persons in the workforce and, in absolute terms, they will never be very numerous. For vast number [*sic*] of workers in those sectors the story is a different one. Once again, experience contradicts the conventional wisdom. (1992:220)

Betcherman, Newton and Godin (1990:53-55) state that at Employment and Immigration Canada, public sector workers of the Unemployment Insurance Program, tend to be mainly involved in handling and processing unemployment insurance benefit applications, and in providing information to clients about employment related concerns. In order to reduce administrative costs and improve service efficiency and quality of service to clients, a decision was made by management to computerize the operation of processing applications. With the implementation of computerization, managerial-professional employees (e.g. directors and technical specialists) have been retrained first for the new technology while the retraining of clerical workers and data-entry clerks has followed. Permanent clerical workers have been reskilled for slightly higher skilled and higher paid positions while temporary and contract clerical workers have been laid off. Generally though,

clerical workers have been the ones adversely affected since the majority of them have either been temporary or contractual workers among whom most have tended to be women and students.

In the same study, Betcherman, Newton and Godin (1990:55-57) have also looked at workers in the publications department who compile, market, and distribute socioeconomic data. In order to reduce operational costs and improve product quality and productivity, a decision was made by management to enhance computerized design and publishing operations with microelectronics technology. With technological innovation of this kind, it has become possible for management to restructure the work organizational division into a concentric structure. For example, word processing operators, and professional workers have been reorganized into a professional operating core. The clerical function of word processing operators has been abolished while permanent ex-clericals have been reskilled for better skilled, better paying professional based positions such as that of computerized photocomposition technician. Despite the beneficial change of restructuration for permanent ex-clericals, this has not been so for clerical workers in general. Clerical jobs have been eliminated, since, once again, the majority of those occupying them have either been temporary or contract workers. Women have been the ones most adversely affected since they have constituted the bulk of the temporary contract mass.

With regard to the above two public sector cases, Betcherman, Newton and Godin (1990) report that all of the decisions that revolved around the use of technology and the organization of work were made exclusively by management. Work was reorganized in a manner detrimental to public service clerical workers - many of whom tended to be women, part-timers, and youth. As Betcherman, Newton and Godin state: "...decisions were made by management. Union representatives were kept abreast of the changes, but their role was limited to ensuring that permanent positions were not lost..." (1990:57-58). They further add that "when new technology replaces a number of older duties, other sections of the organization may benefit from the experience of displaced employees" (1990:57). They conclude by arguing that:

> Commitment to permanent staff on the part of the employer is, in our view, a desirable human resource strategy; however, it highlights the relative job insecurity of those outside the protected group. So-called 'contingent' workers - term, contract, and part-time employees, for example - occupy a growing proportion of employment in the federal public service and elsewhere. Since many of those workers are women, legitimate concerns remain about the impact of technological change on the female labour force. (Betcherman, Newton and Godin, 1990:58)

It appears likely that labour is not able to prevent management from polarizing service related work. Drache and Glasbeek state that "employers who persist in their use of microcomputer-based mechanisms in this primitive manner meet with little resistance because the rate of unionization is very low in the service sector" (1992:221). Carroll and Warburton (1991:326) support the polarization argument for the service sector. These authors state that a

growing proportion of workers are being employed in the secondary market of the service sector. Such so-called "interchangeable workers" work part-time, earn minimum wages, are not unionized, and originate from poor social class backgrounds. Carroll and Warburton pursue this argument by stating that:

> ...the interchangeable worker may be seen as the counterpart to the post-Fordist established worker who becomes enmeshed in QWL [Quality of Work Life] schemes. Positioned as they are at the secondary and primary poles of the labour market, these new forms of labour personify the results of corporate strategies to restructure the workplace and the wage relation in the direction of greater managerial control, higher productivity, and a disorganized, compliant workforce. (1991:327)

Since clerical work appears to be only minimally enskilled and is done at the disadvantage of women (see Betcherman, Newton and Godin, 1990; Drache and Glasbeek, 1992), it could be argued that the consequence of polarization in the service sector is reflective of a concentration of women and youth in clerical-sales-service occupations where automation is employed. To demonstrate, Krahn (1992:48) and Lowe (1992:100-101) report a concentration of women in clerical-sales-service jobs and a concentration of men in managerial-professional jobs (see Table 2.4).

Table 2.4
Level of concentration of employed male and female workers in the service sector according to occupational differences, 1984-1989

	Percentage Employed (1989)[1]		Percentage Employed (1984-1989)[2]	
	Men	**Women**	**Men**	**Women**
Managerial-Professional	47%	35%	64%	36%
Clerical-Sales-Service	33%	59%	34%	66%

SOURCE: 1989 General Social Survey.
[1] Data computed from Harvey Krahn, Statistics Canada 1992, Table 5.
[2] Data computed from Graham S. Lowe, Statistics Canada 1992, Text Table N.

More clearly, Krahn (1992:48) and Lowe (1992:100-101) report that there is a greater concentration of women employed in clerical-sales-service occupations than in managerial-professional ones. On the other hand, a greater concentration of men are employed in managerial-professional occupations than in clerical-sales-service ones.

However, Krahn (1992:48, 122-123) and Lowe (1992:100-101) report that women find their clerical-sales-service jobs more interesting than men (see Table 2.5). On the other hand, men find their managerial-professional occupations more interesting than women.

Table 2.5
Level of interest in the job as reported by male and female workers in the service sector according to occupational differences, 1984-1989

	Intrinsic Interest is increasing (1989)[1] - strongly agree		**Intrinsic Interest (1984-1989)[2]** - is more interesting	
	Men	**Women**	**Men**	**Women**
Managerial-Professional	79%	66%	69%	62%
Clerical-Sales-Service	67%	79%	55%	61%

SOURCE: 1989 General Social Survey.
[1] Data computed from Harvey Krahn, Statistics Canada 1992, Table 5 and 23.
[2] Data from Graham S. Lowe, Statistics Canada 1992, Text Table N.

Myles and Fawcett (1990:22, 38-39) state that women tend to have accessibility to skilled jobs where the training costs are absorbed by the actual candidate or by the formal educational system. On the other hand, women tend to be excluded from those skilled jobs where the training costs are absorbed by the employer. In a wage competitive labour market, candidates bid on the position offered with employers choosing the least expensive bidder with the most skill, education, and the like, while in a job

competitive labour market, candidates apply for positions that require on-the-job training. Despite women's high educational credentials, they tend to be excluded from the job competitive labour market. As a result, women usually have no choice but to contend in a wage competitive labour market where they must acquire job relevant skills on their own.

In essence, the shift from goods to services may increase the availability of "good jobs" to women. However, factors discussed such as wage competition versus job competition, and concentration in relatively low skilled employment, inevitably reduce women's chances of gaining tangible accessibility to "good jobs" (see also Human Resources Development Canada, 1996). Such factors were to some degree prevalent at Employment and Immigration Canada. Betcherman, Newton and Godin (1990:54-55) state that here, only a small number of displaced female employees actually entered the technical professions. The majority of displaced female employees did not possess the necessary background to move into the professional realm. As a result, these remaining permanent workers were either voluntarily relieved through attrition or they were relocated somewhere else in the organization.

At Statistics Canada, permanent ex-clericals were given the opportunity to be retrained for the professional core. The general willingness and capability of ex-clericals to adapt to the new technological opportunities provided by management permitted such workers to become part of the newly established

concentric structure (Betcherman, Newton and Godin, 1990:55-57). Although, as Betcherman, Newton and Godin comment: "the majority of those who remained at the division changed from being word-processor operators to computerized photocomposition technicians. Desirable as it may be, occupational mobility of this kind is rarely seen in practice" (1990:55).

One rare instance where clerical work is actually upgraded with skills intensive technology, is reported in a nationwide municipal study conducted by the Coopers and Lybrand Consulting Group for Employment and Immigration Canada. In this study researchers found that municipal managers played a predominant role in employing computerized technology in a skills intensive manner for upgrading the quality of existing clerical positions in terms of increased skill requirement and job security level (Employment and Immigration Canada, 1992:37-43, 48-55, 69-70).

In Myles, Picot and Wannell's (1988:4.17) study of wage distribution in the Canadian public service, wage dispersion occured in terms of an upward shift in pay for managerial-professional occupations and a downward shift in pay for sales-service occupations between 1981-1986. In this study: "the polarization in the distribution of jobs by hourly wage rates between 1981 and 1986 was largely between age groups. Particularly important was the downward shift in the wage distribution of the young" (1988:4.16).

The argument that an increased demand for highly skilled workers would correspondingly be followed by a decreased demand for low skilled ones in

service work (e.g. Cappelli, 1993; McMurdy, 1993) does not seem to be a likely possibility for Canada. In fact, Drache and Glasbeek (1992:217-219) point out that a series of commissioned surveys of the Ontario Task Force on Employment and New Technology predicted that for the 1985 to 1995 decade, the new technological advances would bring a growth of managerial-professional workers and a decline of clerical-sales-service ones. In the end however, the surveys came to reflect a different scenario from the one originally envisaged. In this sense, there was a rather predominant growth of clerical-sales-service workers as opposed to only a limited growth of managerial-professional ones. Drache and Glasbeek state that:

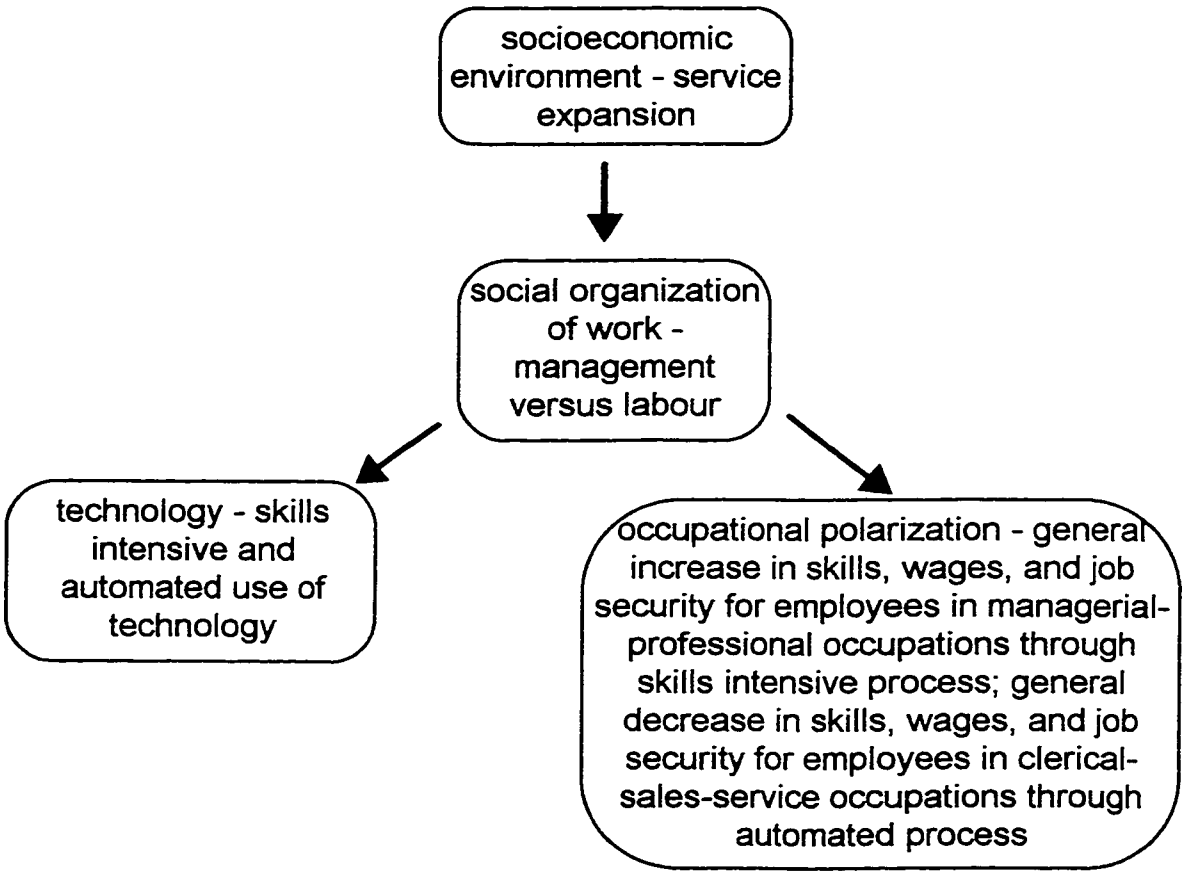
> In the vast majority of firms, particularly in the service sector where 70 percent of Canada's workers are employed, the new technological possibilities are leading to a return to a more pristine Taylorism. Despite all the rhetoric to the contrary, many — perhaps most — employers have not given up on the maintenance of the hierarchical workplace, with themselves at the top of the management chart. (1992:222)

Members of the Economic Council of Canada (1992:9) tend to deflect the blame for the unmet demand of more skilled labour in Canadian society. They criticize Canada for its lack in supply of highly skilled labour. However, Drache and Glasbeek (1992:220-221), Myles and Fawcett (1990:4), and Krahn (1992:140) dismiss this criticism by saying that it ignores the reality of overqualification. The problem for these latter authors then, is not one of supply but rather one of the underutilization of skills. As Krahn expressly states:

> ...the tone of recent policy papers suggests that, in general, Canadians are underqualified and incapable of participating successfully in a high-

technology, global economy. Such conclusions ignore the fact that many Canadians are currently employed in jobs that do not utilize their skills and for which they are overqualified. Furthermore, these jobs are not likely to disappear even if the demand for highly-skilled workers increases. (Krahn, 1992:140)

Figure 2.4 Working Conditions for Clerical-Sales-Service Workers



The studies reviewed in this chapter suggest that with the expansion of the service sector, there has been an increase in both skills intensive jobs and in jobs requiring fewer skills. Causes for this lie in part with technology but also in the way employers organize the work process and the role of technology within it.

Accompanying these changes have been changes in occupational mobility. With the segmentation of labour markets, it has become difficult for clerical-sales-service workers to move from low to higher skilled positions. Long-term employment within one company no longer provides workers with some assurance of upward mobility. Rather, workers in a previously more secure "internal" labour market, must compete with the "external" labour market, outside the business firm. In the following chapters, I attempt to assess the implications of these changes more fully.

CHAPTER 3

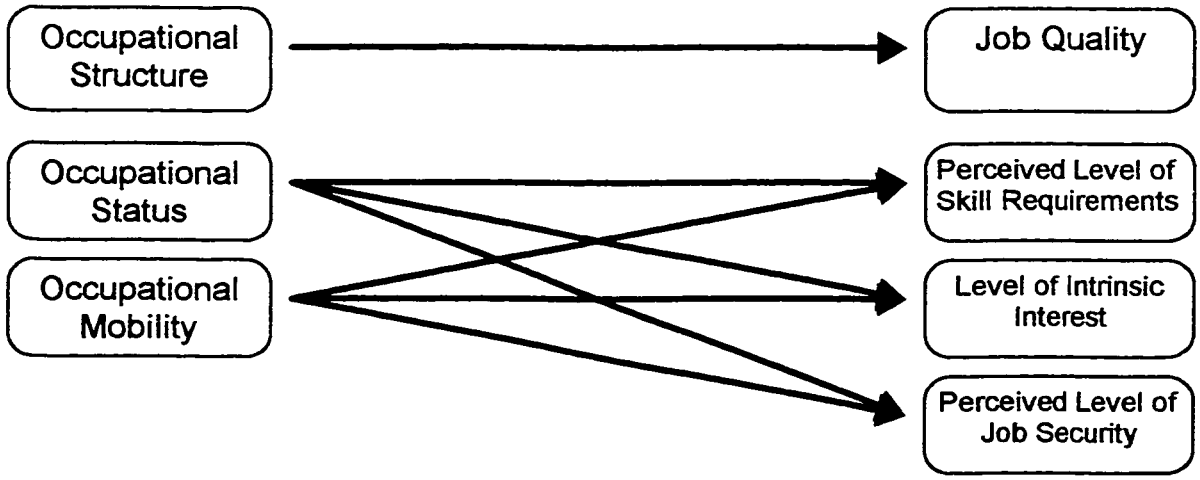
OCCUPATIONAL STATUS, OCCUPATIONAL MOBILITY, AND WORKERS' PERCEPTIONS: METHODOLOGY

Operationalization

The proposition that emerges from the theoretical arguments in Chapter 2, is that the quality of blue-collar and clerical-sales-service work is lower than managerial-professional work. The quality of the former occupations is proposed to be characteristic of deskilling, wage decline, and job insecurity. This job quality translates into job dissatisfaction or lower intrinsic interest for those affected. The workers that are negatively affected are likely to be those occupying blue-collar or clerical-sales-service positions as well as the workers who are moving into one of these two positions.

In this chapter, the central proposition will be presented and the indicators used to test the propositions will be described. The following is an illustration of the proposed analytic model (see Figure 3.1).

Figure 3.1 Occupational Structure and Job Quality



In this model, the central proposition is that occupational structure affects job quality. Included in the descriptive term, "occupational structure" are 1) the manner in which jobs are organized on dimensions of skill, influence, and prestige and 2) the amount of upward mobility possible within the organization of jobs. In this thesis, I measure occupational structure using two indicators from the General Social Survey on Education and Work 1989. They are 1) occupational status and 2) occupational mobility. Occupational status is derived from the question in the survey which asked, "What kind of work were you doing?" for both 1984 and 1989. A measure of occupational mobility is derived from the differences in responses to this question in these two years.

Occupational status refers to the division of occupations into levels of status and control and are implied in the categories of "managerial-professional" versus "clerical-sales-service" or manual "blue-collar" jobs. Occupational mobility refers to the job changes workers experienced between the years 1984-1989. Upward mobility is indicated by moves from either clerical-sales-service or blue-collar occupations to managerial-professional occupations. Downward mobility is indicated by a reverse change over this period.

Job quality in this thesis is taken to be associated with skill requirements of an occupation as well as with remuneration and job security. Three measures from the General Social Survey on Education and Work are used in

the analysis. They are 1) perceived level of skill requirements, 2) level of intrinsic interest, and 3) perceived level of job security. I use the question, "In the last five years, has the level of skill required to perform your work increased, decreased, or stayed the same as a result of the introduction of computers or automated technology?" to measure perceived level of skill requirements. Answers to the question, "Over the last five years, has your work become more interesting, less interesting, or stayed the same as a result of the introduction of computers or automated technology?" are taken to indicate intrinsic interest. Perceived level of job security is measured by the question, "In the last five years, has the job security increased, decreased, or stayed the same as a result of the introduction of computers or automated technology?".

Six hypotheses can be derived from the central proposition. They include the following: 1) the lower the occupational status, the greater the perceived decrease in skill requirements, 2) the lower the occupational status, the greater the perceived decrease in intrinsic interest, 3) the lower the occupational status, the greater the perceived decrease in job security, 4) the lower the occupational mobility, the greater the perceived decrease in skill requirements, 5) the lower the occupational mobility, the greater the perceived decrease in intrinsic interest, and 6) the lower the occupational mobility, the greater the perceived decrease in job security.

CHAPTER 4

OCCUPATIONAL STATUS, OCCUPATIONAL MOBILITY, AND WORKERS' PERCEPTIONS: FINDINGS

The survey used for the analysis is the General Social Survey on Education and Work 1989 conducted by Statistics Canada. A random sample of 9338 respondents represents a total of all Canadians. A subsample of 2218 respondents was selected on the basis of different occupational backgrounds and different views about job quality. The major strength of the survey is that it permits one to examine the change in job structure and job quality over time.

Internal Validity

The higher the occupational status, the greater the possibility of occupational mobility. Thus, as a check for internal validity, occupational status in the years 1984 to 1989 was compared to test whether those in higher ranked occupations were also more likely to have been mobile over this five-year period. The correlation between occupational status and mobility using a nonparametric test of association (gamma[1]) was statistically significant at a value of 0.97.

A second test of internal validity was performed for indicators used to measure job quality. Gamma was used for the validity check. The correlation between perceived level of skill requirements and level of intrinsic interest was statistically significant at a value of 0.61. The correlation between level of intrinsic interest and perceived level of job security was statistically significant

[1] Gamma is used to determine whether or not there exists an association between the independent and dependent variable.

at a value of 0.56. The correlation between perceived level of skill requirements and perceived level of job security was statistically significant at a value of 0.60. These correlations are taken to indicate different aspects of the attributes of occupational status and job quality respectively.

Occupational Status

Hypothesis 1

According to the literature, there is evidence of polarization of skill requirements between workers in managerial-professional occupations and those in clerical-sales-service or blue-collar occupations. The former are likely to experience increases in their levels of skill requirements while the latter are likely to experience an opposite trend. More formally stated, the hypothesis is: The higher the occupational status, the greater the proportion of respondents who perceived that skill requirements have increased over the five-year period. Conversely, the lower the occupational status, the greater the proportion of respondents who perceived that their skill requirements have *decreased* over the same period.

Table 4.1 represents workers job status along with their perception of increased skill requirements for the period 1984-1989.

The data shown in Table 4.1 indicate that while the differences in proportions of respondents are in the direction indicated in the hypothesis, they are not statistically significant. However, this suggests a more interesting possibility. Since nearly two-thirds of respondents in both status levels of

occupations indicate that their skill requirements have increased, there may be more evidence that new skills are being required at all levels of occupations even though there may remain "good jobs" and "bad jobs."

Table 4.1
Workers' perception of their skill requirements according to occupational status, 1984-1989

Perceived Skill Requirements	Managerial-Professional	Clerical-Sales-Service / Blue-Collar
- increased	67.7%	65.4%
- decreased	32.3%	34.6%
(N)	(838)	(1077)
Gamma = +.05		
χ^2=1.11		
p<.29[2]		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Hypothesis 2

In the literature, there is also evidence of polarization of job satisfaction or intrinsic interest between managerial-professional workers and clerical-sales-service or blue-collar workers. The former are expected to be more satisfied with their job, while the latter are less satisfied. Hence the hypothesis: the lower the occupational status, the greater the perceived decrease in intrinsic interest.

Table 4.2 represents workers' job status along with their intrinsic interest for the period 1984-1989.

There is some association between occupational status and level of intrinsic interest. This relationship is also significant. Thus it is possible to support the research hypothesis and the theoretical implication of

[2]The criterion point for the acceptance of a relationship as statistically significant was chosen to be p<.05 level.

occupational polarization in terms of job satisfaction. Clerical-sales-service and blue-collar workers are less likely to report an increase in intrinsic interest in their jobs and more likely to report a decreased interest over the 5 year period, 1984-89 in comparison to the managerial-professional occupations.

Table 4.2
Workers' intrinsic interest according to occupational status, 1984-1989

Intrinsic Interest	Managerial-Professional	Clerical-Sales-Service / Blue-Collar
- increased	62.7%	54.6%
- decreased	37.3%	45.4%
(N)	(837)	(1076)
Gamma = +.17		
χ^2=12.91		
p<.000		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Hypothesis 3

In the literature, the impression has been created that there has been an increased proportion of workers in higher status jobs who enjoy greater degrees of job security than workers in lower status occupations. From this point Hypothesis 3 could be formulated. Hypothesis 3: The higher the occupational status, the greater the proportion of respondents who perceive their job security has increased while the lower the occupational status, the greater the proportion of respondents who perceive that they have less job security than they had 5 years previously.

Table 4.3 represents workers' perception of changes in job security for the period 1984-1989.

As shown in the table, there is little movement of perceptions over the 5-year period. What is surprising is that the level of perceived changes in job security is nearly the same for both occupational levels. Of course the actual consequences may be quite different since it may be that those in management-professional occupations might have an easier time finding other sources of employment in comparison to those in clerical-sales-service and blue-collar occupations.

Table 4.3
Workers' perception of their job security according to occupational status, 1984-1989

Perceived Job Security	Managerial-Professional	Clerical-Sales-Service / Blue-Collar
- increased	16.9%	17.9%
- decreased	83.1%	82.1%
(N)	(833)	(1072)
Gamma = -.03		
χ^2 =.31		
p<.57		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Occupational Mobility

Hypothesis 4

In the literature, there is evidence of polarization of skill requirements between upwardly mobile workers and those who are downwardly mobile. This consideration results in the fourth hypothesis: A higher proportion of those respondents who have experienced downward mobility are more likely to perceive a decrease in skill requirements than those who have experienced upward mobility over the 5-year period.

Table 4.4 represents workers' job mobility along with their perception of skill requirements for the period 1984-1989.

Table 4.4 indicates a surprising similarity between both upward and downwardly mobile respondents. Over 70 percent of the respondents, regardless of the direction of their mobility over time report that skill requirements have increased. Only a slightly larger percentage of downwardly mobile respondents report a decrease in skill requirements. The original hypothesis is however not supported.

Table 4.4
Workers' perception of their skill requirements according to occupational mobility, 1984-1989

Perceived Skill Requirements	Clerical-Sales-Service / Blue-Collar to Managerial-Professional	Managerial-Professional to Clerical-Sales-Service / Blue-Collar
- increased	75.8%	71.4%
- decreased	24.2%	28.6%
(N)	(190)	(112)
Gamma = +.11		
χ^2=.70		
p<.40		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Hypothesis 5

According to the theory, there is evidence of polarization of job satisfaction between upwardly mobile managerial-professional workers and downwardly mobile clerical-sales-service and blue-collar workers. The former are more satisfied with their job, while the latter are less satisfied. Hence it is hypothesized that a higher proportion of downwardly mobile respondents will perceive a decrease in intrinsic interest in their jobs in comparison to those who have been upwardly mobile.

Table 4.5 represents workers' job mobility along with their intrinsic interest for the period 1984-1989.

For the majority of respondents their new jobs resulted in increased intrinsic interest, regardless of the direction of their mobility. Still, there was a statistically significant difference in the proportion of downwardly mobile respondents whose intrinsic interest decreased in contrast to those who were upwardly mobile.

Table 4.5
Workers' intrinsic interest according to occupational mobility, 1984-1989

Intrinsic Interest	Clerical-Sales-Service / Blue-Collar to Managerial-Professional	Managerial-Professional to Clerical-Sales-Service / Blue-Collar
- increased	77.0%	66.1%
- decreased	23.0%	33.9%
(N)	(191)	(112)
Gamma = +.26		
χ^2 =4.24		
p<.04		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Hypothesis 6

One would expect from the literature that the upwardly mobile would experience greater job security than those who are downwardly mobile. Thus, it is hypothesized that a higher proportion of respondents in the sample who have been upwardly mobile will perceive that they have greater job security than those who have been downwardly mobile over the period 1984-89.

Table 4.6 represents workers' job mobility along with their perception of job security for the period 1984-1989.

Regardless of the direction of mobility respondents experienced over the five year period, over two-thirds perceived that their job security had been reduced. However, there was a statistically significant difference in the relative size of these percentages. Those who were downwardly mobile were

even more likely to report less job security than those who were upwardly mobile.

Table 4.6
Workers' perception of their job security according to occupational mobility, 1984-1989

Perceived Job Security	Clerical-Sales-Service / Blue-Collar to Managerial-Professional	Managerial-Professional to Clerical-Sales-Service / Blue-Collar
- increased	28.0%	19.6%
- decreased	72.0%	80.4%
(N)	(189)	(112)
Gamma = +.23		
χ^2=2.65		
p<.10		

SOURCE: Computed from the 1989 General Social Survey on Education and Work.

Summary

It is apparent from the data incorporated in this thesis that over the time period, 1984-1989 the vast majority of respondents indicated that they experienced increased, rather than decreased skill requirements, that they experienced increased rather than decreased intrinsic interest in their jobs but that they perceived that their security in their jobs had decreased over this period. Nevertheless, a statistically significant higher proportion of downwardly mobile respondents reported that intrinsic interest had decreased over the period. Similarly, a larger proportion, statistically significant, of those in managerial-professional occupations were more likely to report an increase in intrinsic interest in comparison to those in the clerical-sales-service and blue-collar occupations.

CHAPTER 5

CONCLUSION

Over the past nearly twenty years, much has been written about changes in the organization of work and changes in job and occupational requirements. Commentators of these changes are divided over whether these changes have been harmful or beneficial to workers. This thesis has sought to clarify some of the issues in this debate by analyzing data available from the 1984 and 1989 surveys by Statistics Canada on Education and Work. The analysis presented in this thesis provides some evidence that while skills demand has gone up for at least two-thirds of the respondents and while intrinsic interest has also increased for the same proportions of respondents, job security for a similarly large majority has gone down. This holds true regardless of one's occupational status.

However, this is not to say that all jobs are equal in their interest and skill demands, it merely means that at any given skill level, individuals were likely to experience the changes indicated above during this period of time. The data also indicate that job level *does* make a difference with respect to the proportions who do experience decreased intrinsic interest. The minority of respondents who report this are more likely to come from those employed in clerical-sales-service and blue-collar jobs than from those in managerial-professional jobs. This difference is even greater for those who have experienced downward mobility over the five year period.

These findings indicate a need for more information on the expectations of workers and the way in which they perceive their jobs in an era of an unusual degree of change and reorganization in industrial and business firms. Changes in government policies which influence markets for labour must also influence the perceptions of individuals as they assess their jobs and future occupational prospects.

The data reported here do not indicate the kinds of labour-management relations that existed among the respondents. One would also like to know how these influence perceptions of occupational well-being. It may be the case that the influence of type of occupation on respondents is dependent on the nature of management-labour relations.

Finally, while technology has often been accused of depriving individuals of meaningful work, more recent research indicates that this is not necessarily the case. What matters is how the technology is introduced and incorporated in the process of work. The data presented here were not able to tap into this dimension, but the findings do suggest that these and the considerations indicated above need to be taken into account in any assessment of contemporary changes on employees, regardless of their occupation.

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APPENDIX

A - EDUCATION AND WORK: GENERAL SOCIAL SURVEY CYCLE 4

Sampling Procedures

Two random digit dialing methods were employed in the selection of a sample for the General Social Survey. They included the following: The Elimination of Non-working Banks Method and The Waksberg Method. In order to carry out sampling, each of the ten provinces was divided into strata or geographic areas. Generally, for each province, one stratum represented the census metropolitan areas of the province and the other the non-census metropolitan areas. For this cycle of the General Social Survey, there was no additional sample (Statistics Canada, 1989).

Two questionnaires were used to conduct the interviews: the selection control form GSS 4-1 and the main questionnaire GSS 4-2. Respondents were interviewed in the official language of their choice. Telephone data collection took place during the period January to February of 1989. All telephone interviewing took place from centralized telephone facilities in Statistics Canada's regional offices with calls being made from approximately 9:00 a.m. until 9:30 p.m. Interviewers were trained by Statistics Canada staff in telephone interviewing techniques, survey concepts, and procedures, in a three and a half day classroom training session. The majority of interviewers had previous telephone interviewing experience (Statistics Canada, 1989).

Data from the survey questionnaires were entered directly into minicomputers in Statistics Canada's regional offices and transmitted to

Ottawa. The data capture program allowed for a valid range of codes for each question and automatically followed the flow of the questionnaire. All survey records were subjected to an exhaustive computer edit to identify and correct invalid or inconsistent information on the questionnaires. Records with missing or incorrect information were assigned non-response codes or corrected from other information from the respondent's questionnaire. In most cases, editing was "bottom-up," meaning that specific related information following a question with a branching pattern was employed to ensure the branching was correct (Statistics Canada, 1989).

Fill-in-the-blank response questions were coded into categories. Coding was mainly based on Statistics Canada's 1980 version of the Standard Industrial and Occupational Classifications (Statistics Canada, 1989). I selected a series of questions from the survey which I thought would best serve as indices for the attributes I wished to study.

B - EMPLOYMENT AND IMMIGRATION CANADA

Explanation

The occupational groupings are classified into five occupational levels: "management occupations," "skill level A," "skill level B," "skill level C," and "skill level D." Within each of these occupational levels are nine industrial categories: business, finance and administration occupations; natural and applied sciences and related occupations; health occupations; occupations in social science, education, government service and religion; occupations in art, culture, recreation and sport; sales and service occupations; trades, transport and equipment operations and related occupations; occupations unique to primary industry; and occupations unique to processing, manufacturing and utilities.

Management positions are represented in each of the industrial categories. Below them occupations are ranked by skill level. Occupations in skill level A require a university degree ranging from bachelors degrees to doctorates. These can be called professional occupations. Occupations in skill level B require one of the following: 1) three to four years of secondary education along with several years of training on the job or through course work or work experience, 2) two to four years of training as an apprentice, or 3) two to three years of educational preparation at the collegiate stage. People who hold significant responsibility, usually at the supervisory stage, are often found in occupations with skill level B status. Occupations in skill

level C require one of the following: 1) one to four years of secondary educational preparation, 2) up to two years of training on the job, or 3) course work or work experience. Occupations in skill level D usually require up to two years of secondary educational preparation and brief on-the-job training.

In this thesis, the construction, primary and manufacturing industrial categories were collapsed into one main category called the "Production Sector." The skill levels for these sectors were collapsed into two categories: "Managerial" and "Blue-Collar." The blue-collar category incorporates skill levels B, C, and D. The remaining industrial sectors were grouped together as the "Service Sector." Within this broad sector, the occupational skill levels were collapsed to form three levels: 1) managerial-professional, 2) clerical-sales-service, and 3) blue-collar (levels B, C, and D).

The major problem of defining skill requirements is resolved here to some extent. The architects of the National Occupational Classification (1993:ii, ix), the members of the Coopers and Lybrand Consulting Group (1992:51-53), and Hunter and Leiper (1993:26-27), define skill requirement in terms of either cognitive complexity or job competence. These researchers define their respective concepts in like fashion. They argue that cognitive complexity or job competence involves the ability to apply knowledge or analytical thought to job based duties. Measures like the level of basic intelligence as defined by reading, writing, and verbal ability as well as the level of analytical, scientific,

and technical ability required on the job, are used to represent skill requirements.

Matrix

NATIONAL OCCUPATIONAL CLASSIFICATION MATRIX

The National Occupational Classification (NOC) type, or on a combination of these two criteria. category (0 Management Occupations) is organ

	1 BUSINESS, FINANCE AND ADMINISTRATION OCCUPATIONS	2 NATURAL AND APPLIED SCIENCES AND RELATED OCCUPATIONS	3 HEALTH OCCUPATIONS	4 OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICE AND RELIGION	5 OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	SALES OC
0 MANAGEMENT OCCUPATIONS	011 Administrative Services Managers 012 Managers in Financial and Business Services 013 Managers in Communication (Except Broadcasting)	021 Managers in Engineering, Architecture Science and Information Systems	031 Managers in Health, Education, Social and Community Services 041 Managers in Public Administration	←	Major Group 00 SENIOR MANAGEMENT OCCUPATIONS 001 Legislators and Senior Management 051 Managers in Art, Culture, Recreation and Sport	061 Sales, Mark Managers 062 Managers in 063 Managers in Accommoda 064 Managers in 065 Managers in
SKILL LEVEL A	Major Group 11 PROFESSIONAL OCCUPATIONS IN BUSINESS AND FINANCE 111 Auditors, Accountants and Investment Professionals 112 Human Resources and Business Service Professionals	Major Group 21 PROFESSIONAL OCCUPATIONS IN NATURAL AND APPLIED SCIENCES 211 Physical Science Professionals 212 Life Science Professionals 213 Civil, Mechanical, Electrical and Chemical Engineers 214 Other Engineers 215 Architects, Urban Planners and Land Surveyors 216 Mathematicians, Systems Analysts and Computer Programmers	Major Group 31 PROFESSIONAL OCCUPATIONS IN HEALTH 311 Physicians, Dentists and Veterinarians 312 Optometrists, Chiropractors and Other Health Diagnosing and Treating Professionals 313 Pharmacists, Dietitians and Nutritionists 314 Therapy and Assessment Professionals 315 Nurse Supervisors and Registered Nurses	Major Group 41 PROFESSIONAL OCCUPATIONS IN SOCIAL SCIENCE, EDUCATION, GOVERNMENT SERVICES AND RELIGION 411 Judges, Lawyers and Quebec Notaries 412 University Professors and Assistants 413 College and Other Vocational Instructors 414 Secondary and Elementary School Teachers and Counsellors 415 Psychologists, Social Workers, Counsellors, Clergy and Probation Officers 416 Policy and Program Officers, Researchers and Consultants	Major Group 51 PROFESSIONAL OCCUPATIONS IN ART AND CULTURE 511 Librarians, Archivists, Conservators and Curators 512 Writers, Translators and Public Relations Professionals 513 Creative and Performing Artists	
SKILL LEVEL B	Major Group 12 SKILLED ADMINISTRATIVE AND BUSINESS OCCUPATIONS 121 Clerical Supervisors 122 Administrative and Regulatory Occupations 123 Finance and Insurance Administrative Occupations 124 Secretaries, Recorders and Transcriptionists	Major Group 22 TECHNICAL OCCUPATIONS RELATED TO NATURAL AND APPLIED SCIENCES 221 Technical Occupations in Physical Sciences 222 Technical Occupations in Life Sciences 223 Technical Occupations in Civil, Mechanical and Industrial Engineering 224 Technical Occupations in Electronics and Electrical Engineering 225 Technical Occupations in Architecture, Drafting, Surveying and Mapping 226 Other Technical Inspectors and Regulatory Officers 227 Transportation Officers and Controllers	Major Group 32 TECHNICAL AND SKILLED OCCUPATIONS IN HEALTH 321 Medical Technologists and Technicians (except Dental Health) 322 Technical Occupations in Dental Health Care 323 Other Technical Occupations in Health Care (Except Dental)	Major Group 42 PARAPROFESSIONAL OCCUPATIONS IN LAW, SOCIAL SERVICES, EDUCATION AND RELIGION 421 Paralegals, Social Services Workers and Occupations in Education and Religion, n.e.c.	Major Group 52 TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT 521 Technical Occupations in Libraries, Archives, Museums and Galleries 522 Photographers, Graphic Arts Technicians and Technical Occupations in Motion Pictures, Broadcasting and the Performing Arts 523 Announcers and Other Performers 524 Creative Designers and Craftsmen 525 Athletes, Coaches, Referees and Related Occupations	Major Group 62 SKILLED SA OCCUPATIO 621 Sales and Se 622 Technical Sa Trade 623 Insurance an Occupations 624 Chefs and Co 625 Butchers and 626 Police Officer 627 Technical Oc Service
SKILL LEVEL C	Major Group 14 CLERICAL OCCUPATIONS 141 Clerical Occupations: General Office Skills 142 Office Equipment Operators 143 Finance and Insurance Clerks 144 Administrative Support Clerks 145 Library, Correspondence and Related Information Clerks 146 Mail and Message Distribution Occupations 147 Recording, Scheduling and Distributing Occupations		Major Group 34 ASSISTING OCCUPATIONS IN SUPPORT OF HEALTH SERVICES 341 Assisting Occupations in Support of Health Services			Major Group 64 INTERMEDIATE SERVICE OC 641 Sales Represe Trade 642 Retail Salespe 643 Occupations in Accommodat 644 Tour and Recr Amusement O 645 Occupations in Service 646 Other Occupat 647 Childcare and 648 Other Occupa
SKILL LEVEL D						Major Group 86 ELEMENTAL S OCCUPATION 661 Cleaners 662 Other Sales an 663 Elementary Med Assistants 664 Food Counter A Helpers 665 Security Guard Occupations 666 Cleaners 667 Other Attendan Accommodation 668 Other Elementa

The National Occupational Classification (NOC) matrix provides an overview of the classification at the minor group level. It also illustrates how the NOC is accessible on the basis of skill level, skill type, or on a combination of these two criteria. The four skill level categories are listed on the left side of the matrix, while nine skill type categories are listed across the top. The tenth skill type category (0 Management Occupations) is organized across the top of the matrix. In most cases, each matrix cell consists of a major group.

4 …ONS IN SOCIAL …, EDUCATION, …NT SERVICE AND …LIGION	5 OCCUPATIONS IN ART, CULTURE, RECREATION AND SPORT	6 SALES AND SERVICE OCCUPATIONS	7 TRADES, TRANSPORT AND EQUIPMENT OPERATORS AND RELATED OCCUPATIONS	8 OCCUPATIONS UNIQUE TO PRIMARY INDUSTRY	9 OCCUPATIONS UNIQUE TO PROCESSING, MANUFACTURING AND UTILITIES
	Major Group 00 SENIOR MANAGEMENT OCCUPATIONS 001 Legislators and Senior Management	→			
…rvices	051 Managers in Art, Culture, Recreation and Sport	061 Sales, Marketing and Advertising Managers 062 Managers in Retail Trade 063 Managers in Food Service and Accommodation 064 Managers in Protective Service 065 Managers in Other Services	071 Managers in Construction and Transportation 072 Facility Operation and Maintenance Managers	081 Managers in Primary Production (Except Agriculture)	091 Managers in Manufacturing and Utilities
…AL OCCUPATIONS …CIENCE, EDUCATION, …T SERVICES AND …rs and Quebec Notaries …ssors and Assistants …her Vocational Instructors …d Elementary School Counsellors Social Workers, …ergy and Probation …gram Officers, …nd Consultants	Major Group 51 PROFESSIONAL OCCUPATIONS IN ART AND CULTURE 511 Librarians, Archivists, Conservators and Curators 512 Writing, Translating and Public Relations Professionals 513 Creative and Performing Artists				
…SSIONAL …S IN LAW, SOCIAL …DUCATION AND …cial Services Workers …rs in Education and	Major Group 52 TECHNICAL AND SKILLED OCCUPATIONS IN ART, CULTURE RECREATION AND SPORT 521 Technical Occupations in Libraries, Archives, Museums and Galleries 522 Photographers, Graphic Arts Technicians and Technical Occupations in Motion Pictures, Broadcasting and the Performing Arts 523 Announcers and Other Performers 524 Creative Designers and Craftsmen 525 Athletes, Coaches, Referees and Related Occupations	Major Group 62 SKILLED SALES AND SERVICE OCCUPATIONS 621 Sales and Service Supervisors 622 Technical Sales Specialists, Wholesale Trade 623 Insurance and Real Estate Sales Occupations and Buyers 624 Chefs and Cooks 625 Butchers and Bakers 626 Police Officers and Firefighters 627 Technical Occupations in Personal Service	Major Group 72/73 TRADES AND SKILLED TRANSPORT AND EQUIPMENT OPERATORS 721 Contractors and Supervisors, Trades and Related Workers 722 Supervisors, Railway and Motor Transportation Occupations 723 Machinists and Related Occupations 724 Electrical Trades and Telecommunication Occupations 725 Plumbers, Pipefitters and Gas Fitters 726 Metal Forming, Shaping and Erecting Occupations 727 Carpenters and Cabinetmakers 728 Masonry and Plastering Trades 729 Other Construction Trades 731 Machinery and Transportation Equipment Mechanics (except Motor Vehicle) 732 Motor Vehicle Mechanics 733 Other Mechanics 734 Upholsterers, Tailors, Shoe Repairers, Jewellers and Related Occupations 735 Stationary Engineers and Power Station and System Operators 736 Train Crew Operating Occupations 737 Crane Operators, Drillers and Blasters 738 Printing Press Operators, Commercial Divers and Other Trades and Related Occupations, n.e.c.	Major Group 82 SKILLED OCCUPATIONS IN PRIMARY INDUSTRY 821 Supervisors, Logging and Forestry 822 Supervisors, Mining, Oil and Gas 823 Underground Miners, Oil and Gas Drillers and Related Workers 824 Logging Machine Operators 825 Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture 826 Fishing Vessel Masters and Skippers and Fishermen/women	Major Group 92 PROCESSING, MANUFACTURING AND UTILITIES SUPERVISORS AND SKILLED OPERATORS 921 Supervisors, Processing Occupations 922 Supervisors, Assembly and Fabrication 923 Central Control and Process Operators in Manufacturing and Processing
		Major Group 64 INTERMEDIATE SALES AND SERVICE OCCUPATIONS 641 Sales Representatives, Wholesale Trade 642 Retail Salespersons and Sales Clerks 643 Occupations in Travel and Accommodation 644 Tour and Recreational Guides and Amusement Occupations 645 Occupations in Food and Beverage Service 646 Other Occupations in Protective Service 647 Childcare and Home Support Workers 648 Other Occupations in Personal Service	Major Group 74 INTERMEDIATE OCCUPATIONS IN TRANSPORT EQUIPMENT OPERATION, INSTALLATION AND MAINTENANCE 741 Motor Vehicle and Transit Drivers 742 Heavy Equipment Operators 743 Other Transport Equipment Operators and Related Workers 744 Other Installers, Repairers and Servicers 745 Longshore Workers and Material Handlers	Major Group 84 INTERMEDIATE OCCUPATIONS IN PRIMARY INDUSTRY 841 Mine Service Workers and Operators in Oil and Gas Drilling 842 Logging and Forestry Workers 843 Agriculture and Horticulture Workers 844 Other Fishing and Trapping Occupations	Major Group 94/95 PROCESSING AND MANUFACTURING MACHINE OPERATORS AND ASSEMBLERS 941 Machine Operators and Related Workers in Mining and Mineral Products Processing 942 Machine Operators and Related Workers in Chemical, Plastic and Rubber Processing 943 Machine Operators and Related Workers in Pulp and Paper Production and Wood Processing 944 Machine Operators and Related Workers in Textile Processing 945 Machine Operators and Related Workers in Fabric, Fur and Leather Products Manufacturing 946 Machine Operators and Related Workers in Food, Beverage and Tobacco Processing 947 Printing Machine Operators and Related Occupations 948 Mechanical, Electrical and Electronics Assemblers 949 Other Assembly and Related Occupations 951 Machining, Metalworking, Woodworking and Related Machine Operators
		Major Group 66 ELEMENTAL SALES AND SERVICE OCCUPATIONS 661 Cashiers 662 Other Sales and Related Occupations 663 Elemental Medical and Hospital Assistants 664 Food Counter Attendants and Kitchen Helpers 665 Security Guards and Related Occupations 666 Cleaners 667 Other Attendants in Travel, Accommodation and Recreation 668 Other Elemental Service Occupations	Major Group 75 TRADES HELPERS, CONSTRUCTION LABOURERS AND RELATED OCCUPATIONS 751 Trades Helpers and Labourers 752 Public Works and Other Labourers, n.e.c.	Major Group 86 LABOURERS IN PRIMARY INDUSTRY 861 Primary Production Labourers	Major Group 96 LABOURERS IN PROCESSING, MANUFACTURING AND UTILITIES 961 Labourers in Processing, Manufacturing and Utilities

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C - HUMAN RESOURCES DEVELOPMENT CANADA

Explanation

The report entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada (1996), permits one to assess the job security pattern of occupational groupings by industry from 1984 to 1994. It also permits one to account for age, gender, employment numbers, and conditions of employment (e.g. full-time, part-time, and self-employment).

The authors measure job security by noting the number of workers in each occupational group in 1994, accounting for the percentage of growth or decline in numbers of workers in each occupational group during the period 1984-1994, the overall employment growth during this period, and the more recent trend in employment rates over the period 1992-1994. The authors also provide rates of change by gender and age.

The National Occupational Classification system indicated on page 69 was employed in the Job Futures Report to plot changes in indices of job security, age, gender, conditions of employment, whether full-time or part-time, and total employment for each occupational category.

Tables

The following Tables C.1 and C.2 are intended to show the number of occupational categories that have increased in job security at the managerial, professional, clerical-sales-service, and blue-collar skill levels for the production and service sector. The importance of these tables is that they provide a quantitative outlook of the current distribution of jobs in the Canadian labour market with respect to age, gender, and employment conditions.

Number of job descriptions according to job security level and industrial and occupational differences, 1984-1994

Table C.1

	Production Sector			∈ℕ
Job Security	**Managerial** Skill Level A[1]	**Blue-Collar (Non-Technical[5])** Skill Level B[2], C[3], D[4]	**Blue-Collar (Technical[6])** Skill Level B[2], C[3], D[4]	**Total of: All Occupations** Skill A[1], B[2], C[3], D[4]
-is increasing	6	2	1	9
-is decreasing	0	23	10	33
(N)	(6)	(25)	(11)	(42)

Table C.1 (continued)

	Service Sector			∈ℕ
Job Security	**Managerial-Professional** Skill Level A[1]	**Clerical-Sales-Service** Skill Level B[2], C[3], D[4]	**Blue-Collar (Technical[7])** Skill Level B[2], C[3], D[4]	**Total of: All Occupations** Skill A[1], B[2], C[3], D[4]
-is increasing	42	37	2	81
-is decreasing	0	13	11	24
(N)	(42)	(50)	(13)	(105)

SOURCE: Computed from the 1993 National Occupational Classification Matrix, and computed from job descriptions of job security tendency in the report entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada, 1996. This report is based on the 1993 National Occupational Classification Matrix that is supplement to the National Occupational Classification of Employment and Immigration Canada, 1993.

[1] Skill Level A - University Education.

[2] Skill Level B - College Education or Secondary Education with relative work experience or an apprenticeship.

[3] Skill Level C - Secondary Education or work related experience.

[4] Skill Level D - Some secondary education with little work related experience.

[5] Non-technical blue-collar occupations are found in the production sector and reflect primary and manufacturing or production related occupations.

[6] Technical blue-collar occupations in the production sector reflect construction related trades.

[7] Technical blue-collar occupations in the service sector reflect transport related trades.

Number of job descriptions for men, women (25 and over) and youth (15-24) workers who are predominantly employed as full-timers and part-timers in the production and service sectors of the Canadian economy as of 1994.*

Table C.2

	Labour Force Distribution in the Production Sector			
	Men	**Women**	**Youth**	**∈N**
TOTAL EMPLOYED: All Occupations Skill Level A[1], B[2], C[3], D[4]	42	2	6	50
Managerial Skill Level A[1]	6	0	0	6
Blue-Collar (Non-Technical[5]) Skill Level B[2], C[3], D[4]	25	2	5	32
Blue-Collar (Technical[6]) Skill Level B[2], C[3], D[4]	11	0	1	12
EMPLOYED FULL-TIME: All Occupations Skill Level A[1], B[2], C[3], D[4]	40	2	4	46
Managerial Skill Level A[1]	6	0	0	6
Blue-Collar (Non-Technical[5]) Skill Level B[2], C[3], D[4]	23	2	3	28
Blue-Collar (Technical[6]) Skill Level B[2], C[3], D[4]	11	0	1	12
EMPLOYED PART-TIME: All Occupations Skill Level A[1], B[2], C[3], D[4]	2	0	2	4
Managerial Skill Level A[1]	0	0	0	0
Blue-Collar (Non-Technical[5]) Skill Level B[2], C[3], D[4]	2	0	2	4
Blue-Collar (Technical[6]) Skill Level B[2], C[3], D[4]	0	0	0	0

Table C.2 (continued)

	Labour Force Distribution in the Service Sector			
	Men	**Women**	**Youth**	**∈ℕ**
TOTAL EMPLOYED:				
All Occupations				
Skill Level A[1], B[2], C[3], D[4]	61	56	29	146
Managerial-Professional				
Skill Level A[1]	28	19	4	51
Managerial				
Skill Level A[1]	19	6	3	28
Professional				
Skill Level A[1]	9	13	1	23
Clerical-Sales-Service				
Skill Level B[2], C[3], D[4]	21	36	24	81
Clerical-Sales-Service				
Skill Level B[2]	15	17	8	40
Blue-Collar (Technical[7])				
Skill Level B[2], C[3], D[4]	12	1	1	14
EMPLOYED FULL-TIME:				
All Occupations				
Skill Level A[1], B[2], C[3], D[4]	50	21	4	75
Managerial-Professional				
Skill Level A[1]	25	11	1	37
Managerial				
Skill Level A[1]	17	4	1	22
Professional				
Skill Level A[1]	8	7	0	15
Clerical-Sales-Service				
Skill Level B[2], C[3], D[4]	14	9	3	26
Clerical-Sales-Service				
Skill Level B[2]	12	7	1	20
Blue-Collar (Technical[7])				
Skill Level B[2], C[3], D[4]	11	1	0	12

Table C.2 (continued)

	Labour Force Distribution in the Service Sector			
	Men	**Women**	**Youth**	**∈N**
EMPLOYED PART-TIME:				
All Occupations				
Skill Level A[1], B[2], C[3], D[4]	11	35	25	71
Managerial-Professional				
Skill Level A[1]	3	8	3	14
Managerial				
Skill Level A[1]	2	2	2	6
Professional				
Skill Level A[1]	1	6	1	8
Clerical-Sales-Service				
Skill Level B[2], C[3], D[4]	7	27	21	55
Clerical-Sales-Service				
Skill Level B[2]	3	10	7	20
Blue-Collar (Technical[7])				
Skill Level B[2], C[3], D[4]	1	0	1	2

SOURCE: Computed from the 1993 National Occupational Classification Matrix, and computed from job descriptions of employment number, conditions of employment status (full-time or part-time), age and gender tendencies in the report entitled "Job Futures: Occupational Outlooks" of Human Resources Development Canada, 1996. This report is based on the 1993 National Occupational Classification Matrix that is supplement to the National Occupational Classification of Employment and Immigration Canada, 1993.

[1] Skill Level A - University Education.

[2] Skill Level B - College Education or Secondary Education with relative work experience or an apprenticeship.

[3] Skill Level C - Secondary Education or work related experience.

[4] Skill Level D - Some secondary education with little work related experience.

[5] Non-technical blue-collar occupations are found in the production sector and reflect primary and manufacturing or production related occupations.

[6] Technical blue-collar occupations in the production sector reflect construction related trades.

[7] Technical blue-collar occupations in the service sector reflect transport related trades.

* The predominance of age and gender in occupational groups is assessed in relation to the national average of women employed in all occupations. This national average is set at a rate of 45%. If this average is surpassed by about 25% (e.g. 45%+25%=70% of women employed compared to only 30% of men and youth employed in the same occupation), then that occupational group is regarded as being predominantly occupied by women.