THE IMPACT OF COMPUTERISATION ON CLERICAL WORK IN THE FINANCE SECTOR:

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LIST OF ABBREVIATIONS

ATM - Automatic Teller Machine
CPU - Central Processing Unit
EFT - Electronic Funds Transfer
ETP - Electronic Text Processing
IBM - International Business Machines
QCC - Quality Control Circle
VDU - Visual Display Unit
GLOSSARY

ATM - Computerised teller facilities used by banks, building societies and post offices.

Computer - An electronic device used for processing information received in a prescribed and acceptable form according to a predetermined sequence of instructions.

CPU - Central Processing Unit is the main part of the computer and comprises a logic unit, an arithmetic unit and a control unit.

Down-time - Any interruption in the functioning of computer units.

EFT - The automatic transfer of funds between accounts within or among institutions and firms.

ETP - The automation of text processing.

Hardware - The mechanical, electronic, magnetic and electrical parts of a computer system. Opposite of software.

Mainframe - The large "traditional" computers. Now the term refers more specifically to "third generation" computers built since the mid-1960s which use microcircuits.

Microchip - A computer on a chip - chip: a small square of pure silicon, layers of which have been etched away and doped with impurities so as to form alternate insulators and conductors which together make up the pattern of a complete integrated circuit, equivalent to thousands of transistors.

Microcomputer - A CPU chip and storage chips mounted on a board for use as a complete control unit. The single chip microcomputer is a CPU with memory storage and other facilities all on the same chip.

Microelectronics - The study, design and use of devices that depend on the conduction of electricity through semi-conductors and which are made to extremely small dimensions.

Microsecond - A measure of time in computing: one-millionth of a second.

Millisecond - As above: one-thousandth of a second.

Nanosecond - As above: one-thousandth of a microsecond or one-billionth of a second.

Output - The information that emerges from the computer.
Peripherals - A terminal or piece of equipment attached to a CPU to form a usable computer system. The term covers all backing store units, keyboards, VDUs and print-outs.

Program - A sequence of instructions to be obeyed by a computer, written by a programmer.

Software - Computer programs: the set of instructions given to a computer.

Stand alone - A complete computer installation in one place.

Terminal - Station for inputting or retrieving information from a computer system.

VDU - A television-like terminal on which may be displayed script or line diagrams generated by a computer.

VLSI - Very large scale integration: integrated circuits containing a minimum of 5,000 logic gates or more than 16,000 memory bits (bit: the basic unit of information in a digital computer, acronym of Binary digit.)

Word Processor - An electronic typewriter with memory and editing functions of varying sophistication.

(With acknowledgements to T. Forester, ed.: The Microelectronics Revolution, 1980)
INTRODUCTION

Over the past two decades or so there has been a revival of interest among sociologists in the nature of clerical work, mainly in industrialized countries. A rapid expansion of the non-manual or white-collar labour force has been a marked feature of the principal capitalist economies, leading to studies ranging from inquiries into the changing class structure of the "advanced" economies and the growth of white-collar unionism, to the quality of work and extent of employment. For sociologists of work this area presents a particular challenge. Office work is not only the daily reality of a large segment of the population in many societies, but is also undergoing major changes accompanying the implementation of new forms of information-processing technology—the so-called "Microelectronic revolution", a fully justified term. For the new technology not only promotes savings in investment, labour and raw materials, it heralds the abolition of work. In the process, a lively debate has arisen in the sociological literature over the impact of computerisation on both the quality of office work and on the extent of employment opportunities.

(i) The Growth of the Clerical Sector

It is necessary to establish 'the enormity of the context'.(1) The twentieth century broke fundamentally with the nineteenth century by the emergence, in its final decades, of the second phase of the industrial revolution. The scientific phase of electricity, steel, chemicals and oil which was contrasted with the industrial based on iron and coal. The resulting industries modernized at an unprecedented pace with profound effects on medicine, hygiene, nutrition and agriculture with consequences for the demographic curve. This formed the matrix for countries
urbanizing and industrializing during the swift and world-wide creation of metropoles with more than a million inhabitants. Europe's population, for example, rose by 100,000,000 between 1870 and 1900 as against 30,000,000 from 1850 to 1870. (2)

Enormous social forces were released and

- if the first consequence was to change for all time the social structure of industrial society, its second was to achieve with fantastic speed the integration of the world. (3)

The new industrialized techniques called for large scale undertakings. This together with the effects of the Great Depression of 1873 to 1895, emphasizing the vulnerability of small family businesses in the new economic climate, stimulated the formation of trusts and cartels. Once begun the process was irreversible and formed the basis for the emergence and expansion of large corporations.

The growth of the clerical sector has been in step with the expansion of industry. The increase in size of the enterprise and the need to control and co-ordinate the finances and marketing of the enlarged firm brought clerical work and the office into sharp focus. Accompanying the expansion of industry was the growth of the finance and service sectors which have become the largest employers of clerical workers.

Clerical work basically involves the collection, recording, analysis, storage and distribution of data which in its processed form becomes information used by management in decision-making. Producing and controlling the flow of information in the pre-microelectronic era was relatively labour intensive. (4) This fact in addition to the significant expansion of the clerical sector made it an important source of employment. In South Africa, clerical workers as an occupational category grew by 165%
from 1960 to 1980 as compared to -26% for Farm, Forestry and Fishery workers and 57% for Mining, Production and Transport workers. (5)

An expansion of administrative divisions and a diversification of services characterised the growth of the finance sector in its present oligopolistic phase. Out of this ever increasing volumes of paper-work were generated.

(ii) Microelectronics and the Clerical Sector

The term 'microelectronics' is used in the thesis to describe the total electronic gadgetry involving peripherals (plug-in attachments), software (specific work-design systems) and the stand-alone or connected computer stations and terminals and associated, interconnected word processors. The term computer is used in the thesis, as is common, sometimes to describe a stand-alone station and sometimes as an element in a micro-electronic system. The term computerisation suggests the end-use of the system or parts of the system, specific to the industry or firm employing it.

Three generations of computers preceded microelectronics. In 1946 the first completely electronic computer emerged, followed by computers based on semi-conductor technology in the 1950s, and later integrated circuitry in the mid-sixties. (6) These three generations represent simultaneously an increase in capacity, speed and efficiency of computers and their reduction in size and cost. This trend towards miniaturisation reached its high-point with the arrival of the microchip. (7)

The most common chips are sold for between twenty and thirty cents each, and it was this low cost which made miniaturisation and microminiaturisation possible. (8)

The significance of the microchip is that relatively
sophisticated computer technology became accessible to a much wider spectrum of companies, including smaller firms who traditionally tended to be labour intensive because of the high cost of 'modernising' equipment.

The association of microelectronics and the office and its consequences specifically for life assurance companies is the central focus of this thesis. The original intention was to survey the impact of computerisation on clerical work in the Finance Sector, focussing specifically on banks, building societies and life assurance companies. The Finance Sector was chosen because it is the largest employer of clerical workers after the civil service and was also the most advanced user of computers in commerce. A survey of the literature on computerisation and clerical work revealed that a comparison of job categories prior to and following computerisation was necessary if the full impact of the technology was to be assessed. However, after several months of research it became evident that a comparison of job categories in the pre- and post computer eras in all parts of the Finance Sector - banks, building societies and assurance companies - would make for an impossibly long exercise in the thesis if all were researched comparably. It was decided to concentrate on two very large life assurance companies in South Africa who were among the first to computerise in the country. Comparability was enhanced by the fact that both company headquarters were in Cape Town and therefore accessible for in-depth and repeated interviewing. This together with the fact that the companies were among the largest employers of clerical labour in the Western Cape made the choice natural and inevitable.
Chapter 1 looks at the sociological literature on computerisation and clerical work. The major issues in the debate on automation and office work are reviewed and discussed in the section that follows.

The research findings are presented in chapters two to five. Chapter 2 provides an empirical background to the research project and discusses the role of financial institutions in the economy, provides a description of the life assurance industry in South Africa, the nature and extent of computerisation in the the two companies, the reasons for computerisation, as well as giving a description of clerical work in the seven divisions researched.

Chapter 3 deals with an examination of theories of control currently in use in labour process studies, summaries of which are given in chapter 1, and assesses their adequacy in relation to computerisation and clerical work. It is argued that they are inadequate for a number of reasons, and the writer draws on Edwards' (1979) and Littler's (1984) conceptions of control to explain the effect of computerisation on management's capacity to control the labour power of clerks as found in Alpha and Beta Life Companies (pseudonyms).

Chapter 4 is based on a discussion of the way in which authors reviewed in chapter 1 have attempted to explain the impact of computerisation on clerical skill levels. It is suggested that their ahistorical approach results in a somewhat superficial examination of the subject. This is illustrated in the second part of the chapter which focusses on the research findings based on a historical study of the impact of computerisation on clerical skills in the two companies.

The fifth chapter deals with the impact of computerisation on
employment opportunities and the nature of the workforce, with specific reference to the sexual and racial divisions of labour in the two companies. An attempt is also made to describe the factors that contribute to these divisions.

(iii) Theoretical Issues

The sociological literature on computerisation and clerical work was reviewed to identify major issues that have emerged in the debates on the effect of computerisation on clerical work. The following areas of debate emerged as central during this literature review:

(a) The issue of control, and the arguments regarding the "real subordination" of clerical labour power as a result of the utilisation of the new technology;

(b) The debate over whether or not computerisation and related technology deskills and fragments clerical work;

(c) The claims that the new technology will lead to widespread unemployment among white-collar workers.

Chapter 1 reviews some of the contemporary studies on these three issues, and provides the background for a critique of the conceptions of control and deskilling employed in the studies undertaken in chapters 3 and 4. One of the contentions of this thesis is that the ahistorical approach adopted by the authors reviewed in chapter 1, arising out of their failure to focus on the division of labour and general working conditions in the pre-computerisation era, results in an oversimplified picture of the impact of computerisation on clerical work. While Braverman does give an historical overview of the effect of computerisation on clerical work it will be argued that his theorisation of the concepts 'control' and 'deskilling' does not do justice to the
complexity of the clerical labour process.

It is argued in chapter 3 of this thesis that many of the limitations in the studies reviewed in chapter 1 are due to a theoretical position based on the Braverman thesis, that deskilling, and consequently the degradation of clerical work is the primary and inevitable outcome of capital's attempts to effect the real subordination of clerks. The post-Braverman labour process debate, however, suggests the issue to be more complex than portrayed in the Braverman thesis. One of the central arguments developed by labour process theorists writing after Braverman is that the relationship between capital and labour is dual in nature. It is argued that just as capitalists need to motivate workers to harness their creative and productive powers to maximise productivity, so workers develop an interest in ensuring the economic viability of their employers. This dual dependence calls forth contradictory strategies for both capital and labour. Writers such as Cressey and MacInnes, Burawoy, Littler and Salaman are the major proponents of this argument as indicated in chapter 3 of the thesis.

The theoretical basis of this thesis is located within the post-Braverman labour process debate and attempts to illustrate that a dual dependency between employers and employees exists in the two life assurance companies researched. Consequently, it will be argued that firstly, while the new technology does provide management with the capacity to effect the real subordination of clerks by means of technical control, management may not fully exploit this capacity for a number of reasons; and secondly, because of this, deskilling and the degradation of clerical work need not be the main and inevitable result of automation.
(iv) Research Methodology

The research methodology adopted in the thesis entailed doing case studies at the head offices of Alpha and Beta Life Companies. The latter are pseudonyms as the researcher undertook to ensure anonymity.

The case study method was used as the literature survey suggested that possibly a detailed comparison of job categories prior to and following computerisation might capture more accurately the impact of computerisation on the nature of clerical work, as the ahistorical nature of the studies reviewed did not illuminate the changing division of labour in the pre- and post-computerisation eras.

A case study allows a variety of research techniques to be used enabling the researcher to undertake an historical and in-depth investigation and so identify a range of factors or variables that may have contributed to the changes under scrutiny. These may be obscured by an ahistorical approach and/or reliance on survey techniques. While the case study method enables the worker to capture a greater range of complexities in the process of change it does have limitations. The most important of such drawbacks is that this approach does not warrant generalisation to the wider universe of concern. There was an absence of documentary source material on the way work was done in the pre-computer era. In-house journals of the period failed to record the early history of the work in this area. Thus an additional limitation is the reliance on oral histories. Events regarding work done twenty years ago depends on accuracy of recall. Fortunately it was possible to cross-check on data for internal consistency by conferring separately with several speakers. These included corroboration of manager's recollections by staff.
related to doing historical research, is having to rely on the memory of interviewees, in this case, regarding work done twenty years ago.

After having conducted a review of the sociological and technical literature on computerisation and clerical work the following research techniques were used: interviews based on an open-ended questionnaire for the pilot study, and interviews using a questionnaire containing highly specific as well as open-ended questions.

The open-ended questionnaire was used in conjunction with interviews for the pilot study, to allow issues to emerge that may not have been identified in the literature survey. This approach enabled the researcher to get to know and gain the confidence of interviewees. Furthermore in-depth interviews were chosen, rather than the survey technique, in order to identify a wider range of variables operative over a couple of decades. The survey technique would not have highlighted as wide a range of variables influencing the changes accompanying the computerisation of clerical work.

The literature survey was based almost entirely on overseas works as only one South African sociological study on the impact of computerisation was known to the writer. This was followed by a pilot study (in banks and building societies as well) to ascertain whether all the major issues had been correctly identified and to test the usefulness of the questionnaire to be used in interviews.

The pilot study consisted of interviews based on an open-ended questionnaire conducted with senior personnel management,
divisional managers, computer systems personnel, and a small number of clerks from each of the divisions who had worked there prior to computerisation. Divisions researched at Alpha Life's head office were selected on the basis of extent of computerisation. The four divisions researched constituted the core of clerical work in the company as they dealt with the issuing and administration of life assurance policies. They were also among the divisions that employed the largest number of clerical workers prior to computerisation due to the labour intensive nature of the work. Because issuing and administration of policies are among the crucial services offered to clients, and perceived as playing a vital role in increasing market share, both companies concentrated on improving the speed and efficiency of work in these areas. Computerisation is the main instrument management has for doing so now. The corresponding divisions were researched at Beta Life's head office to allow comparison. Upon completion of the pilot study another set of questionnaires was used in interviews with management and clerks. Again these contained a combination of highly specific and open-ended questions to allow as wide a range of issues to emerge as possible as well as facilitating a correlation of responses among those interviewed.

In-depth interviews were conducted with personnel- and divisional management, computer systems personnel, departmental managers, section heads and clerks from each of the divisions. A total of 81, of whom 46 (57%) were clerks, were interviewed. Clerks consulted were selected on the basis of length of employment within the areas researched and constituted 4% of the total clerical workforce in both companies. Length of employment was used as a selection criterion as the aim of the study was to
capture if and how job categories and general working conditions had changed under the impact of computerisation. Categories of clerks interviewed ranged from junior to the most senior. All the senior clerks interviewed had worked in their respective divisions both prior to and following computerisation. Consequently interviews with these clerks (who constituted 54% of all the clerks interviewed) tended to be much longer and were often conducted over several days.

In order to assess the nature of the effect of computerisation on job categories attempts were made to collect detailed descriptions of how work was done, as well as a comparison of the objective competencies required in the various job categories pre- and post-computerisation. These findings were then correlated with the clerks' subjective experiences of computerisation in order to assess whether clerks were aware of the impact of computerisation on their level of skill. This was considered to be important as Butler's (1984) study showed that word processor operators thought their skills had been increased with the introduction of microelectronic technology. The increase in skill level had not however been acknowledged by management in terms of either grade or salary restructuring. Clerks' awareness of the impact of computerisation is also important in an assessment of whether a basis exists for the development of various forms of worker resistance to computerisation.

Objective competencies are defined as the type of job knowledge, including task range and degree of discretion, and the amount of training necessary to attain job proficiency.
(v) Research Problems

In the movement from competitive to advanced capitalism the economy reaches new levels of complexity and the range of functionaries to work the emerging forms become more numerous and diverse. This is reflected in the evolution of new types of policies, and applies not only in the upper reaches of socio-economic strata, but equally in the burgeoning new sexual and racial divisions of labour. Policies evolve to fit the needs of new categories of the economically active.

Due to considerable expansion of the number and types of policies now marketed, complications arose in trying to compare the amount of training time to attain job proficiency in the two periods. In the first place policies in the 1980's are more flexible and variable making the data processing more complex. The marketing of such policies would have been unlikely, if not impossible, in the absence of computerisation according to the various managers interviewed, as they would have required a vast army of clerks to process. The result is that clerks processing policies in the 1980s tend to have acquired additional job knowledge. Because of this a straightforward comparison of length of training time is problematic.

Further factors complicating such a comparison are that prior to computerisation clerks received only on-the-job training whereas shortly after computerisation this included off-the-job instruction as well. On-the-job training takes much longer during a busy period than in quiet times.

The attempt to interview clerks who had worked in their respective divisions prior to computerisation was complicated by the fact that this meant finding people who had worked in the
companies for more than twenty years. Such people were rare for the following reasons:
- high labour turn-over is characteristic of clerical work in the life assurance industry because women constitute the majority of clerical employees. The majority of women leave work to raise families or follow transferred husbands although the former is changing - women are increasingly returning to work after pregnancy;
- low salaries are also an important reason for the high labour turn-over in both companies;
- the staff who have stayed this long are mostly males who have become senior managers. Only a very small number were senior clerks or female thus introducing what could be managerial bias.

As a result it was decided to interview clerks who had worked in the pre-terminal era as well - the second stage of computerisation when batch processing was increasingly replaced by transaction processing.(9) For reasons similar to those cited above, these clerks tended to be few in number, especially in Alpha Life where terminals had been introduced ten to twelve years ago, considerably earlier than in Beta Life. Clerks who had been employed after the introduction of terminals were also interviewed.

The need for longevity in employment reduced the available sample of clerks quite drastically. This limitation does not allow for a high degree of reliability in generalising the research findings on objective competencies and subjective experiences. However, the need for comparison over the period concerned makes the limitation unavoidable.

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However, it would not be unreasonable or invalid to assume that the findings based on interviews with the longer-serving clerks in both companies provide some degree of reliability in generalising these findings to the total clerical workforce in both companies. The case for arguing a degree of reliability is strengthened by the fact that two of the senior clerks in each of companies spent several days locating other staff members who had worked in the job categories researched prior to computerisation. They were able to present a more complete description of how the work was done prior to computerisation, thus corroborating the accuracy of their own first recollections.

Despite the reservation about generalising and its reliability, a historically-based case study is useful for indicating tendencies in the effect of computerisation on job categories and general working conditions. It also provides the basis for further and more comprehensive research projects on the impact of computerisation than the one conducted here.

One particular constraint on the conduct of the research should be noted. In some areas managers were reluctant to offer hard data, not wishing to divulge information useful to the major competitor. This is natural in the existing oligopolistic market. The result was that qualitative opinions appear where it would have been useful to be more precise. An example is work efficiency increase. Output due to automation was categorised as "two or three times the staff would have been necessary had we not computerised". Pressed for actual numbers or percentages, refusals were polite and firm.
FOOTNOTES

1 - Gorz, 1983, p.84
2 - Barraclough, 1967, p.52
3 - ibid, p.53
4 - Capital investment per clerical worker was only $2,300 in 1978 as compared with $31,000 per factory worker. Report to the Club of Rome, 1982, p.83
5 - Armstrong, 1983, p.60
6 - Jones, 1982, pp.104 - 105
7 - See glossary for explanation of microchip.
8 - Jones, 1982, p.106
9 - This is explained in chapter 2, pp.11 - 13
CHAPTER 1: A REVIEW OF THE SOCIOLOGICAL LITERATURE ON COMPUTERISATION AND CLERICAL WORK.

Introduction

The sociological literature on computerisation and clerical work known to the writer was reviewed to identify the major issues emerging in the debate on the effect of automation on office work. An assessment of the validity of the authors' conclusions is made in chapter 3.

It is widely held that the major transformations occurring in the workplace which ensure continued capital accumulation, are increasing managerial control over the clerical labour process and a concomitant deskilling of the clerical work force. Historically, one of the primary means of effecting these changes has been mechanisation of the office. Consequently, the dominant concern of recent studies in the field has been the extent to which computerisation increases managerial control over the clerical labour process and whether it reduces or increases the degree of clerical discretion, and accompanying skill levels. Another major concern is the effect of automation on employment opportunities. Most contemporary writing on the clerical labour process finds its main point of reference in Braverman's (1974) Labour and Monopoly Capital.

This chapter is structured around the three themes arising in the literature: control, deskilling and job loss. Section 1 focusses on whether managerial control is extended or limited as a result of automation; section 2 on whether computerisation deskills and/or reskills clerical workers; and section 3 on the effect of computerisation on employment opportunities.
1. COMPUTERISATION AND MANAGERIAL CONTROL

Whilst Mumford and Banks' (1967) work tends to lean towards the manager's needs (1) in exposition, it was reviewed because it was the only book known to the writer that dealt in any depth with the effect of early computerisation on clerical work. Subsequent works have tended to concentrate on the impact of microelectronics. The authors do not contextualise their conclusions on control within a theoretical framework but their findings are nevertheless useful in that they indicate the majority of clerks were losing control over their work even in the early stages of computerisation.

The investigation was conceived in 1957 and executed 1960 to 1965, in view of the speed with which technological developments were affecting the office.(2)

Two first generation, medium-sized computer installations were studied: one in a bank, cover name Royal Exchange, the other in food manufacturing under the pseudonym, Carters. Surveys were made before, during and after computerisation.

At the Royal Exchange 20% of the clerks claimed they had less control over the speed of work. At Carters, the general clerical response, unlike the banks', was a decrease in emphasis in certain areas of work - less control over pace, variety and quantity of work. However, since at Carters work on earlier Hollerith machines predisposed clerks to view the change as a shift from one form of mechanisation to another, the computer was experienced subjectively as affecting less the clerks and more the firm as a business. If there was less control over the quantity of work, the firm was seen as taking the consequences rather than the clerks.
Braverman (1974) on the other hand contextualises managerial control over the clerical labour process within a historical materialist framework. He links quite simply and directly a capitalist imperative to control the labour process with the drive toward the accumulation of capital:

...when the capitalist... buys labour time, ...(it) is the "variable" portion, which undergoes an increase in the process of production; for him, the question is how great the increase will be. It thus becomes essential for the capitalist that control over the labour process pass from the hands of the worker into his own"...(3)

The application of Taylorism and scientific management to industrial and clerical work, resulting in the increasing subdivision of labour, the separation of conception and execution culminating in the detailed division of labour is the process whereby the capitalist gains full control over the labour process. The creation of the 'detailed' worker as a result of deskilling, according to Braverman, represents the transformation from the formal to the real subordination of the worker. This transformation occurs in the monopoly capitalist phase. (4)

Braverman not only equates the deskilling process with that of increasing managerial control over the labour process; he views deskilling as the only strategy by which such control is achieved. This conception of control and deskilling is salient in his analysis of clerical work under monopoly capitalism. His discussion of the deskilling of clerical work as a result of the introduction of computerisation will be dealt with in greater depth in the second section of this chapter.

According to Braverman, promptings to control and systematise clerical work arose as the clerical population expanded. The growth of the clerical sector coincided with the requirements of monopoly capitalism. More and more of the work in society was
given to the accounting of value as monopoly capitalism evolved in complexity. As a result entire industries have been called into being to deal with the mounting volume of value transfers together with the multiple and often parallel accounting systems tracking the motions of value. The effort to keep track of the various trajectories of transfer and allocation of surplus value and its ramifying value forms is the reason for the rapid expansion of clerical labour according to Braverman.(5)

Manuals on office managership were compiled early in the twentieth century. Leffingwell in 1917 and Galloway in 1920 published definitive works in the area:

the purpose of the office is control over the enterprise, and the purpose of office management is control over the office.(6)

Braverman notes that following these publications clerical work as a labour process in its own right now becomes a distinct object of study using Taylor's concepts.

A more recent article by Barker and Downing (1980) takes the Braverman thesis a step further in the direction of the real subordination of labour. Like Braverman, the authors view

the move towards real subordination through simultaneously cheapening labour power and by striving for tighter control over the labour process (7)
as fundamental to the mechanism of capital accumulation and coming about through the use of machinery and Taylorist methods of rationalisation.

However, unlike Braverman, Barker and Downing draw a distinction between different forms of control employed by management. These writers argue the case for the dominance, through the history of industrialisation, of patriarchal control in the case of a predominantly female labour force and for the pervasiveness of
the ideology of mental over manual labour. The latter's function is to engender a degree of class identification with the employer by according clerical work a higher status. The generation of loyalty on these grounds acts as a deterrent to the clerks' potential demands for better work conditions and salaries, for both male and female.

In the case of female clerks, however, capital/management duplicates the control inherent in the ideology of mental over manual labour with patriarchal control. Quoting Poulantzas, Barker and Downing make the connection that the mental-manual division of labour is reproduced within mental labour itself by the sexual division of labour. Patriarchy buttresses its power and control by including the female clerk within the hierarchy of mental labour.(8)

Thus according to Barker and Downing, the loyalty and passivity of women was 'mediated' not in the class relationship but through relations of male-female, subordination-domination. Success in these relations are learnt through "an apprenticeship in womanhood". (9) They maintain furthermore that women's work outside the home is conditioned by mechanisms of the family and the ideology of patriarchy where women are essentially seen as wives and mothers. The concept of the 'social office', comes to embody the idea of female clerks under patriarchal domination.

The transition from patriarchal to real control becomes possible with the introduction of microelectronics into the office. The necessity of effecting the real subordination of secretaries (10) has been due to this groups' contribution to the burgeoning office costs which place constraints on continued capital accumulation. This situation has come about as a result of the
low productivity traditionally associated with secretaries and
the increasing number of managers who have sought to enhance
their status by acquiring private secretaries.

In the case of secretaries/typists, word processors with their
capacity for linking up to form a computer network, provide
management with the capacity for gaining control over the
secretarial labour process. Barker and Downing's discussion of
the way in which microelectronics facilitates increased
managerial control over the clerical labour process revolves
primarily around how word processors deskill typists/secretaries,
which will be discussed in greater detail in the next section.
The authors do not distinguish forms of control other than the
process of deskillling in the stage of the real subordination of
labour. Where Barker and Downing do discuss the loss of clerical
control over how the work is done and pace of work, they do not
make the theoretical distinction between these forms of control
and deskillling.

According to the authors, automation of the lay-out results in
the removal of

an area of control which the typist has over
both her work and her typewriter; through choosing how
to lay out a particular document, the typist is
instructing the machine on what to do, her skill and
initiative are guiding the machine through its various
functions. (11)

The control which a typist has over the pace of her work is
limited as a result of the increased facility to monitor and
pace the typist by means of centralised dictation via a control
unit and the programmed measurement of the number of keystrokes
and recording of the typists name and document number. (12)

West (1982) argues that word processing systems are intended for
the increase of managerial control over the labour process because they provide automated audio dictation and measurement facilities which enable management to control the pace of work.

Like West, Butler does not enter into

the complexities of deskilling or control of the secretarial labour process ... nor ... the intersection of capitalism and patriarchy in shaping clerical social relations. (13)

The author's primary concern is the way in which microelectronics aids management in restructuring the office to gain greater control over the secretarial labour process.

Butler conducted a survey of the impact of word processing on a range of clerical jobs in Brisbane, Australia. A response rate of 73% was achieved from nine hundred questionnaires which were sent to private secretaries, stenographers, word processor operators, typist-clerks and supervisors in two commercial and two non-profit organisations. Subsequently forty interviews were undertaken with secretarial workers, managers, administrators, supervisors and unionists. The organisations surveyed were academic institutions, public service departments, legal and insurance companies.

Butler found evidence of two forms of word processing in use: centralised word processing pools and decentralised systems where the machine is brought to the operator. The creation of a word processing centre and a centralised dictation system facilitates the automation of audio dictation as well as monitoring the pace of word processor operators' pace of work. The measurement programmes accompanying the word processing system also enable management to keep track of the time spent on the word processor by each word processor operator, the type of document being keyed.
in, whether the operator is editing or keying in coded clauses, the number of lines typed, errors and revisions being made at any given time and how much central processing unit time is used.

Secretarial work organised in the pool type formation is described by some as
dehumanising ... that floor is your whole world ... like chooks in a factory farm.(14)

According to Butler, not all managements are opting for restructuring the office into centralised word processing centres. Smaller firms in particular are using decentralised forms of word processing. Such arrangements are less disruptive to secretarial skills and office social relations. While it appears to be recognised that there is a reduction in productivity, the preference of some managements is for a trade-off in improved office social relations. However, larger firms surveyed by Butler, are centralising previously decentralised systems. (15) The author does not, however, discuss whether management has less scope for controlling the pace of word processor operators' work in decentralised systems or whether automated audio dictation systems are used. According to word processing systems' personnel interviewed at Alpha Life, decentralised systems do not facilitate the automation of audio dictation as it is not cost effective.

Butler suggests the extent of the new controls over the labour process available to management have a psychological, economic and political effect on the deskilling of workers such that

the work force becomes an "inert" collection of bodies mechanically related to a set of materials and sustained in motion by external force.(16)

Armstrong (1983) in the first South African labour process study
of automation and office work, suggests that the need to increase managerial control at the point of production was a response to economic and political crises confronting capital in advanced industrialised countries in the mid-seventies. Following Braverman, Armstrong views the expansion of the clerical workforce and concomitant escalation in office costs as the main reason for management employing microelectronics in reorganising the clerical labour process and increasing control.

In addition forms of control over the clerical labour process prior to the introduction of microelectronics were inadequate for increasing the extraction of relative surplus value. The dominant form of control had been based on personal organisation and control which was 

rooted both in the traditional relations of male domination and female subordination, and in concerns with status and prestige springing from the division between manual and intellectual labour. (17)

Due to the increased size of the clerical workforce management had to increasingly rely on additional forms of control: the application of scientific management methods resulting in the deskilling and fragmentation of work, further separation of conception and execution, the physical reorganisation of the office lay-out with office work being centralised into typing and steno pools. (18) However, patriarchal control remained the dominant form of control due to the clerical labour process being characterised by a sexual division of labour. Armstrong lists the following as features of patriarchal control: loyalty and devotion are established through personal ties between management and workers making workers 'reluctant to break the bond it forms' (19); loyalty and devotion from female staff are elicited by means of flattery and praise, a sense of indispensability is engendered; and the use of sexual innuendo underlying all 

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communication which is sometimes made explicit. Armstrong also suggests that positive attitudes to office work are elicited in that

patriarchal relations ... perpetuate the ideology that office work is clean, secure, glamorous, professional, fun and easy.

Patriarchal control also serves to divide secretarial and clerical workers in that private secretaries develop loyalties and obligations to their bosses so that they identify with them rather than their colleagues lower down the hierarchy.

Armstrong, using her research findings at "Long Life", argues that the new technology enabled management in this firm to exercise a new and different form of control over the clerical labour process. The introduction of microelectronics enables management to exercise 'real control', in the form of technical control, over clerical workers. Using Edwards' classification of elements of control, Armstrong shows how word processing facilitates the subjection of two of the elements of control to technical control.

The standardisation of work via the glossary and merge systems results in the typist losing control over the method of work, the first elements in Edwards' classification, as

The machine performs those functions automatically which previously the typist used to perform, and the programmed glossary tells the operator where to fill in the variable information, and determines the layout of the documents being keyboarded in.

The second element of control, the monitoring and evaluation of work performed, has been subjected to technical control in Long Life in some departments but its use will evidently become more widespread in the future. Technical control over the pace and
accuracy of work is possible with the development of a software package which

enables management to automatically establish the time taken, the total number of lines, the total number of pages, the total number of key depressions, the total number of times revised, the total number of key depressions involved in those revisions, per document completed by the operator. (25)

Armstrong found an additional means of technical monitoring and evaluation in use at Long Life. By means of a control screen in the centralised word processing room, the word processing project team are able to analyse the nature of text processing workflow throughout the building. (26) This appears to be an 'invisible' form of control as the wpos

were very uncertain as to what could be established about their work via the central control screen. (27)

While Armstrong argues that microelectronics makes possible the transition from formal to real control, and that technical replaces patriarchal control as the dominant form, she found evidence of bureaucratic control, a second form of structural control at Long Life. (28) Elements of the bureaucratic mode are the hierarchical and lateral divisions of workers; job descriptions and job manuals which facilitate the direction of work tasks by management; and gaining the co-operation of workers via a system of benefits. (29)

Crompton and Jones' (1984) study of clerks in the civil service, a Life Assurance Company and a Bank support the findings of the preceding authors that clerks have diminished control over their work as a result of computerisation. Drawing on Braverman, Crompton and Jones distinguish two elements of clerical control: control over their own labour power and control over organizational resources. The latter
may include both the labour-power of others and/or material resources. (30)

The authors use the concept 'control' as a synonym for skill. In order to establish the skill level of tasks the authors obtained verbatim descriptions of the employees' tasks. These supplemented their own knowledge of many of the tasks derived from both observation and discussions with management. Crompton and Jones identified twenty-four elements in these descriptions and coded all the descriptions in terms of the elements, whether present or absent. They then rated each element on a three-point scale, ranging from tasks that required no control but were governed by simple, explicit rules to tasks that required a degree of discretion and self-control.

This classification of tasks according to degree of control exercised in work demonstrated that

91% of interviewees on clerical could not be said to exercise any control - and therefore, we would argue, very little skill - in respect of their own work. (31)

Crompton and Jones conclude on this basis that as computerisation has routinised and fragmented clerical tasks, clerical control over labour power has been reduced.

Control over organisational resources (which may include the labour power of others) was also tested on a three-point scale. Each job was placed on the scale which took account of both task range and content. Each job was further rated according to the presence or absence of supervision and whether the employee could actually authorise payments or other organisational resources on their own account. (32)

Crompton and Jones found that only 16% of clerks had control over either the labour power of others and/or organisational resources.

A comparison of level of control and extent of mechanisation in
the three companies revealed that where computerisation was least advanced, a greater proportion of clerks exercised self-control within the work task. (33)

Where computerisation was most advanced clerks exercised no control within their work tasks. In the company where computerisation was extensive but which was not employing 'state of the art' technology, few opportunities for clerks exercising control in their work existed. On the basis of the findings the authors conclude that computerisation has resulted in the centralisation of control within the companies characterised by advanced automation. (34)

SUMMARY

All the authors mentioned conclude that computerisation results in a further loss of control by clerks over their own labour power. While Mumford and Banks do not explain why or how management increases control over clerks in their study, the remaining authors argue that computerisation is used to restructure office social relations and increase managerial control over the pace and method of work to ensure continued capital accumulation.

The more recent studies, particularly Barker, Downing and Armstrong, differ from Braverman in that deskilling was not viewed as the sole means of effecting the real subordination of clerks. The three authors, being more gender conscious than Braverman, argue that patriarchal control was the dominant means whereby management controlled clerks' labour power. Because this informal control was not sufficiently effective in monitoring the pace and method of work, microelectronics, in the form of word processing, was introduced. The use of the new technology
represented the transition from patriarchal to technical control, and thus the real subordination of clerks. Armstrong, however, suggests that the implementation of word processing systems does not eliminate the use of patriarchal control: it is merely displaced by technical control as the dominant form. In addition, she found evidence of bureaucratic forms of control co-existing with patriarchal and technical modes.

West, Butler, Crompton and Jones do not enter into the capitalism-patriarchy debate but their findings suggest that technical control over the pace and method of work is the dominant form.

2. COMPUTERISATION AND DESKILLING

Mumford and Banks found that the primary division of manual and non-manual labour was breaking down under the impact of early computerisation. Furthermore lower levels of clerical labour were deskilled by the computer. For example, routine book-keeping was displaced by the more routinized and duller work of punch-card operating.

At the Royal Exchange only 25% of the clerks thought that more judgement was required in their work after computerisation. More than a third, and mainly women, reported that parts of their work had been diminished in significance.

Both male and female clerks reported that the computer had made their work more impersonal and women generally thought that there were more rather than less routine jobs:

on the whole, the computer was seen as bringing individuals more disadvantages than advantages. (35)

Groups suffering the major impact of computerisation were management, female machinists, control clerks, mostly male and
customers. All came to believe they had lost something with automation.

An American study by Hoos (36) stands in contrast to the work of Mumford and Banks. In a survey of twenty American firms Hoos found that downgrading and transfers occur often and follow almost immediately on automation. Mumford and Banks found no instances of downgrading and few transfers. They are careful to point out however, that as automation proceeds such effects may become noticeable in the two firms. (37)

The authors found evidence of upgrading as a result of computerisation of clerical work in Royal Exchange which corroborated Ginsberg's research in America. (38) Mumford and Banks point out that a study by Mann and Williams (39) in a light and power company in the USA found higher job grading to be absent.

Thus it seemed difficult to generalize about the effect of computers on job grading at that time, although it was allowed that in general, routine tasks of whatever kind, would tend to be eliminated.

Monotony induced by automation through reduction of interest and variety in tasks indicated, according to Mumford and Banks, that Royal Exchange was

recruiting girls of too high an intellectual calibre for the new simple machine jobs. (40)

At Carters, however, where lower educational standards prevailed, monotony was not a problem. Both the authors' and American research of the time suggest that the more desirable aspects of work such as variety, judgement and skill, tend to be increased for computer personnel and reduced for clerks losing work to the
computer. They conclude their analysis of change through computers by noting that those who view themselves as agents in the transition, whether managers or clerks, find shifts in their jobs more acceptable than those who suffer the change.

The authors maintain that the different reaction in individuals undergoing automation at work is a complex process not easily predicted on the basis of other peoples' experience. The variables, both in the work environment, in - and outside the firms, and in people create different consequences as between the actual and the perceived -

what really does happen and what people think has happened (41) -

for they are not always the same.

Braverman, unlike Mumford and Banks, specifically defines deskilling. He views it as a process based on the increasing subdivision of labour, resulting in the separation of conception and execution and culminating in a detailed division of labour. The deskilling of clerks became an imperative as the volume of clerical work grew in parallel with the emergence of the monopoly phase of capitalism as the dominant mode of production. (42)

Clerical labour power had to be made cheaper and capitalist control over the labour process secured to ensure the continued extraction of relative surplus value in this phase of capitalism. These aims were easier to realise in the clerical than industrial sector as paper work could be permutated, especially in its numerical aspects, with greater precision.

Early Taylorism found in the office the locus of mental labour. But the new approach to clerical labour restricted responsibility for conception and planning to a dwindling group within the
office. The Babbage principle of the 1830s is resurrected three
generations later in designs for the progressive elimination of
thought from the labour of the office worker: work is reduced to
abstract labour. (43)

While motion is the essence of factory machinery, office
machinery overrides motion to establish information as its raison
d'etre. However the information-machines stood at the primitive
stage of a "handtool or power-assisted handtool" (44) Only when
typewriters, calculators, etc. became assisted by Hollerith
machines was the office prepared for the quantum jump from
mechanical and later electromechanical to microelectronic
machines for information processing. Computerisation came to
radicalise all aspects of office functions.

To Braverman the computerisation of clerical work is the final
stage in the deskilling process; that process which results in
the reduction of

special knowledge and training ... to simple
labour. (45)

Braverman views the computer as the 'chief instrument' of office
mechanisation which management does not use to

... eliminate the many steps that had previously been
assigned to detail workers ... Instead, capitalism goes
against the grain of the technological trend and
stubbornly reproduces the outmoded division of labor in
a new and more pernicious form. (46)

In support of his thesis Braverman discusses the deskilling of
job categories created as a result of computerisation and
previously existing job categories under the impact of
computerisation. He likens the new data processing occupations,
as they existed in the 1940s and 1950s, to a craft, since data
processors had to learn to operate several different machines —
the sorter, collator, tabulator, calculator, etc., over a period
by gaining experience in the workplace. Within a decade and a half, the technical division of labour within data processing was begun, culminating in a hierarchical grading of job categories with concomitant differential remuneration. (47) As regards punch operation on the key punch machine, from the outset it was a job category distinct from other data processing functions in terms of it being a largely female occupation, having a very limited task range, short training periods, low levels of remuneration, and not requiring pre-entry qualifications higher than a school-leaving certificate. (48)

The process of deskilling previously existing job categories had already begun with mechanically operated machines and was intensified with the introduction of electronic machines which preceded computerisation, according to Braverman. In these job categories people were reduced to machine operators rather than clerks with a specialised job knowledge, for example, bookkeepers. Furthermore, those clerks who did not directly use or operate terminals or key punch machines were also drawn into the deskilling process as the method and layout of their work was governed by the same "strict rules of form" that applied to clerks preparing data for capturing onto the computer. The result of this development, Braverman asserts is that

the work of transcribing information into a form that can be used by the computer is spread throughout the office ... by means of terminals or other simple keyboard machines that can be operated by any clerk. In this way machine operation is generalised throughout the office. (49)

Where machine operation is combined with other tasks, such as interpretation, further simplification and the removal of the need to exercise judgement is possible if the terminal is linked to the computer thereby gaining access to the latter's memory and
'swift search capacities'.

Thus, in a variety of ways, the reduction of data to symbolic form with accurate positional attributes, becomes increasingly, the business of the office as a whole, as a measure to economize on labor costs. (50)

By facilitating the generalisation of information throughout the office, computerisation greatly reduces management's dependence on a group of clerks in whom the 'information and decision-making capacity' is concentrated. As a result of the detailed division of labour office workers have difficulty in coping with exceptions to the rule or errors as these require more specialised knowledge. (51)

Barker and Downing, like Braverman, view the deskilling of typists/secretaries as central to management's attempts to gain greater control over the clerical labour process in order to secure continued capital accumulation. According to the authors, microelectronics in the form of word processing deskills typists/secretaries in a number of ways.

Firstly, fragmentation occurs with the introduction of word processors. The typist is reduced to a keyboard operator as she no longer presses keys to print information onto paper, she only feeds data into a memory. The printing task is done separately. The separation of data capture and printing increases productivity in that cheaper labour can be employed. (52) The authors presume that a 'keyboard operator' would be paid less than a typist. In addition, the years of practice of developing high speeds and accuracy are no longer needed on the word processor as error correction is done on a screen rather than on the printed document.

Word processors further deskill secretaries/typists as a result
of memory storage. Prior to the introduction of word processing secretaries/typists were able to create complicated filing systems which was one of the ways in which they became indispensable. Memory storage reduces their scope for doing so as standardised filing procedures are used on word processing systems.

Whilst the authors acknowledge that the feminisation of clerical work has meant that women's work has been devalued so that conventional notions of skill and deskilling cannot be applied to a predominantly female labour process (53) they argue that typing is a 'skill' which together with shorthand takes time and training to perfect (54).

Both authors reject, on the basis of time taken to become job proficient, the argument of 'apologists for word processing' that new skills are acquired. They also reject the notion that word processing frees secretaries/typists to do 'more interesting work' as upward mobility is inhibited by a hierarchical structure based on class due to the biased access to advanced secretarial training courses.

As the subdivision of the labour process continues ... and the repetitive typing becomes allocated to the word processor operators located in their work stations, the gap between the few super secretaries at the top and those who were always in any case destined for the lower routine jobs will become visible. Promotion will not become limited, but its limitations will become more manifest and the class nature of secretarial work more distinct. (55)

Along with Braverman the authors view deskilling as an ongoing and perhaps inevitable process. However, they go further and suggest that the extent of deskilling will depend on the extent and nature of trade union and working class responses to the introduction of the new technology. (56)
West suggests that typists/secretaries are deskilled with the introduction of the new technology in ways similar to those discussed by Barker and Downing. In addition she notes that high level computer languages further enable sophisticated functions to be performed by non-specialists reducing the need for knowledge and discretion. This factor puts not only clerical but administrative, as well as senior management, at risk in the long term.

While the author recognises that new jobs requiring higher skill levels than many existing clerical job have been created, she argues that it is doubtful whether real possibilities of skilled work for those who would have entered the now declining areas of general clerical employment (57) are being opened up as the entrance qualifications for these jobs are higher than many women currently possess. The emergence of the two-tier system in banking and insurance, which entails the majority of functions being centralised at head office or regional offices while branches are left only with 'counter-work', form the basis of West's reservations concerning who benefits from the new jobs requiring higher skill levels. Important consequences of the two-tier system are the changing labour needs and the recruitment base: a small number of people with different and higher pre-entry qualifications than those currently required for most clerical jobs, for example, A levels for programming and either a degree of programming or business experience for systems analysis; a larger number of people with possible lower pre-entry qualifications than those currently required for clerical work (58). According to West, the Department of Employment in Britain also recognises these developments which it is claimed are a response to a shortage of
school-leavers with adequate grades. In addition, the Department notes that the specialists in data processing will follow a career path distinct from those who process information on a daily basis. The latter group can hold little expectation of upward mobility.

Furthermore, like Barker and Downing, West argues that mobility through promotion out of the 'female clerical ghetto' will shrink especially for non-middle class girls. As typists they are less likely to have the entrance qualifications for access to the emerging schools of restructured secretarial studies, where increasing emphasis is being placed on subjects such as business administration.

Butler's study revealed that the effect of microelectronics on typing/secretarial skills depended on the form of word processing introduced. Where a centralised word processing formation is established secretarial work tends to be fragmented, with secretaries specialising in different fractions of the job. The typing part of the secretarial function goes to the word processing centre while the administrative tasks go to the Administrative Report Centre where each administrative assistant serves several principals with the traditional work of telephone answering, filing, maintaining the appointment diary, etc. With the exception of a small range of typing tasks they do very little typing. In addition the creation of a word processing centre and a centralised automated dictation system eliminates longhand and shorthand skills are drastically reduced if not eliminated.

Decentralised word processing formations are less disruptive to secretarial skills and office social relations as
decentralisation is not generally accompanied by the fragmentation of secretarial work.

The author demonstrates that while there was a complete variation in attitudes towards word processors, from very negative to very positive, majorities of 70% to 80% welcomed the "march of technology" into their working lives. (59) In the matter of training she reports an ambiguous recognition of word processing as a skill. Secretarial workers see wp as a new skill, and many managers freely admit the word processing is not simply a "glorified typewriter" since its sixty odd functions require considerable time to master.

Butler rejects the prevailing ideology which contends that the restructuring of secretarial labour leads to upgrading of the work force. She suggests both deskilling and upgrading are taking place, but more as a polarising process. The upgrading thesis concentrates on the fortunate few who add word processing skills to their established secretarial practice. The remainder are separated through

progressive fragmentation, rationalisation and mechanisation of jobs. (when) complex labour becomes collective labour. (60)

Going on to quote Glenn and Feldberg as one of the earliest efforts to analyse the "objective conditions" of clerical worker, Butler indicates a proletarianisation of the modern office work force. In terms of Braverman's now classic criteria for degradation of work through division of labour and the separation of conception and execution, three factors are forceful. The subdivision of clerical work by the new office organisation; the installation of programmed microelectronic office technology; and the use of scientific management in office rationalisation, as
in pooling. Previously existing skills are trivialised — for example stenography — while those now called for are narrower, at a lower level and more mechanical.

Where Brisbane secretarial workers are dominated by the centralised dictation system the situation as described by Glenn and Feldberg is fulfilled, according to Butler. At the other end of the pole are the few private secretaries being professionalised as part of their global function. These are probably the workers who fulfill the "creative" role in the Myer's report, the findings of the Committee of Inquiry into Technological Change in Australia, commissioned by the Australian Government.

Armstrong views deskilling as a multifaceted process. It involves the removal of objective competencies which require training and aptitude, and the processes of fragmentation, standardisation and routinisation, as well as the substantial removal of decision-making from the worker ... removal of control over the clerical labour process from the worker, and the increasing separation of conception and execution.(61)

On the basis of interviews conducted with principals of secretarial colleges, the marketing manager of Wang and word processor operators at Long Life, the author concludes that word processing deskills typists as it removes objective competencies required for typing and shorthand. The ways identified by Armstrong in which word processing does so are the same as those discussed by Barker, Downing and West.

In addition Armstrong found further indicators of deskilling at Long Life: the fragmentation and simplification of work and the elimination of most of the decision-making available to typists. After the introduction of word processing clerical work was subjected to a more detailed division of labour. The work of
multifaceted process involving the reduction or removal of objective competencies formerly required, the separation of conception and execution resulting in job fragmentation, as well as the loss of control over the pace and method of work. All conclude that deskilling has followed the computerisation of clerical work.

Butler differs from these authors to some extent in that she found evidence of upgrading coexisting with deskilling. Word processor operators and management recognised that upgrading accompanies the introduction of microelectronics but she argues that this applies to only a small number of secretaries. Furthermore, Butler argues that even those typists/secretaries who have acquired additional word processing skills have been deskilled

... in the context of the wider issues of the degradation of work - such as fragmentation, standardisation, loss of conception and control - it would be more true to say that even the "reskilled" workers have "deskilled" as a result of the introduction of word processors.(68)

Braverman, Butler and Armstrong argue in addition that computerisation had greatly facilitated the proletarianisation of clerical workers. Clerical work has been degraded and dehumanised as a result of the separation of conception and execution, the use of scientific management in rationalising office work and job fragmentation.

3. THE IMPACT OF COMPUTERISATION ON EMPLOYMENT OPPORTUNITIES

It is widely held that the automation of clerical work results in the erosion of job opportunities. Most of the writers reviewed in this chapter, however, have been primarily concerned with the impact of computerisation on the nature of clerical work. Where
they have addressed the issue of loss of employment opportunities it has not been discussed in any depth. For this reason, the writers' comments on the subject will be dealt with seriatim and briefly, while only West's and Hines and Searle's (1979) discussion will be presented in some detail.

Mumford and Banks found no evidence of redundancies occurring at the Royal Exchange or Carters, though some clerks at Royal Exchange saw the possibility of redundancy, as did machine operators at Carters. The authors did, however, find that an American study by Hoos (69) revealed that redundancies occurred almost immediately after automation, and suggested the same would occur for the two companies researched as automation proceeded. It should also be noted that Mumford and Banks researched the impact of computerisation at a time when its applications were comparatively limited and the service sector was in a growth phase. Consequently, more job opportunities tended to be created than lost.

Braverman and Barker and Downing similarly suggest that while no redundancies may have occurred at the time of writing, further automation is likely to result in loss of employment opportunities. Barker and Downing further contextualise the loss in terms of current state and managerial rationalisation policies in the UK. Unlike Braverman, the authors argue that the extent of the loss will depend largely on the strength of trade union responses.

Butler found in her survey no direct evidence of retrenchment as a result of word processing installation but there seemed to be an element of invisible dismissal in the options given to affected secretarial workers: a few stayed on as private
secretaries, the rest went to the word processing centre, became administrative assistants or clerical workers. Some resigned. None were directly dismissed. In due course the right staff level was found through 'natural' wastage. This arrangement redistributes unemployment to school leavers comments Butler, or quoting West, to

married women returnees to the labour force. (70)

No redundancies occurred at the life assurance company Armstrong researched, but staff savings were effected with the freezing of clerical posts in spite of work loads increasing significantly.(71)

West's discussion of job losses is based on an examination of the British Department of Employment report which she considers to be a

major example of the dominant orthodoxy on microelectronics and employment. (72)

In response to the reports's suggestions that fears of severe unemployment as a result of computerisation are unfounded, West, following Barker and Downing contends that the argument is "politically and economically decontextualised" (73). The new technology is being introduced into the civil service precisely to facilitate a reduction in the size of the service. Whilst staff numbers may have risen after the introduction of computerisation due to the 'explosion of information' generated as a result of computerisation, the author points out that what is of greater significance is how many job opportunities would have been available in the absence of computerisation. She further points out that a closer examination of job losses relative to job creation reveals that whilst job losses have tended to occur among lower clerical grades, the new jobs will
require
'a higher calibre of staff than is required in most
current clerical jobs'...there is no suggestion that
most clerical work could be transformed in this way.(74)

West draws on a report by the head of the Department of
Industry's Computers, Systems and Electronics Division to
identify trends within the clerical ranks. These are

the reduction of the clerical hierarchy; the
polarisation of staff into one group with low-level
qualifications doing 'predominantly mechanical work',
and a group of higher qualified ADP personnel; and
changes in the organisation and pace of work. (75)

There are parallel loss of employment opportunities evident in
the finance sector. Whilst volumes of work have increased in
banking and insurance, the recruitment of new staff has not kept
pace with the increase in business. Since 1959 there has been a
doubling of insurance business with the number of people employed
virtually unchanged.

In addition, West points out that the argument of constraints
existing on introduction of the new technology and concomitant
job losses, resulting in the 'cashless' society, appears to have
a tenuous basis. The alleged constraints are the potential legal
and political problems with automatic cheque clearing, the
shortage and expense of automatic teller machines (ATM's) and
electronic funds transfer (EFT) not being economically viable.
She counter-argues it is likely that ATM's will be reduced
significantly in price as have word processors, and that evidence
of co-operation between banks on the implementation of EFT exists
in the wake of eleven banks examining, in 1979, the possibilities
of introducing the system.

A further development which is likely to affect employment
opportunities for women in banking and insurance is the emergence
of the 'two tier' system, where the majority of functions are
centralised at head office or regional offices with few remaining at the branches. The effect of this system is likely to reduce local employment opportunities which tend to be sought by married women.

Having outlined these general tendencies, West focussed on word processing to illustrate the relationship between microelectronics, job losses and job restructuring. She suggests that the full impact of word processing can only be understood when it is examined, not in isolation, but as part of a network of linkages: word processor, computer and 'telephone' cables which forms the basis of an electronic mail system. Viewed in this light, not only secretaries or typists are faced with loss of employment opportunities and restructuring of jobs. Internal messengers and filing clerks are also affected. (76)

West's rejection of the view that word processing is likely to have only a limited impact on secretaries and typists is based on a comprehensive survey of word processing applications in the UK. The survey revealed that where job losses were insignificant this was "related to inefficient use and organisational inexperience" (77) where productivity was significantly increased there was a correspondingly significant decrease in labour (50%); staff numbers were constant despite increases in work volumes; whilst there were no marked job cuts, management were planning cut backs in the future; managements were planning to introduce word processing systems on a greater scale and in more efficient formats, such as shared logic. The same survey suggests that one in three jobs will be displaced by 1985 and 17% by 1990. West points out that

this kind of impact is expected on a group who currently comprise nearly a third of all women clerical
workers...while at the same time more women enter the labour market. (78)

As with other applications of microelectronics, the new or additional jobs created are fewer than those displaced.

Quoting Bird (79) West shows clerical unemployment rising in Britain between 1975 and 1978 from 51% to 68% of the total unemployed.(80) Office reorganisation due to word processing creates fewer new jobs than those displaced throughout all organisations which adopt it.

'Automatic Unemployment' by Hines and Searle was prompted by British policy makers' inadequate responses to the effect of microelectronics on employment opportunities. While the government is aware of the possible impact of microelectronics on job opportunities, it is nonetheless anxious to use the new technology to help keep Britain competitive in international markets. Accordingly its policies have been restricted to the technical development only of the microelectronics industry in the United Kingdom, rather than its socio-political impact. Support has been in the form of funding a microelectronics production company; publicising the potential of microelectronics; worker training and retraining; reorienting education arrangements; gearing public sector purchasing to accommodate microelectronic products.(81) They have failed to pay sufficient attention to the likely effects of microprocessors on the structure and the very nature of employment ... Instead the makers of policy have placed their trust in the belief ... that somehow new jobs will be created by the new technology and that these will compensate for jobs lost.(82)

In an attempt to counter this 'Micawber-like approach', the authors consider the scale on which existing job opportunities will be reduced as well as the range of jobs which will be lost due to microelectronics. The basis of their argument is that
while there is a tendency toward a diminution of job opportunities in the primary sector and an increase in the service sector, employment opportunities in the latter sector are likely to be significantly reduced with increasing application of microelectronics in the office.

Reduced job opportunities in the primary sector until the mid-seventies was largely the result of changes in demand and competition rather than technology. (83)

According to Hines and Searle, 2 million jobs have already disappeared under the impact of market forces. In the future loss of employment opportunities in this sector will increasingly be the result of the introduction of new technology such as computer aided manufacture. The authors quote Jenkins and Sherman's study on the effect of automation in the manufacturing industry to illustrate that a further 1.8 million jobs (out of 13.6 million in 21 industries) will be lost in 15 to 20 years time. These figures have been arrived at with the help of the 21 industries' own forecasts. (84)

Gorz quotes research in West Germany indicating that DM1 000 million invested in industrial plants would have generated two million jobs from 1955 to 1960 and 400 000 from 1960 to 1965. From 1965 to 1970 the same sum would have destroyed 100 000 jobs and from 1970 to 1975 it would have destroyed 500 000. In France, the officially registered decline in the industrial work force has been 53 000 jobs per year. (85)

In response to those who suggest that the service sector will increasingly expand to absorb displaced primary sector workers, Hine and Searle present the following scenario:
... the introduction of new technology into the office will not stop at the replacement of some secretarial and typing jobs ... office automation will concern everyone whose job involves the handling of information, since it will gradually replace the desk, the typewriter and the filing cabinet by an electronic substitute, a workstation which will be able to perform automatically many currently manual tasks.(86)

The basis for this transformation of the office the authors argue is the transition from electronic office equipment being job-specific to the integration of office information systems. In the early stages of office automation, word processors, facsimile transmitters, etc. tend to be used as separate units. Even this piecemeal application of new office technology has had a marked effect on employment opportunities. The authors cite as examples: the reduction of office staff from 44 to 22 by the Bradford Council in one of their offices with the introduction of nine word processors and a 19% productivity increase with estimated annual savings of 58 000 to 59 000 pounds; the Provident Financial Group increasing its workload but reducing its full time staff from 27 to 17 and part time staff from 13 to 3; reductions of female staff at CEGB from 50 to 26.(87)

However, the impact of new technology is likely to be much more severe when office systems are integrated. Word processors linked to mainframes can become 'general purpose computers', used for handling payrolls, cash flow, standard and personnel records, manpower planning and to monitor and improve management productivity.(88) Word processors linked to computers via telecommunications lines make electronic mail possible, replacing memoranda, filing and inter-office copying within single buildings. The electronic mail system can also be extended via satellite to link offices throughout the world.(89) The basis for these developments were already being laid at the time Hine
and Searle wrote. In the USA a group of consultants estimated that by 1982 two-thirds of the 500 biggest companies would have internal electronic mail; IBM was cooperating with the European company, Comsat, to develop US-European satellite communications for business purposes.(90)

A report issued by Siemens (91), the Nora-Minc study (92), and Sherman and Jenkins (93) support Hines and Searle in questioning the capacity of the service sector to provide employment opportunities for those workers displaced from other sectors. Siemens, one of the major electrical firms in West Germany issued an internal report which suggested that by 1990, 40% of office work will be carried out by computerised equipment,(94) The Nora Minc study commissioned by the French Government reports that under the influence of telematics and automation the service industries will release personnel, while the large industrial enterprises will expand with a constant (my emphasis) level of employment. (95)

According to the report, the developments described above have already begun. It is estimated that banks and insurance will save up to 30% each in personnel over the next ten years.(96)

The authors conclude their discussion of the impact of microelectronics on employment opportunities by suggesting that all 'information workers' are likely to be affected and therefore job losses will be experienced not only in the service sector but in all sectors of the economy. Information workers refer to those people who are

primarily concerned with information in some form or another ... office workers at the clerical level since they are concerned with the transformation of information ... and with its communication to others; ... at the executive level ... concerned with assimilating existing information, processing and manipulating it, and generating new material ...(97)

Hines and Searle point out that traditional industrial
The authors estimate that 'information workers' constitute approximately 45% of the working population. (98)

The authors arrive at the same conclusion as West does, namely, that women are the group who will be most severely affected by reduced employment opportunities as a result of microelectronics. This is due to office work being one of the main sources of employment for women and it is at the level of clerical work that automation is likely to have the greatest impact on employment opportunities.

**SUMMARY**

All the authors discussed in this chapter have either suggested or found evidence supporting the view that computerisation significantly reduces employment opportunities for clerks. Mumford and Banks were the exception but it should be noted that their study was conducted in the early stages of computerisation and when the service sector was in an expansionary phase. Thus while more clerical job opportunities tended to be created than lost, West's research indicates this tendency has been reversed with the introduction of microelectronics.

None of the authors found evidence of redundancies occurring but staff savings were effected by means of natural staff attrition and giving staff the opportunity to resign, in spite of significant increases in workloads. West, Hines and Searle further point out that women will be most severely affected by reduced employment opportunities resulting from the computerisation of clerical work as it is among the largest
sources of employment for women as well as being the area where computerisation is likely to have the most significant impact on job opportunities.
FOOTNOTES:

1 - Mumford and Banks, 1967, p.2
2 - ibid, p.1
3 - Braverman, 1974, pp.57 - 58
4 - Littler and Salaman, 1982, p.255
5 - ibid, p.304
6 - Braverman, 1974, p.306
7 - Barker and Downing, 1980, p.65
8 - ibid, p.73
9 - ibid, p.75
10 - Barker and Downing isolate secretaries because they were the subjects of the authors' research but their argument applies to clerical workers in general.
11 - ibid, p.92
12 - ibid, p.92
13 - Butler, 1984, p.1
14 - ibid, p.17
15 - ibid, p.5
16 - ibid, p.25
17 - ibid, p.62
18 - ibid, p.40
19 - ibid, p.85
20 - ibid, p.85
21 - ibid, p.86
22 - ibid, p.86
23 - Edwards, 1979, p.18
24 - Armstrong, 1983, pp.99 - 100
25 - ibid, p.101
26 - ibid, p.17
27 - ibid, p.102
28 - ibid, p.110
29 - ibid, pp.111 - 112
30 - Crompton and Jones, 1984, p.60
31 - ibid, p.61
32 - ibid, p.60
33 - ibid, p.63
34 - ibid, p.53
35 - Mumford and Banks, 1967, p.99
37 - ibid, p.185
40 - Mumford and Banks, 1967, p.190
41 - ibid, p.196
42 - Braverman, 1974, p.348
43 - ibid, p.319
44 - ibid, p.327
45 - ibid, p.82
46 - ibid, p.328
47 - ibid, pp.329 - 330
48 - ibid, pp.329 - 334
49 - ibid, pp.330 - 340
50 - ibid, p.340
51 - ibid, pp.347 - 348
52 - Barker and Downing, 1980, p.91
53 - ibid, p.93
54 - ibid, p.93
55 - ibid, p.94
56 - ibid, p.96
57 - ibid, p.68
58 - West, 1982, p.66
59 - Butler, 1984, p.10
60 - ibid, p.25
61 - Armstrong, 1983, p.93
62 - ibid, p.97
63 - ibid, p.98
64 - ibid, p.103
65 - ibid, p.109
66 - ibid, p.110
67 - ibid, p.113
68 - Butler, 1984, p.26
69 - See footnote (7)
70 - West, 1982, p.70
71 - Armstrong, 1983, pp.105-106
72 - West, 1982, p.62
73 - ibid, p.63
74 - ibid, p.64
75 - ibid, p.64
76 - ibid, p.68
77 - ibid, p.69
78 - ibid, p.70
79 - ibid, p.70
80 - ibid, p.70
81 - Hines and Searle, 1979, p.1
82 - ibid, p.IX - Introduction
CHAPTER 2: THE FINANCE SECTOR; LIFE ASSURANCE INDUSTRY AND THE TWO COMPANIES RESEARCHED.

The first part of this chapter provides a brief description of the finance sector and life assurance industry to contextualise the two companies researched. The second part describes the two organisations in greater detail to provide a background for discussion of research findings in later chapters.

1. FINANCE SECTOR

A financial system evolves to finance both the production of goods and services and smooth the exchange of goods and services in a mercantile and industrialising economy. This two-fold function of a financial system generates a mutually reinforcing linkage, the more complex the economy the more complex the financial system.

The complexity of a financial system, and thereby the economy, can be gauged in three ways: the variety of forms in which money occurs; the extent of specialisation among the financial institutions; and the range of choices available for lending and borrowing finance.

The effort to meet the increasingly diverse and specialised requirements of investors in a growing economy is the basis of specialisation among financial institutions as well as the drive toward competition among financial institutions. This occurs at a number of levels: between companies of the same category, for example life assurers; between categories, for example life assurers versus banks; and between companies within the finance sector and those in other sectors, for example, when citizens choose to invest in a firm rather than a bank or when investors obtain securities or mortgage bonds secured through the government rather than building societies. In this competitive
environment financial institutions' source of profit lies in the difference between the cost of attracting savings (interest rates, advertising, maintaining branch offices, salaries, etc.) and the revenue obtained from them. (4)

The facilitative role of a financial system in an economy growing in complexity has required increasingly large numbers of clerks to document and process money flows. The cost to the financial institutions of salaries and employee benefits has increased dramatically with the expansion of the clerical labour force. Furthermore clerical work has traditionally been labour intensive.(5) Table 1 provides an indication of the growth of the clerical labour force in the South African finance sector over the past two decades. There are no statistics available to indicate the growth of clerical workers as an occupational category within the finance sector. Interviews with management, however, have revealed that one can safely assume that for the two decades in question, clerical workers constituted the largest occupational category within the finance sector. Against the background of the world recession of the 1970s and in view of the financial institutions' source of profit, ways of stemming the increase in administrative costs has become an important aim.

**TABLE 1: The Total Labour Force Employed in the South African Finance Sector, 1960 to 1980.** *

<table>
<thead>
<tr>
<th>Year</th>
<th>1960</th>
<th>1970</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11620</td>
<td>153382</td>
<td>233300</td>
</tr>
</tbody>
</table>

*These figures exclude Africans to make the two decades comparable as they were not incorporated in the 1980 population census.
Table 1 shows that there was a thirteen-fold increase in the labour force between 1960 and 1970. By 1980 the increase of the labour force had slowed down to one and a half times.

There occurs a density of information flow which mirrors the complexity of the market-place so that the capturing of data and its analysis becomes ever more onerous to management and its helpers. The research required in the finance sector to secure profitable areas of investment has become a highly diversified methodology. The administrative costs entailed in this area of work has expanded enormously. The control of these costs has become an imperative, and considerable pressure is put on administrative managers to keep costs as low as possible, especially in view of the current recession. (6)

The development of computers and other communication and information retrieval and storage devices has permitted financial institutions to efficiently deal with these increasing volumes of information ... and to broaden their operation (7) as well as render a faster and more efficient service to clients.

According to Natrass, the financial sector can be divided into two parts: institutions that provide long-term capital and those that provide short-term capital. (8) The thesis focuses on life assurers, providers of long-term capital.

2. THE LIFE ASSURANCE INDUSTRY: A DEFINITION AND DESCRIPTION

The principle underlying all assurance is the sharing of risks by a number of policy-holders on either a short- or long-term basis. Life assurance is a long-term contract. In terms of the contract the policy-holder regularly pays a premium calculated by the insurer. In the case of death, retirement or disability a lump sum is paid out.
Prior to the mid-twentieth century the life assurance industry was characterised by a relatively large number of smaller firms whose business was mainly limited to the issuing of policies against premature death. In the latter decades of the twentieth century the industry has been characterised by two main trends, oligopolisation and diversification. A much reduced number of firms now offer a much wider range of services. With advances in medicine and a greater democratisation of economic prosperity the focus of life assured shifted to policies for retirement. Life assurance companies began diversifying into pension and provident funds, and shifted from exclusive reliance on contract savings or revenue from policy premiums, as a source of capital to linking a portion of funds to equity and property growth assets.

Oligopolistic trends began to emerge within the life assurance industry by the 1960s. In 1966 there were 202 life assurance companies. Due mostly to mergers this number was reduced to 114 in 1974. (9) By 1979 there were 39 companies registered as life assurers. The two largest of these controlled approximately 50% of the life assurance market. Nine of the 39 registered companies accounted for 83% of total premium income. (10)

The increasing oligopolisation of the life assurance industry has reduced the extent of competition but intensified competition among the dominant firms. As a result life assurance firms need to be continually innovative in policies marketed in order to retain or increase market share. According to all managers interviewed, computerisation has become a vital tool in the production of sophisticated policies for waging the struggle in the market place.
3. SIZE AND FUNCTIONAL ORGANISATION

Both companies are among the largest life assurance companies in Southern Africa in terms of total premium income and number of individual and group policies. The total premium income of Alpha Life was R1 293.4 billion, and R1 368.5 billion in Beta Life for 1984. Individual and group policies totalled 2 371 000 in Alpha Life. Comparable figures are not available for Beta Life.

The following two tables indicate the clerical workforce as a percentage of the total number of staff (excluding representatives) in South Africa and head offices respectively.

**Table 2: Employment in Alpha and Beta Life in South Africa for 1984, excluding sales representatives, was as follows:**

<table>
<thead>
<tr>
<th></th>
<th>Alpha</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage clerical</td>
<td>77</td>
<td>52</td>
</tr>
<tr>
<td>Percentage management and service staff</td>
<td>23</td>
<td>48</td>
</tr>
</tbody>
</table>

**Table 3: Employment in the respective head offices, excluding representatives, is concentrated as follows:**

<table>
<thead>
<tr>
<th></th>
<th>Alpha</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage clerical</td>
<td>77</td>
<td>52</td>
</tr>
<tr>
<td>Percentage management and service staff</td>
<td>23</td>
<td>48</td>
</tr>
</tbody>
</table>

The above tables show there is a marked difference between Alpha and Beta in the ratio of clerks to management and service staff. This is due to different ways of combining and classifying service and lower clerical eschelons and differing overlaps between senior clerical and lower management rungs. These
differences do not affect research issues in the thesis in any essential way, and were not taken any further.

Four divisions were selected for research at the head office of Alpha Life on the basis that these divisions employed predominantly clerical workers and were among the most advanced in computerisation. The corresponding divisions at the head office of Beta Life were selected for comparison. A total of forty-six clerks were interviewed in both companies. This comprises 4% of the total number of clerks employed in the seven divisions researched. Of the forty-six clerks, 25 (54%) had worked in their respective divisions either in the pre-computer and/or pre-terminal era.

In both Alpha and Beta Life a total of twenty-nine management personnel, which included section heads through to division managers, as well as six systems analysts and programmers were interviewed.

Alpha and Beta Life companies have similar organisational structures. The major divisions within both companies are functionally based as follows: individual life, group life, pensions, investments, services and external operations. Each of these divisions are continuously subdivided according to function giving rise to departmental specialisation and the creation of specialist workers. (11) In many departments further functional specialisation into sections tends to be the rule with further specialisation among section employees.(12) The effect of departmental organisation on clerical skills will be discussed in greater detail in chapter 4.
4. THE EXTENT AND NATURE OF COMPUTERISATION IN THE TWO LIFE ASSURANCE COMPANIES.

The most important reasons for computerisation seem to be staff rationalisation, increase of efficiency, speed and quality of service to the client and to expand business through the diversification of services. As a result of this diversity, ways of increasing speed of response and improving quality of service to the client are fundamental to the life assurance companies striving to capture ever larger market share.

In addition there is a growing awareness overseas and in South Africa that information is a vital management resource. Therefore an information processing system that collates and reorganises data automatically at high speeds, has a large storage capacity, retrieves data accurately and reduces the cost of clerical work is an indispensable instrument. This applies particularly to the finance sector which is characterised by intensive competition and where rapid decisions about changes in policies or tactics often need to be made.

Both companies used similar pre-computer technology and followed congruent paths in automation. Accordingly the first part of this section will be a general discussion of technology used in Alpha and Beta Life prior to computerisation. The second part will provide more detail on the extent and nature of computerisation in each company.

Prior to the introduction of Electronic Data Processing the recording and processing of numerical data in both companies had been mechanised since the 1930s with mechano- and later electro-punch card machines which were linked to tabulators and sorters. The operational procedure and principle underlying these systems has been clearly articulated by Braverman:
In recording bits of data, each on its own card, by means of a system that gave to each column and rank of the card a specific meaning ... machines could sort and classify, combine and tabulate the bits of data on the cards ... "reading" and "interpreting" simple data without direct human participation. (13)

However, the difference between these mechanical and electric machines and the computer is that the former lacked a stored programme which could alter itself.(14) Human intervention was required each time a new cycle of processing was to be started. In the case of the computer a range of instructions, called programmes, can be simultaneously stored in the computer's memory. Once one set of instructions has been completed the computer automatically proceeds to the next set of instructions and so on, thereby eliminating human intervention between cycles of data processing. Furthermore, in the previous era text processing as distinct from numerical data processing could not be mechanised beyond the addressograph machine, typewriter and mechanical duplicating machines.

Clerical work by its very nature lends itself to computerisation because at least a third of all clerical work is figure processing.(15) The structural nature of figure processing which is characterised by fixed procedures, predetermined sequences and codifiable data is similar to the computer's programmed method of working.(16) This highly structured form of programming is known as Electronic Data Processing.

The advent of microelectronics makes it possible also to computerise the unstructured activities in clerical work such as text processing, non-routine exchanges of documents, information flow via written messages, etc, which comprise the remaining two-thirds of all clerical work.(17) Electronic text processing
Electronic Data Processing was introduced in both companies in the late 1950s and early 1960s with both companies installing successive generations of computers. The difference in electronic generation reflects increases in storage capacity and speed of processing data. The first generation of computers processed data in milliseconds, the second in microseconds and the third in nanoseconds. The following example from one of the life assurance companies researched illustrates the difference in speed of operation between first, second and third generations of computers. Main records on the first generation computer consisted of 770,000 policies and took fifty hours to process; the second generation took thirty minutes for the same number. (18) The increase in power of the third over the second generation of machines is best illustrated by the number of instructions per second accessed: 3.3 million as against 100,000. (19) There was a gap of approximately 7 years between first and second and 11 years between second and third generation computers.

The result of increased storage capacity was the automation of wider areas of work. Initially, only actuarial and commission calculations and payrolls tended to be processed on the computer. Subsequently, a whole range of calculations, formerly the preserve of the clerk, have been automated.

Advances in memory capacity and speed of operation have been accompanied by developments in telecommunications which combined have made it possible to install a network of terminals at some distance from the mainframe. As a result departments at head
offices in both companies have increasingly been supplied with their own terminals, thereby reducing clerks' reliance on the centralised punch pools and introducing a new dimension to the clerical function, namely keyboard operation.

In addition to the decentralisation of access to the mainframe via terminals, advances have been made in the method of processing data, that is, in the software. Two main modes of data processing are used in both life assurance companies. These are batch- and transaction processing.

4.1 Batch Processing

This form of processing is based on the division of each task into separate batches. Each batch is constituted by a series of steps, the steps being successive aspects required for the completion of the task. On completion of the steps constituting the first task, the computer proceeds to process all the steps of the second task, and so on. This form is illustrated in Figure 1 below.

Figure 1.

\[
\begin{align*}
\text{task 1 = batch 1} \\
\text{steps:} \\
1 & 2 \\
2 & 3 \\
3 & 4 \\
4 & 1 \\
\text{task 2 = batch 2} \\
\text{steps:} \\
1 & 2 \\
2 & 3 \\
3 & 4 \\
4 & 1 \\
\end{align*}
\]

This is very similar to the method of working in the pre-computer era. Each clerk was responsible for one or more tasks, and before being able to proceed to the next task (if his/her job category comprised more than one task), had to complete all the steps of the first task. This procedure is known as the flow-line concept. Due to the time-consuming nature of the work.
method, management tended to divide tasks which had numerous or complex steps amongst one or more clerks in order to increase productivity. As a result of the ensuing division of labour clerks tended to specialise in only one aspect of processing life assurance policies.

Since first and second generation computers were relatively slow and limited in storage capacity, some portions of clerical work remained non-automated with the flow-line concept of clerical work being retained.

4.2 Transaction Processing.

The advent of third generation computers with dramatically increased storage capacity and speed of operation, resulting from very large scale integration of electronic circuits on a microchip, made it possible to replace batch- with transaction processing. Instead of processing a task per batch, the steps in a whole range of tasks could now be simultaneously processed. Figure 2 illustrates this method diagrammatically.

Figure 2.

Prior to this development in software management had a limited choice of job design that would permit maximum productivity. But the flow-line concept of each clerk doing only an aspect of the whole administrative process was no longer necessary given the opportunities opened up by the advances in computers. The advent of transaction processing accompanied by the introduction of
terminals made it possible for one clerk to do a much wider range of tasks since there was direct access to a larger number of tasks simultaneously.

4.3. The Nature and Extent of Computerisation in Alpha Life.

A gradualist approach to automation has been adopted in three of the four divisions researched in Alpha Life which entails computerising only certain clerical functions in a limited number of sections at a time so that manual and computerised operations coexist in a division. An additional reason for the coexistence of manual operations is the company's policy of weighing up the costs of automation against the benefits. Where it would not be cost-efficient clerical work is not automated. The fourth division is fully automated. Furthermore, where work has been computerised in the three divisions it has been done so differentially. Some departments or sections within departments in the three divisions have access to the relevant mainframes via either of the following access categories:

(a) real time on-line terminals which makes it possible simultaneously to update the mainfile whilst capturing data as well as retrieving information from the mainframe to answer client queries. The latter function is referred to as "doing enquiries" in the two companies;

(b) on-line terminals for data capturing with the updating done on a batch basis at a later stage, as well as doing enquiries;

(c) having terminals only for doing enquiries and not data capturing. In this situation data capturing is done by clerks who fill out coding slips which are then sent to punch operators to enter onto the mainframe. A very small percentage of policies are administered manually as they are
too complex for automation in cost-benefit terms. Once these policies have been drawn up and issued they are entered onto the mainframe via the coding slip system as described above for recording rather than processing purposes.

The result of this gradualist approach to computerisation is that clerks have varying degrees of access to data on the mainframe which in turn affects not only the division of labour but the content of specific job categories as well. Decentralised direct access to the mainframe via on-line terminals for data capturing is likely to result in the obsolescence of the punch- and keyboard operators as a distinct job category in the near future. The content of specific job categories has been affected in that the task of encoding data slips done by the clerk administering the policy has been eliminated as a result of direct access via terminals. Enquiries carried out via on-line terminals eliminates the need for clerks to leave their desks to locate data. The implications of this will be discussed in greater detail in chapter 4.

The advances in computer technology outlined thus far reflect the use of microelectronics - the increasing scale of integration of electronic circuits, and concomitant reduction in size and cost of hardware - embodied in third generation computers. These developments should not, however, be confused with the emergence of the microprocessor, and fourth generation computers.

The microprocessor is an integrated circuit which has the properties, and fulfils the role, of a complete central processing unit of a computer ... the circuit does not just react in a fixed pre-programmed way to an input signal to produce an output signal ... its response, its logic, can be altered. In other words, the microprocessor can be programmed in different ways rather than react in one pre-programmed way only.(20)
The applications of microprocessor technology in the divisions researched in Alpha Life have taken the form of word processors, personal- and mini computers. Most departments in the three divisions researched have either stand-alone word processors or word processors linked to a minicomputer. The remaining departments that do not write large numbers of letters do these on electronic (an electric typewriter with a microchip providing a small amount of memory for correction capability) or electric typewriters.

Word processors are used to produce letters that are not stored on the mainframe. Stored letters have standard paragraphs to which other lines and/or paragraphs are added as and when they are needed via the 'manual glossary' method; word processor operators key in the instruction codes as well as type in additional lines or paragraphs. One division produces four thousand letters per month in this way and forty thousand per month on the mainframe. Letters produced on the mainframe require only the keying in of codes instructing the computer in the selection of files to be merged to create the document. This is known as the 'automatic glossary' method.

Memos are sent electronically by these three divisions to branches via terminals or word processors which operate like telex machines. As regards personal computers (PCs) two of the divisions researched make extensive use of these. They tend to be operated by divisional managers and/or their secretaries.

In the fourth division, the Text Processing Centre, only cheques are typed on electric typewriters. All other typing and phototypesetting has been automated. In addition electronic mail
is increasingly becoming the norm within head office and from head office to regions. This is based on head office dictaphones being linked to the Text Processing Department's central processing unit and word processors, thus forming a continuous circuit linking the latter, head office and PCs among regional managers and secretaries. This system forms the basis for the office's transformation into the information technology mode. The French term 'Teletronic' is more explicit since the interlinking of computers, word processors and telecommunications makes paperless communication at the speed of light possible.

According to a systems analyst and the head of the Text Processing Department, the company is working towards the 'paperless office' but whether it is achievable in the short term is still at issue. Two factors seem to be obstructing development in this direction: cost-benefit calculations - certain kinds of work are not economic in automation even if the requisite technology should become available at a lower price; and the legal aspect - original documentation with the policy-holder's and insurers signatures are required as proof that a contract has been entered into. In addition, the original proposal is used as a reference point for accurate data capture.

A considerable amount of data is still stored 'manually' in paper files. These are mostly original policy files which may not be stored only electronically, given the legal requirement that insurance and assurance companies keep copies of the original application form and the policy issued as evidence of contract. Most other data, however, is either stored on microfiche or on computer output microfilm. Examples of data stored in these ways are policy-holders' registration with the Life Offices Association and membership of medical aid schemes offered by the
two companies. Computer output microfilm storage is gaining popularity over microfiche in the two companies as it makes possible the storage of larger volumes of data in a greatly reduced area. Prior to the use of these newer methods there were two main stages of storage and filing: all data was manually written up on Acme cards and filed in banks of drawers. This method of filing was used until the late 1940s. It was superceded by mechanically printed cards filed manually on mechanically rotated drums which continued well into the 1950s until replaced by microfiche storage.

4.4 The Nature and Extent of Computerisation in Beta Life.
As a result of adopting a gradualist approach to computerisation, manual and computerised operations coexist in Beta Life as well as the three categories of access to the mainframe identified in Alpha Life. However, in the case of Beta Life one of the divisions researched is not as technologically advanced as Alpha Life. All of the departments in this division have on-line terminals for doing enquiries only without data capturing. The latter is done by means of filling out computer coding slips which are sent to a centralised punching pool to be put on the mainframe. Its counterpart in Alpha Life has real-time on-line terminals for both data capturing and retrievals for enquiries. The other divisions have a combination of on-line terminals for data capturing as well as enquiries, and on-line terminals only for enquiries. The reason for dual modes of access within a division is the differential application of electronic communications. Only some files are accessed via decentralised on-line terminals whilst entry to other files is only possible via terminals in the centralised data capture centre. As a result clerks in these departments encode data on paper slips to
obtain the information from those specific files.

Correspondence in Beta Life can also be divided into three categories: standardised letters produced on the mainframe with automatic merging; standardised letters produced on word processors where the merging is done 'manually' within the department; and non-standardised letters typed on electric typewriters within the department. In terms of this categorisation only one of the divisions researched in Beta Life produces letters on the mainframe, with only one division using word processors in the internal text processing department. The other two divisions type letters on electronic or electric typewriters. Storage and filing of data in the company operate similarly to Alpha Life with small variations.

5. IMPACT OF COMPUTERISATION ON ORGANISATIONAL STRUCTURE

Prior to computerisation increases in business and therefore workloads called for departmental restructuring. This took the form of differentiation with individual departments specialising in specific aspects. An example is New Business Division in one company. Prior to 1945 New Business was a single department which split in two in the same year. Within two years a further split resulted in three departments forming New Business, and by 1970 there were five departments. With computerisation of New Business Division in the early seventies, the five departments were consolidated into four, and shortly afterwards, a fifth department was established specialising in processing new policies ‘captured’ only by brokers. Similar trends were evident in the second company.

Exceptions to departmental structuring on a functional basis were the Policy Holders' Services in Alpha Life and its counterpart,
Client Services Department in Beta Life and the Medical Aid Division in the same company. Departments in Policy Holders' Services and Client Services' Division were initially functionally based. In the mid-seventies departments were restructured on a geographical basis with the result that a number of functions were performed in a single department serving a particular geographical area in South Africa. While the reorganisation did not have a significant impact on the division of labour, it did result in clerks being trained in a variety of functions instead of specialising in only one function for the greater part of their working lives. This will be discussed in greater detail in Chapter 4.

Prior to 1983 departments within Medical Aid Division were not functionally divided, but were constituted according to the various medical schemes offered by the company. The result was a markedly different division of labour from that currently existing since the reorganisation of departments on a functional basis. Whereas medical aid clerks dealt with all aspects of a particular medical scheme prior to 1983, clerks now deal with only one aspect of all schemes, hence job categories are now functionally constituted. The extent to which functional specialisation is extended differs from department to department, as it is left largely to the discretion of the departmental head.

In addition to the restructuring of existing departments new departments such as Training and Data Processing were created as a result of computerisation. Prior to automation training was done on-the-job by more experienced clerks. With the advent of computerisation larger volumes of clerical work were generated,
policies became more sophisticated and created more complex clerical work. In addition greater emphasis was placed on productivity and improved quality of clerical output. These developments required a more systematic and formalised approach to training. Hence the establishment of departments specialising in the training of new clerks.

In both companies Electronic Data Processing Divisions were established as a result of computerisation. As the companies' computerisation programmes expanded the division split up into departments specialising in the various aspects of data processing. One of these departments was Systems Analysis and Programming. In Alpha Life this department was initially centralised. It became decentralised in the early 1970s with the result that most divisions within the company had their own core of systems analysts and programmers. Decentralisation was aimed at facilitating improved communication between the systems analysts, programmers and departmental staff to ensure that the departments' programming needs were met as efficiently as possible. An important result of decentralising systems analysis and programming was that experienced clerks within the division were recruited and trained for programming.

In Beta Life programming and systems analysis are centralised in the Systems Planning Division. Within this division, various departments specialise in the programming and systems requirements of specific divisions within the company as a whole. Thus for example, one department within the Systems Planning Division maintains and enhances all the systems and programmes that administer a policy from the time it is sold until some time after the benefits have been paid to the policy-holder.(21)
The centralisation of systems analysis and programming tends, unlike Alpha Life, to result in the recruitment of personnel from outside the division for whom the systems analysis and programming is being done. Thus the more experienced clerks tend not to have the same upward mobility as in Alpha Life.

In the precomputerisation era work in the division researched was centralised at head offices of both companies. As a result of computerisation both companies were able to and did begin decentralising work to the branches. Prior to decentralisation the branches operated primarily as "despatch points" with the result that a limited amount of information processing was done at the branches, and consequently, reliance on clerical employees was minimal. One company initiated decentralisation earlier than the other with the result that more clerical functions in the former are currently decentralised. The difference in degree of decentralisation is a difference in pace rather than non-commitment to the concept. Increasing decentralisation produces a concomitant rise in the number of clerical job categories located at the branches. While this development is beneficial for married women in creating employment opportunities closer to home, the scope of job creation is constrained by increasing automation and the displacement of job categories. This will be discussed in greater detail in Chapter 5. However, as the thesis focuses on the impact of computerisation at the head offices of the two companies, the effects of decentralisation of clerical functions on branches will not be assessed.

The effect of decentralisation on the head offices is that the volume of work done there has been reduced, although in the early stages of decentralisation it tended to generate more work. This was due primarily to checking and correcting for errors made by
clerks at the branches because of inexperiencce and the absence of sufficiently skilled clerks to train new-comers on the job.

In Alpha Life the Text Processing Division had a different departmental structure from that of the centralised typing centre prior to automation of text processing. An additional department was created as a result of computerisation to house the programme writers for text processing. The typesetting section was considerably expanded as electronic phototypesetting made large-scale in-house typesetting possible. Prior to computerisation of text processing most typesetting was contracted out to specialist firms.

Text processing in Beta Life is organised differently. Text processing work stations are decentralised as in the pre-computerisation era, unlike Alpha Life where they are centralised in one division. The word processors in twenty-two departments are linked to a Centralised Processing Unit. The number of work stations in any one area range from one to ten. Client Services' Division has ten word processors, the largest number of work stations concentrated in one area. Whether text processing work stations are decentralised or centralised has a significant impact on the job content of word processor operators. This will be discussed in chapter 4.

6. AREAS OF WORK IN THE LIFE ASSURANCE INDUSTRY.

Work in the life assurance industry can be divided into two primary areas: first, attracting new business, issuing new policies and administering existing policies, pension and provident funds; and, second, researching the capital market for investment potential and then investing income. Both categories of work make the life assurance industry a paper-intensive one.
The major portion of clerical work in life assurance is located in the first category.

6.1. Clerical Work Qualifications Compared to Other Types of Work in Both Companies

The pre-entry qualifications for most clerical work in both companies requires no more than a general matric. 'Specialist' matric subjects and post-matric qualifications are called for in only a few job categories: text processing divisions require a minimum of matric typing; in the case of secretaries post-matric subjects such as typing and shorthand; and in quotations and conversions matric mathematics. Whereas most other divisions require university graduates, for example, Actuarial, Investments and Personnel, or as in the case of representatives, extensive in-house training, only the Postal Division requires qualifications lower than those for clerical work. In contrast with other divisions in both companies, the training time for most clerical job categories is short: three months to a year, as opposed to five to seven years for Actuaries and one to two years for representatives.

6.2. A Description of Clerical Work in the Divisions Researched in Both Companies

All but one of the divisions researched in both life assurance companies fall into one of the two main categories of work in life assurance identified in section 6, namely, attracting new business, issuing new policies and administering existing policies, pension and provident funds. These are the New Business, Policy Holders' Services or Client Services' and Text Processing Divisions. The Medical Aid Divisions in both companies are actually subsidiaries, but the staff are employed by the parent companies. The latter also hire out hardware to medical
aid subsidiaries who have access to the parent companies' mainframe. For brevity's sake, the Medical Aid Companies will be treated as divisions within the parent company.

All of the staff employed in the four divisions in Alpha Life and the three divisions in Beta Life are in clerical grades except cleaners, messengers, programmers and staff located in the managerial hierarchy.

6.2.1 Work in the New Business Division.
The function of the New Business Division is processing and issuing new policies. In both companies new business clerks work from the policy-holders' original application form and various computer print-outs. Some clerks are 'users' and others are terminal operators. 'User' clerks do not operate terminals themselves to obtain information, but fill out request slips which are given to terminal operators. A different category of clerk is responsible for specific tasks. The original application form is checked against those on the summary sheet (23) produced on the mainframe to ensure correspondence. A separate task consists of checking the original application form to ensure it has been correctly completed, and that the policy-holder is entitled to the policy s/he is applying for and has supplied sufficient information. If not the same clerk corresponds with the applicant for the additional information. Another clerk will establish whether the applicant has other policies with the company and whether the applicant is registered on the Life Offices' Association record as having policies with other companies or has been refused policies by other companies and the grounds for refusal. Also job specific is that the policy has to be assessed and underwritten. If a medical report is required this has to be arranged and paid for by the company -
the responsibility of a separate clerk. Again, if necessary the premium calculated by the agent is readjusted by the underwriter. On completion of all these stages the application and computer print-outs are given a final check by yet another clerk before the policy issue command is given. If problems are identified, the clerk has to correct them and recheck. Once the policy has been printed on the computer or typed, it is collated by one group of clerks, checked once again against the original application form by another group. If everything is in order it is signed by a senior clerk authorised to do so, stamped by a different clerk and sent to the postal division. If not the necessary corrections are made, checked and then the final procedure outlined above is followed.

6.2.2. Work in the Policy-Holders' or Client Services Division. Clerks in Policy Holders' Services or Client Services' Division administer existing policies, those policies already issued by the New Business Division. Administration of policies can be divided into two main categories: one, responding to postal- and telephonic client enquiries as well as requests for changing the status of policies; and two, procedural processing of all aspects of policies defined by company regulations such as amending premium rates, bonus calculations, etc.

Policy Holders' Services/Client Services' Division clerks work primarily with memos sent from the branches specifying the nature of the enquiry or request for change, and computer print-outs. The latter are obtained either directly by the clerk via the terminal or indirectly where the clerk has to fill out a request data coding slip and receives the print-out, usually the following day. Where terminals are available in departments, all
clerks use them with the result that no distinction between 'user' and terminal operator exists in these departments. However, the distinction between 'user' and word processor operator exists in all departments.

There are "approximately" thirty-one functions involved in the administration of a variety of policies. Performing any one of these functions involves a number of tasks which varies according to the type of policy. Administration of most policies requires a relatively standard combination of tasks which renders the work repetitive. Where the policy-holder does not meet all the conditions normally specified policy administration is less monotonous, due to task variety. A small percentage of policies are more difficult to process due either to complexity arising from numerous exception clauses, or they require manual processing for some reason. Numerous exception clauses make it difficult to provide highly specified procedural guidelines in the work manual. Clerks therefore need to use more discretion when working with these policies. In both companies, only a small percentage of policies (5 to 10%) have not been automated. In addition, Alpha Life has automated more functions than Beta Life in the divisions researched. For example, certain types of claims have been automated in Alpha Life while all claims are processed manually in Beta Life. Clerks processing non-automated policies often need to be enterprising and resourceful in locating the necessary data which may be scattered departmentally.

6.2.3 Text Processing

Text processing is centralised in the Text Processing Division in Alpha Life. Word processor operators in this division do the overflow work which departmental typists/word processor operators
and secretaries cannot manage. In addition this division handles the production of large volumes of standardised letters, formatting of certain types of documentation, such as company reports, statistical reports, etc. The former task is done by junior and the latter by senior word processor operators. Phototypesetting work is also incorporated. Phototypesetters design a wide range of company documentation, for example, policy formats, booklets and pamphlets, etc. which the company publishes.

As text processing is decentralised in Beta Life, each division has its own word processor operators/typists processing text or typing for their respective divisions. Thus their job content differs considerably from that of word processor operators in the Text Processing Division at Alpha Life. This will be discussed in greater detail in chapter 4.

6.2.4 The Medical Aid Division

In both companies this division deals with all aspects of medical aid: the registration of new members, renewals, assessing and paying out of claims, and written or telephonic enquiries from clients. In the case of registration and renewals, clerks work with the original application form and computer print-outs, and the distinction between 'user' and terminal operator applies in both companies. Claims clerks deal with medical accounts. In the case of Alpha Life these clerks are also terminal operators but in Beta Life are 'users'. The difference is due to the stage of computerisation which has been discussed in section 4.4 of this chapter. Enquiries clerks in both companies operate terminals and work either from computer print-outs or directly
from a visual display unit (VDU) in responding to client enquiries.
FOOTNOTES:

2 - Natrass, 1981, p.248
3 - Kantor, 1975, p.1
4 - ibid, p.2
5 - Capital investment per clerical worker was only $2,300 in 1978 as compared with $31,000 per factory worker. Report to the Club of Rome, 1982, p.83
6 - Interviews with management.
7 - Polakoff, 1970, p.15
8 - Natrass, 1981, pp.248 - 249
9 - Goodall, 1971, p.127
10 - Marais, 1981, p.9
11 - Fox's concept to denote people who exercise a high degree of discretion in their work. (Fox, 1974, p.24.)
12 - people who exercise a low degree of discretion in their work. (ibid, p.24)
13 - Braverman, 1974, p.327
14 - Jones, 1982, p.104
16 - ibid, p.150
17 - ibid, p.150
18 - Amicus Certus, Nov. 1968, p.10
19 - Amicus Certus, March 1975, p.1
20 - Forester, 1980, p.78
21 - Amicus Certus, April 1979, p.9
22 - a computer print-out containing all the personal details of the applicant duplicated from the original application form, as well as the classification codes produced by the computer which guide the clerks processing the application.
CHAPTER 3: COMPUTERISATION AND MANAGERIAL CONTROL OVER CLERKS' LABOUR POWER.

Introduction

A commonly held conception of 'control', implicit in some of the authors and explicit in others reviewed in chapter 1, is that of the capability of capitalists and/or managers to obtain the desired work behaviour from workers. However, the authors, differ to some extent on how management achieves control over the work force. In order to contextualise the writer's own research findings the first part of this chapter focusses on the validity of these authors' explanations of control as discussed in Chapter 1. Only those authors who elaborate theoretical explanations of control will be dealt with. These are Braverman, Barker, Downing and Armstrong.

Two main arguments are developed in this Chapter. Firstly, control over clerks' labour power may not be the primary concern of management given that clerks are 'non-productive' workers. Managerial control to increase efficiency and effect savings in administration costs is not the same as control aimed at extracting maximum relative surplus value. Secondly, it can be argued that the issue of control is more complex than that portrayed by Braverman, Barker, Downing and Armstrong. Prior to computerisation the only methods of control employed by management in Alpha and Beta Life were technical control in the form of job design and bureaucratic control in the form of job description. In the post-computerisation era the range of managerial control strategies expanded as this period was characterised by increases in volume of work as well as the number of clerks employed. This thesis argues that it is not valid to generalise from particular instances that technical control and deskilling are the main forms of control over clerks'
labour power. Research at Alpha and Beta Life companies suggests that bureaucratic forms of control are equally if not more important than technical control and deskilling.

1. A CRITIQUE OF BRAVERMAN, BARKER, DOWNING AND ARMSTRONG'S CONCEPTION OF CONTROL.

None of the above authors view control as a dependent variable. As they appear to consider the imperative of control to be more fundamental than that of capital accumulation, the authors elevate control above the problem of capital accumulation in the scale of capitalist managerial priorities. In doing so they confuse cause with effect. As Lever drawing on Elger notes,

> If maximum long-term profits are the priority of the capitalist enterprise, then control becomes a variable dependent on the particular stage of the accumulation process. (1)

Wright also argues that control should be viewed as a dependent variable as the importance of control over the labour power of workers tends to diminish under Monopoly Capitalism because the extraction of surplus value can occur via other mechanisms, such as monopoly pricing and taxation. (2) Furthermore, the production of relative surplus value may not be equally important in all sectors or firms. In some cases the realisation rather than the production of surplus value may be more important. (3)

In addition there are sectors and industries where surplus value is not produced, such as the finance sector and the life assurance industry. The function of the finance sector is to finance the production of goods and services and facilitate their exchange. (see chapter 2) The primary concern is therefore controlling the circulation of money which entails the redistribution and augmentation of surplus value created elsewhere in the economy.
Life assurance companies can be characterised as savings institutions in that the companies invest the savings of clients, collected in the form of life assurance policy premiums, pensions, provident funds, and medical aid schemes, in property and shares. (see chapter 2) Because they operate as savings institutions and investors, the companies play an important part in the circulation of money and the redistribution of surplus value created elsewhere in an economy. Given this role surplus value is neither produced nor realised by life assurance companies. Clerks do not perform productive labour in the life assurance industry as they do not produce commodities and hence neither commodity value nor surplus value for capital. Clerical labour is exchanged against revenue not capital. (4) Profits and the fight to retain or increase market share are the main concerns of the companies.

Profits are obtained from the difference between the cost of attracting savings (advertising, maintaining offices, salaries, etc.) and the revenue gained from investing the savings. Surplus labour has not been exchanged against capital. In addition the development of increasingly sophisticated policies and greater efficiency in issuing and administering them have become an important part of the struggle for market share.

As the life assurance industry neither produces nor realises surplus value and is concerned primarily with profit and the battle for market share, management's main priority may not be to increase control over the labour power of clerks. According to a senior manager the two primary concerns of life assurance companies are to locate lucrative avenues for investing funds and developing ever increasingly sophisticated policies in the
struggle for market share. In terms of the companies' priorities control over clerks' labour power is secondary in importance. The main aim of controlling clerks' labour power is to increase efficiency in issuing and administering life assurance policies and other services offered to ensure satisfactory service to clients and minimise administrative costs. It does not appear valid to establish a direct causal link between capital accumulation in the monopoly phase of capitalism and the imperative of control for maximising the extraction of surplus value as Armstrong does. This error follows from the author failing to distinguish between productive and non-productive sectors and associated workers.

In accepting the transition from formal to real subordination of labour as necessary for continued capital accumulation Barker and Downing accept the notion implicit in this argument, that the appropriation of surplus value occurs in the labour process via the real subordination of workers. In doing so the authors make the same error as Armstrong in assuming that surplus value is produced in non-productive sectors.

While Braverman does distinguish between productive and non-productive workers he makes the same errors as Armstrong, Barker and Downing in using the formal/real distinction in the subordination of labour.

The authors' exclusive focus on the labour process appears to be an additional factor contributing to their oversimplification of the control issue within the Capitalist Mode of Production. Their failure to assess the role of market factors obscures the fact
that capitalist imperatives are formed under the influence of the complex interaction between workplace and extra-workplace dynamics.

Thus in a market where 26% of registered life assurance companies account for 83% of premium income social relations in the workplace is strongly influenced by oligopolistic factors. Management may choose not to tighten its control over the labour process in competitive situations. Instead it may focus equally on means of gaining worker co-operation. This focus, however, may pose management with the problem that achieving higher levels of worker co-operation may require all or any of the following: greater job autonomy, creating semi-skilled rather than 'detailed' workers, the substitution of control over how the work is done with other forms of control, for example, the establishment of an internal labour market.

Braverman, Barker, Downing and Armstrong base their explanation of control on the notion of an incomplete exchange of wages for labour occurring between capital and labour, and that workers efforts will not be sufficiently productive without management controlling their labour. The assumption underlying this argument, which is common to all the authors, is that a fundamental conflict of interests exists between capital and labour such that workers are "universally recalcitrant to capitalist authority." This view of the relationship between capitalists and workers ignores the other spheres in society, such as the school, family and other non-work institutions, which socialise workers into accepting capitalist authority and property rights. People come to work prepared to contribute effort in terms of customary standards and even beyond the bounds of organisational
rules and work specifications (7)

By assuming a fundamental antagonism between capitalists and workers, none of the authors consider that there are categories of workers who do not view the workplace as an arena of class conflict: a contested terrain. (8) The literature on clerical work and the writers' own research findings (to be discussed later in the chapter) indicate that clerical workers are largely acquiescent to management's control over the labour process.

Where, in particular cases, workers do criticise decisions made by managers and struggle to increase wages/salaries, these actions are not necessarily rooted in a fundamental challenge to the right of management to manage or capitalist's ownership of the means of production. As Littler and Salaman point out the acceptance by workers of the managerial function

is a first crucial step in the establishment of control over the workforce. They have accepted the normality of their subordination. Resistance, when and if it occurs will be largely about details. The important aspects - the hierarchical nature of the enterprise, the location of decisions, capital investment, etc, have effectively been removed from the agenda. (9)

While the view that capitalist/managerial control is necessitated by the incomplete exchange of wages for labour is widely acknowledged in labour process studies, the element of employer dependency on the capital/labour relationship in the workplace is not present in Braverman, Barker, Downing or Armstrong's work. It is the incomplete nature of the exchange of wages for labour that makes employers dependent

...on the motivation, attitudes, work orientation, of the employee. For without some (highly variable) degree of acquiescence ... the employer finds the employee's potential is not being realised in the intensities and forms which he - the employer - desires. (10)

The four authors fail to see the relationship between capital and
labour as being dual in nature. Just as capitalists need to motivate workers to harness their creative and productive powers in order to transform the forces of production, so too do workers have an interest in ensuring the continuance of the capital/labour relationship and the economic viability of their employers. As Cressey and MacInnes point out, this dual nature of the employment relationship implies contradictory strategies for both employers and employees. (11)

Arising out of this Braverman and Barker and Downing do not take into consideration the means by which management need to secure some degree of clerical co-operation and that this may influence the control strategies employed. While Armstrong does refer to management eliciting clerical co-operation by means of bureaucratic control in the form of benefits, she does not relate this form of control to the dual nature of the capital/labour relationship. Furthermore, all the authors fail to take into account that managerial control strategies will vary according to the nature of work and position in the occupational hierarchy. (12) As a result the authors generalise the control strategies they identify to all firms in the clerical sector, and in the case of Braverman, to all commerce and industry. Because the method of control will depend on the nature of work and position in the occupational hierarchy it is likely that the way in which management achieves control will also vary from firm to firm and industry to industry.

The above considerations highlight the inadequacy of Bravermans' thesis that deskilling is the only managerial strategy whereby control over labour process is achieved (13). While Barker and Downing argue that capital/management employs an additional form of control in the case of female employees, patriarchal control,
they see this as being superseded by technical control in the form of microelectronics, culminating in deskilling. Like Braverman they conclude that the real subordination of workers is achieved with the application of the new technology. Although Barker and Downing concede that the extent of deskilling accompanying the increasing automation of clerical work will depend on the extent and nature of trade union and working class responses to computerisation, they do not incorporate into their analysis the possibility of management employing forms of control other than deskilling or that, in their attempt to gain worker co-operation, management may need to explore methods of control which may stem or reverse, to an extent, the deskilling process.

Armstrong differs from Braverman, Barker and Downing in that she argues that management at Long Life have employed a combination of deskilling and bureaucratic control strategies aimed at increasing their control over clerical labour power. What she does not entertain, however, is that management may increasingly have to rely on a variety of control strategies to elicit worker co-operation under certain circumstances, such as the struggle for market share. Due to this omission, Armstrong sees deskilling as inevitable and incorrectly generalises deskilling accompanying automation to all firms in the clerical sector.

A further problem with Braverman's view that deskilling resulting from computerisation enables management to achieve real subordination of workers, is that it does not allow for the possibility of worker resistance. However Barker and Downing do acknowledge that the extent of deskilling will depend on the responses of trade unions, in spite of their argument that microelectronics mediates the real subordination of clerks.
Although Armstrong appears to recognise that management needs to gain some degree of co-operation from clerks and that elements of bureaucratic control are introduced for this purpose, she does not address the issue of why there is no apparent clerical resistance to managerial attempts to control the labour process, nor does she relate it to the absence of forms of clerical worker organisation. Her only reference to this issue is that due to patriarchal relations prevalent at Long Life problems at work are regarded by women workers as personal and individual problems, as opposed to being structural, and therefore these problems must be solved on a personal basis. There is very little identification between women as workers. (14)

Further on in her thesis Armstrong does argue that because race is an important factor politically and ideologically these women cannot be described as part of the working class in this country and it is unlikely that they will be won for the working class in terms of class struggle in South Africa. (15)

But once again the author does not examine how other forms of control may inhibit or undermine clerical worker representation or resistance.

In the light of the inadequacies inherent in Braverman, Barker, Downing and Armstrong's theorisation of control, the remainder of this chapter will be devoted to a discussion of Littler and Salaman (16) and Edwards' (17) classification of forms of managerial control. This will be used to contextualise the writers' own research findings on various methods of control employed in Alpha and Beta Life and the reasons for the various forms of control and their effects on clerks.

2. LITTLER, SALAMAN AND EDWARDS' CONCEPTUALISATION OF CONTROL
To conceptualise the variations in methods of control Littler has distinguished three elements of employer strategies: job design,
the structure of control and the nature of the employment relationship. The first refers to the extent of the division of labour, the second to the manner and intensity with which the work is controlled, and the third to the extent of employee dependence on the employment relationship. (18)

Edwards' classification of elements of control can be usefully applied within Little's framework of conceptualising employer strategies as they introduce a further subtlety to understanding methods of control. The three means of control Edwards identifies are the direction of work tasks, the evaluation or assessment of workers' performance, and discipline. The first element refers to specifying what needs to be done, the second to monitoring the pace and quality of work, and the third the means by which management disciplines or rewards workers in order to elicit co-operation and force compliance with management's direction of the labour process. (19) He introduces a further elaboration into his classification, the distinction between simple and structural forms of control reflecting the expansion of firms and scale of production. Simple control refers to informal and unstructured forms of control such as "the personal power and authority of the capitalist". (20) Structural control refers to a more formal and systematic approach to control than under simple control. Because of the expansion of firms it became necessary to replace the personal control of the capitalist with bureaucratic control, that is, hierarchical control which was embedded in the social structure of the labour process.

The inability of capitalists and upper echelon managers to oversee all production operations meant that new mechanism for co-ordination (written reports, official lines of communication, and so on) were required to replace the informal and irregular co-ordination that had been conducted personally by the entrepreneur. (21)
Technical control, the second aspect of structural control, refers to control embedded in the physical structure of the labour process - the job design. (22) The two forms of structural control are not necessarily mutually exclusive according to Edwards.

In time, employers used both, for they found that the new systems made control more institutional and hence less visible to workers...(23)

Two of the three methods of control identified by Edwards, (direction of work and evaluation) can occur in the form of either bureaucratic or technical control. The third method, discipline, occurs only in the form of bureaucratic control. Direction of work and evaluation can be applied within the employer strategy for control identified by Littler, as the structure of control, and discipline/reward within the employer strategy of increasing employee dependency. The writer's research reveals that all three management strategies identified by Littler and the three methods in Edwards' classification are present in control exercised over the clerical workforce.

3. METHODS OF CONTROL EMPLOYED IN ALPHA AND BETA LIFE COMPANIES.

3.1 Bureaucratic Control

It will be shown that in both Alpha and Beta Life management rely to a greater degree on bureaucratic rather than technical forms of control. Edwards has identified four elements of bureaucratic control: stratification of workers, job description, job evaluation systems, eliciting co-operation and enforcing compliance from workers. All four elements are employed in both life assurance companies.

Three of these elements can be applied to management strategies identified by Littler: job design, structure of control and the
employment relationship which will be discussed in sections 3.2, 3.3 and 3.4 respectively. As the stratification of workers applies to none of the management strategies discussed by Littler, it will be dealt with now in a separate section which follows.

3.1.1 Stratification of Workers

These divisions run both hierarchically, creating higher and lower positions, and laterally. They tend to break up the homogeneity of the firm's workforce, creating many seemingly separate strata, lines of work, and focuses for job identity. (24)

Employees are stratified hierarchically and laterally in both Alpha and Beta Life by means of a grading system and organisational structure. Each job is graded according to a job description and ranked in terms of a number of criteria, the most important being the degree of responsibility exercised in the job. The result of this system is the creation of a definite hierarchy: General manager, assistant general manager, divisional manager, assistant divisional manager, departmental head, section head, senior clerk, clerk and operator.

Lateral divisions are further refinements within the organisational structure. Both companies comprise various divisions which are subdivided into departments and sections.

3.2 Job Design

In the early years of computerisation and just prior thereto technical control in the form of job design was one of two managerial strategies to increase clerical productivity. The other was job description which will be discussed in the next section of this chapter.

During the pre-computerisation era when clerical work was labour-intensive the tendency in job design was towards a detailed
division of labour. However, a shift toward reducing job fragmentation is beginning to emerge in both companies. Some job categories which formerly required very little discretion and had little or no task range are being restructured to include a small increase in task range as well as requiring a greater degree of discretion by collapsing two or more previously distinct job categories into one. This will be illustrated in chapter 4.

There appear to be three main reasons for this development: first, the nature of the market in which the companies operate, second, the kind of managerial strategy and third, the replacement of batch processing by transaction processing. As regards the first, operating in a market dominated by a few large companies can influence the division of labour. Continual competition among capitals in such a market tends to pressurise companies towards innovation in market product. In the life assurance industry such imperatives have resulted in the dominant companies marketing novel flexible policies which are more difficult to process and administer. At Alpha Life, for example, in two of the divisions researched the more complex policies have resulted in the creation of specialist job categories where a small group of clerks each process all aspects and stages of the most recent policy marketed. It remains to be seen whether attempts will be made to fragment this work by means of computerisation.

Job design is also affected by managerial strategy. Prior to the seventies managerial practice at Alpha Life was autocratic with the result that little or no attention was given to the quality of worklife for clerks or management. Senior managerial strategy concentrated almost exclusively on job design as a means of
increasing clerical productivity. In a labour-intensive work environment such exclusivity of focus resulted in a move towards a detailed division of labour irrespective of its effects on the clerical workforce.

A gradual shift in managerial practice began in the late sixties due to a number of factors, the most important of which were a change in management personnel, increasing contact with overseas life assurance firms, and the emergence of the 'humanisation of work' movement in the seventies. As a result of these developments the means by which productivity was to be increased was weighed against its effects on the clerical workforce. The quality of working life came to be seen by Alpha Life management as an important variable affecting productivity, the assumption being 'a happy clerk is more productive'. Hence the shift to a conscious strategy of job enrichment. Thus instead of using microelectronics to further divide the work as some companies have done, the new technology is being applied to reduce job fragmentation and upskill work by increasing not only the task range, but the degree of discretion as well as will be illustrated in chapter 4.

Finally the introduction of transaction processing has further facilitated the move away from fragmentation to specialisation. Prior to the adoption of transaction processing management had a limited choice of job design that would increase productivity. In the absence of computerisation clerical work was labour intensive and a detailed division of labour was the most efficient method by which management could increase productivity. Because batch processing, which accompanied early computerisation (see chapter 2), was similar to early methods of working in the pre-computer era, a detailed division of labour continued to be
the dominant form of job design. The arrival of transaction processing provided management with a decisive choice in job design - either to further promote the division of labour or decrease job fragmentation - without sacrificing increased clerical productivity. (see chapter 2)

The head of the Work Study Department and several senior managers in Alpha Life, as well as Senior Management in the Computer and Systems Division in Beta Life, see their companies moving more rapidly in the direction of a specialised rather than a detailed division of labour as the price of the new technology decreases. Such specialisation will be achieved via the "one-stop approach", according to the managers in Alpha Life, where ONE clerk will deal with ALL aspects of issuing a new policy as all the necessary information on several different programmes will be directed to one workstation. At present the process of issuing most policies passes through five to six different job categories. Beta Life management envisaged a similar development, though not necessarily resulting in one clerk dealing with all aspects of a policy. A more likely development would be clerks dealing with a wider range of tasks than is currently the case. It remains to be seen, however, whether the increase in task range will be accompanied by a decrease or increase in the degree of discretion required in the new "specialised" job categories.

3.3. The Structure of Control

The Structure of Control refers to the manner and intensity with which management controls work. (25) In Alpha and Beta Life management control the manner and intensity of tasks by directing and evaluating clerical work. The direction of work was achieved
initially by means of bureaucratic control. Job descriptions were compiled from individual job analyses which were later systematised in job manuals. Senior clerks, in collaboration with section or departmental heads, compiled job analyses for all job categories specifying how the work was to be done. Job descriptions were also compiled for employees in each strata of the hierarchy by employees higher up the hierarchy.

More recently, under the impact of computerisation, a shift from bureaucratic to technical control is emerging in the direction of clerical work and in some job categories in higher grades. As the subject of the thesis concerns only clerical workers, the transition from bureaucratic to technical control in the non-clerical job categories will not be discussed.

3.3.1 Direction of Work
Prior to computerisation job method was not systematized in job manuals as is the current practice in both companies. A senior clerk in collaboration with the section head would do an analysis of a particular job, asking the questions 'what', 'when' and 'how?', then write up the job method which would be used for on-the-job training of new clerks. On-the-job training proved to be insufficient, however, with the advent of computerisation. The increasing emphasis on productivity and improved quality of clerical output coincident with computerisation called for new clerks attaining job proficiency more rapidly. In the computer era this included not only high levels but greatly improved quality of output as well. This reconceptualisation of job proficiency combined with the generation of larger volumes of work and increased complexity of clerical work led management to reassess on-the-job training. It emerged that a more systematic and formalised method of training was necessary, and in order to
meet the new demands made by management of clerks in terms of quality and quantity, training departments were established within divisions. Under the new system a combination of on-the-job and off-the-job training was introduced. The latter was the responsibility of the training department in each division. Here, new clerks were introduced to the general principles underlying life assurance theory and practice, as well as actual tasks in the department/division to which they had been allocated. After two to four weeks of full-time training new clerks started the second phase which was on-the-job learning.

The new approach called for replacement of piecemeal methods in a single, unified format such as the job manual, which was compiled by company training officers.

Job manuals have been compiled for most job categories in each of the divisions researched at both companies. Only a small percentage of job categories do not have work manuals, for example, postal clerks and stamp- and binding machine operators. In these cases task range is non-existent and tasks are very simple, requiring no discretion. Task method is demonstrated by an experienced person and learnt within a day.

Job manuals are used in job categories which have task range and require some degree of discretion. The extent to which they specify work method differs between job categories. Some job categories require considerable discretion, such as underwriting. In these cases, numerous variables need to be taken into account by the clerk in processing each policy, and since the company markets a great variety of policies, it has not always been possible to provide detailed rules on job method. Where task range is narrower and fewer variables operate highly specific
rules can be drawn up more easily, thereby reducing the amount of discretion exercised by the clerk.

Thus the degree of discretion permitted clerks is determined by the specificity of the rules laid down in the job manuals. Levels of discretion in the four divisions researched range from a very narrow degree, as the rules are simple and so specific that interpretation is seldom called for, to considerable latitude in discretion as only broad guidelines are given. In addition to job manuals, printed forms are used by clerks in some job categories. The data to be collected and recorded is indicated on the form with the result that the clerk does not have to decide which data needs to be collected to complete the processing of some aspect of a particular policy. The use of these forms in conjunction with job manuals strongly direct the clerk in processing method as well as what data is to be processed. Learning by experience what is relevant and what not becomes unnecessary.

In one of the divisions researched at Alpha Life job manuals are in the process of being computerised reflecting the beginning of a shift from bureaucratic to technical control in the direction of work. The effect of this will be the same as using printed forms combined with printed work manuals. The paper printed forms are, however, replaced by screened formats on a VDU. Should the clerk enter data incorrectly on the screen format the computer will indicate an error has been made. Similar technical control over the direction of work is likely to be implemented in other divisions in the near future according to one of the managers interviewed. A programmer claimed attempts were being made to write more sophisticated programmes which not only
identified the error but which also instructed the clerk how to rectify the error. The use of these programmes would further reduce the degree of discretion required of clerks. Automated job manuals are not in use at the divisions researched at Beta Life but are likely to be introduced "some time in the future" according to one of the managers. Technical control over the direction of work already exists on a limited scale in the Text Processing Division at Alpha Life and the Word Processing Department at Beta Life. The major portion of junior word processor operators' work consists of typing glossarized letters at Alpha Life. In Beta Life it is distributed amongst all the operators. Keying in only the variable data on the standardized letters stored in the computer's memory eliminates the need for juniors to make decisions concerning document lay-out: centering, spacing, justification, etc. This has already been done by senior and technical assistants, who "wrote" the glossaries.

3.3.2 Monitoring and Evaluation of Clerical Work

In both Alpha and Beta Life management rely to a greater degree on bureaucratic rather than technical control in the monitoring and evaluation of clerks' work. Both companies use a combination of bureaucratic control methods for this end: job evaluation which is supplemented by the productivity schedule and personal goal/performance appraisal systems (26). The latter two were introduced in the post-computerisation era as a result of greater managerial emphasis on increasing clerical productivity.

Job evaluation systems, the third element of bureaucratic control which relates to the second method of control - the monitoring and evaluation of employees' performance - in Edwards' classification, are used in both companies, and employees in each stratum of the hierarchy are evaluated in terms of job
descriptions by employees higher up.

In addition the pace and quality of most clerks' work is controlled via the productivity schedule system in all divisions at both companies. Clerks themselves record the number of policies processed daily on a record sheet which is analysed on a weekly basis by section or departmental heads who also record the number of errors made. In one of the divisions at Alpha Life frequent errors can result in the dismissal of clerks. This measure is only resorted to when the clerk continues to produce a high error rate in spite of attempts to find the reason and remedy it. The remedy can include placing the clerk in a job more suited to his/her capabilities.

The accuracy of data capture by terminal operators is assessed by checking computer print-outs. Each terminal operator has her own machine. Before commencing the day's work, she keys in her terminal number. The print-out is checked by a senior who can then easily identify which terminal operator made errors on the print-out. The number of errors are recorded, and then used by the departmental or section head to combine the error rate with the number of policies processed in an assessment of each operator's productivity. These schedules enable the section or departmental head to determine whether the operator is keeping up with or exceeding the daily minimum number of policies to be processed. Falsification is not possible as the computer print-out reflects the number processed at each terminal station, and the head occasionally does a random cross-check of terminal operators' record sheets and the print-outs.

In one of the divisions at Alpha Life control over the pace of terminal operator's work is exercised by a combination of the
productivity schedule system described above and a control terminal. The supervisor can, via the control terminal, determine how many medical claims have been assessed on a particular terminal at any stage of the day. According to one of the claims assessors,

we don't really mind the spot-checking with the control terminal...its the productivity schedule system that keeps you working hard to beat the daily minimum when you want your salary increase at the end of the year...I suppose only those women who aren't working for the increase would mind...

Further evidence of a shift from bureaucratic to technical control exists in the monitoring of work hours with the installation of a microelectronic clock-card identification system. Each staff member carries a staff card with a magnetic band which records the staff number, time of entry and departure as the staff member passes through a turnstile. No such system exists at Beta Life.

In the case of 'user' clerks pace of work is monitored via the productivity schedule system and the error rate is determined by random checks. The supervisor selects batches of their work periodically and scrutinises for errors. According to one of the supervisors,

you soon get to know who makes errors consistently and whose work is generally error free... after a while you only need to check the work of those who frequently produce poor quality work.

Technological control over the pace and quality of word processor operators' work is not employed in the Text Processing Division at Alpha Life, nor the word processing department at Beta Life, contrary to Armstrong's findings at Long Life. She found that the Management Statistics Report, a software package provided with the Wang system was used to record the number of keystrokes and errors made by each word processor operator. This was
combined with a central control screen used to monitor the whole word processing system throughout the building. The Text Processing Division at Alpha Life initially experimented with the programme but found it was not foolproof as it did not provide an indication of the actual time spent on each type of document. Consequently, the programme was replaced by bureaucratic control: a combination of the productivity schedule system outlined above and supervision by the section head. This method accomplishes four objectives simultaneously: monitoring the pace and quality of individual word processor operator's work; ensuring an even distribution of workflow; determining when each junior is eligible for promotion to senior word processor operator and when seniors are 'ready' for doing more complex word processing.

More accurate monitoring of the pace of work is possible with 'manual' measurement by the section head. She distributes the day's work among word processor operators and records the number and type of documents given to each. As the Work Study Department has provided the Text Processing Division with estimates of the length of time required to complete various types of documents, the section head is able to assess whether each operator has accurately recorded the number of documents processed on the record sheet when she compares it with her record of the number and types of documents distributed to each operator. This system eliminates the possibility of word processor operators artificially increasing the amount of work completed in a given period unlike the Management Statistics Programme, where the count of the number of keystrokes can be manipulated. The section head checks the error rate of individuals by scrutinising print-outs on a sample basis, using these figures to calculate each person's productivity as
described previously.

According to the head of the Text Processing Division at Alpha Life, bureaucratic control is more accurate than technological monitoring and has the added benefit of saving valuable space on the computer for other, more profitable programmes. In addition, the distribution of work by the section head ensures a smoother flow of work and enables her to evaluate at close quarters the progress and development of individual word processor operators. As soon as the section head sees that an employee is proficient in processing documents of a certain kind, she will allocate more difficult work to the worker concerned.

This is in line with our policy of stimulating our staff and encouraging them to develop their potential according to the head of Text Processing Division.

A central control screen situated in the Text Processing Division operates similarly to the one Armstrong described in her study. While it does provide management with the capacity to monitor the pace of work by word processor operators throughout the building, it is not used for this purpose at Alpha Life. Armstrong does not explicitly state whether this capability is fully utilized at Long Life. The control screen is employed to monitor only the efficiency of word processor allocations to various departments, to determine whether they are underutilized. If so, a reassessment of departmental work processing needs is made and the machines may be reallocated to a department(s) with a more urgent need for word processing facilities.

Barker, Downing, Butler and West report that the centralised dictation - "endless loop system" is another method of exercising technical control over the pace of word processor operator's
work. While a centralised dictation system is used in the Text Processing Division at Alpha Life, the "endless loop system", where by

recorded dictation is automatically fed to an operator as soon as her "station" becomes free is not employed. The section head distributes the cassettes containing the dictation. Unlike word processor operators working with the "endless loop system", those in the Text Processing Division are not continuously plugged in to the system described above by Butler, and do not feel that they are dominated by the computer.

A minimum daily quota of work is set for most clerical job categories in both companies. In Alpha Life the minimum is determined with the help of the Work Study Department who estimate the approximate time required to complete a given task. Annual salary increases are determined largely on the basis of the productivity schedule system outlined above which indicates whether each clerk is meeting or exceeding the minimum quota, as well as the quality of work produced. Some job categories, however, do not lend themselves to monitoring. For example, those clerks who deal mostly with telephone enquiries from policy-holders or those terminal operator's who do corrections and enquiries for 'users'.

Some of the clerks interviewed had mixed feelings about the productivity schedule system. The majority, 37 of the 46 clerks or 80%, felt that it motivated them to work harder, improve on past performance and ensured that those who worked hard were rewarded for working harder. These are the reasons given by management for using the productivity schedule system. 18 of the 37 clerks or 49% felt, in addition, that the productivity
schedule system placed them under excessive pressure and

...did not always give time to think about what they were doing or where it fitted into the whole cycle... it would be nice to know where your contribution fits in

said one of the clerks interviewed.

The remaining 7 or 15 % disliked the productivity schedule system for the reason given in the quotation, as well as for the fact that it enabled management to raise the minimum if all clerks were able to exceed the minimum by a relatively large margin. Only 2, or 5 % of clerks had "not really thought about it".

The clerks who had had mixed feelings about the productivity schedule system and those who disliked it had generally worked longer in the company than those who were enthusiastic about the system. When asked whether they had ever thought of or had actually worked slower to avoid the minimum being raised, all replied in the negative. A couple of the longer serving clerks added that in their experience the minimum had been raised only twice and felt that the new levels had "not been unreasonable".

3.4 The Employment Relationship

Dore (1973) and Edwards (1979) argue that the form of the employment relationship has a significant influence on management's capacity to elicit worker co-operation. According to Littler, the form of employment relationship is determined by

the extent to which it establishes the dependency of the employee(29)

which in turn is generated by

alternative sources of need satisfaction and the capacity of workers to organise.(30)
3.4.1. Alternative Sources of Need Satisfaction - A First Determinant in Alpha and Beta Life Companies.

Little scope exists for most clerical workers to seek "alternative sources of need satisfaction." The combination of recession, labour supply and possession of few skills severely limits the extent to which clerks can seek alternative employment opportunities. These factors make them highly dependent on the employment relationship. Despite the degree of clerical dependency on the employment relationship, management is however still faced with the problem of securing maximum productivity and with the possibility of clerks developing forms of work organisation sufficiently strong to challenge management control over the labour process.

3.4.2 Management Strategies Aimed at Eliciting Greater Clerical Co-operation

Various methods have been adopted by both companies to generate greater clerical commitment as a step toward maximising clerical productivity. Principal methods are the personal goal/performance appraisal system (31), the provision of benefits, the quality control circle system or similar, and an individualistic approach to worker problems or grievances. These are illustrations of the final element of bureaucratic control identified by Edwards - eliciting co-operation and enforcing compliance from workers. The way in which compliance has been enforced in the two companies - salary increments based on productivity, and in one division in Alpha Life, the possibility of dismissal if error rates continue to be high in spite of attempts to remedy the situation - has been previously discussed. An ancillary result of these strategies is the inhibition of clerical worker organisation.
a) The Personal Goal System

Under this system each staff member meets personally with his/her departmental head (32) to establish jointly a performance goal for a given period. At the end of the period they meet once again to assess whether the goal was met. If the goal had been realised a new one is set, and if not, the reasons for failure are discussed. Both companies use this system but it is differently named in Beta Life: performance appraisal system.

The aim of this system, according to a number of management personnel interviewed, is to actively encourage staff to improve their work standards; the staff are more motivated when a personal interest in their work is displayed by their superiors; setting their own performance goals encourages a sense of personal achievement when they meet or improve on the goals.

Interviews with clerks corroborated managements' view of the role of setting personal goals, and is evident from the following quotes:

Setting your own personal goals really motivates you ... it gives you something to work for ... when you've met the goal you set for yourself you feel a sense of personal achievement ... work becomes more meaningful and worthwhile when you know your departmental head is taking a personal interest in your work.

Some clerks reported that their departmental heads encouraged them to see their personal achievement and "betterment" as synonymous with the company's success in the market.

you feel you're actually making a contribution to the company's success and its acknowledged by your superiors... you're not just an anonymous individual, an invisible cog in the wheel.

The effect of the personal goal system operates on two levels. At one it is a method used by management to "manufacture consent". (33) Management, sets the minimum daily performance levels in terms of both the quantity and quality of work. Encouraging clerks in addition to set their own performance goals aids management in eliciting the clerks' co-operation with the
establishment's productivity goals.

At another level generating greater clerical commitment to company goals by means of a personalised and individual goal system undermines any basis for the development of collective clerical organisation or resistance. The extent to which the personal goal system has been effective in inhibiting the emergence of forms of clerical worker organisation will be discussed below.

b) Benefits

Both companies offer a range of staff benefits. Qualification for most benefits depends on length of employment. Gender and marital status are further qualifying factors for certain benefits, for example, housing subsidies. The effects of the benefit system are, firstly, to 'bind' clerks to the company as leaving the company for another job would result in the loss of benefits accumulated. Particularly important are medical aid coverage, pensions and housing subsidies. Secondly, the benefits contribute to a sense of company loyalty. This is evident in some clerks' views:

we feel we're being looked after... the company is good to us.

According to a divorcee:

moving to another job would mean lowering my standard of living as I'd lose my housing subsidy... it's also good to know that if I want to do additional training courses relevant to my work the company will either provide the training or subsidize it if I do a course externally.

Feeling "looked after" appears to have contributed greatly to the perception among most clerks interviewed that

we don't need a trade union or staff association.

This issue will be discussed in greater depth below.
c) Quality Control Circle System

In Alpha Life the quality control circle system has recently been introduced in a few divisions, and is likely to be adopted in more divisions in the near future, according to one of the managers interviewed.

A senior manager studied the system in Japan in the early eighties and upon his recommendation it was introduced in some divisions. The aim, according to one of the systems personnel interviewed, is to encourage staff to find ways of effecting cost savings, to work faster, improve accuracy and where possible, simplify work.

He pointed out that one side effect of quality control circles is increased job satisfaction derived from greater participation in defining and refining work methods.

The 'circles' operate on a departmental basis, meeting weekly. They are generally comprised of a senior clerk, an 'ordinary' clerk, section head and departmental head. The two clerks liaise with other clerks in the department to establish an agenda for the weekly meeting, or clerks make recommendations of their own accord. Additional departmental staff may be co-opted onto the quality control circle if their expertise is required for specific problems on the agenda.

According to one 'circle' member most of the issues discussed tend to be procedural changes clerks think need to be made and suggestions for the automation of further aspects of work. If the proposed changes affect only one department and the group approves the changes, these can be implemented by the group without having to obtain approval higher up the managerial hierarchy. However, if the proposed changes affect more than one
department, the approval of the Division's Policy Systems Staff has to be obtained. According to the circle member, approximately 70% of all proposed changes are of a procedural nature. The remaining 30% tend to be fundamental proposals for change affecting company policy. In these cases, the issues need to be discussed with the divisional manager who may approve the whole proposal, only part of it or may reject the total proposal.

Unlike Alpha, Beta Life never formally instituted quality control circles. Research revealed that in two departments of one of the divisions investigated, the heads, on their own initiative, introduced 'circles' and received divisional management support for the initiative. All clerks in a specific section within the department at Beta would meet with the departmental head on a regular basis to discuss ways of simplifying procedures to speed up work-flow and to suggest areas that could be automated. Issues related to the simplification of work, if approved by the group, would be implemented by the departmental head without having to obtain approval from higher management. Suggestions for further automation of work were discussed by the group concerned with representatives from the Computer and Systems Division. According to the departmental head, these suggestions were seldom implemented as the Division was bound by a company priority list of areas to be automated.

At one stage, the Personnel Division considered formalising the introduction of quality control circles for the company as a whole. However, this idea was dropped in favour of each department negotiating its own 'package'. Some have secured management assistance from consultancy firms - one such was the purchase of a performance appraisal system in place of the quality control circle mode.
Thus while the QCCS are not formal company policy, two departments continue to implement it. According to a divisional manager, other departments within the division have adopted something similar.

The dual nature of the employment relationship is evident in both Alpha and Beta Life. There is little scope for clerks to seek "alternative sources of need satisfaction", and management in both companies employ various methods to generate clerical consent in order to extract maximum productivity from clerks.

3.4.2. The Capacity of Workers to Organise - A Second Determinant of the Employment Relationship.

The capacity of workers to organise has been inhibited to some extent in both companies. Clerical workers in neither of the companies have a trade union, staff association or any form of committee to represent their interests. If a clerk has a grievance about some aspect of her/his work, s/he can discuss it with a supervisor, section head, departmental head or divisional manager. Should the clerk be dissatisfied with the outcome of the discussion, there is recourse to more senior management.

While this practice is the general policy in both companies, some departmental heads deal with grievance situations differently. For example, one departmental head in Beta Life prefers a collective approach to grievance or problem resolution. If the grievance or problem is of such a nature that it may affect more than one clerk in the department, the departmental head discusses the matter with all staff in the department in an attempt to resolve the issue collectively. Should it be necessary to take the matter up with more senior management, the departmental head gives feedback to his staff.
Alpha and Beta Life adopt similar approaches on the issue of clerical worker organisation. Neither company is opposed, in principle, to clerical trade unions or some other form of representation. According to Personnel Management in both companies, the company has never been approached by clerks wanting to form an association, nor a trade union wanting to organise clerical workers specifically.

However, both companies say they are prepared to consider the issue if approached by clerks or a trade union. Beta Life personnel management apparently would not encourage trade unionism as it may cause a split on racial grounds. This cautious approach is based on Liberty Life's experience with the Insurance and Assurance Workers Union (IAWU), a black consciousness union. IAWU wanted to organise only black clerical staff which could have caused racial discontent among clerical workers in the company. Consequently, Liberty Life refused to recognise the union.

Beta Life considered the idea of initiating a staff association for clerical workers, but decided against it as they did not want to impose any form of organisation. Company policy is to wait for the initiative to come from the clerks.

The company has recently signed a recognition agreement with General Workers Union, who represent the service staff. Some 'coloured' messengers, who are lower grade clerks, are members of the union but are not part of the bargaining unit.

Alpha Life personnel management expressed similar reservations about being approached by a clerical trade union. The company would only recognise the union if it was representative of the
majority of clerical workers. While Alpha Life is not opposed in principle, to forms of clerical worker organisation, all management personnel interviewed thought collective representation for clerks was unnecessary in view of the existing "channels of communication" available to clerks (described on p.25)

Some members of management interviewed in both companies were opposed to the idea of a trade union for clerks because of the British experience and the recent labour unrest caused by black unions in South Africa. They perceived trade unions as "trouble-makers" rather than as organisations concerned with the welfare of workers. A similar attitude towards trade unions was evident among some of clerks interviewed.

Trade unions encourage strikes, that's not the way we want to deal with problems we may have. Look at the economic problems Britain has. The trade unions have been mostly responsible.

Most clerks interviewed, 80%, or 37 of the 46, in both companies did not think they needed a trade union or staff association.

If I have problems I go to the section head or head of department... they've always helped me.

The company looks after us. We get good benefits, working conditions are okay... the salary could be a bit better though but then you can't have everything can you?

Blacks need trade unions because they have little experience in how to approach management, but clerks have always had an open door to management... we respect our managers and know how to talk to them.

According to a clerk in Alpha Life, they had recently discussed amongst themselves the issue of forming a staff association but nothing came of it as the majority thought it was unnecessary.

The remaining 20%, or 9 or the 46, in both companies had not really thought about either having a trade union or staff association to represent their interests. Some of these clerks
did not know what a trade union was. After explaining the role of a trade union or staff association to these clerks, most thought they would serve no purpose as they felt free to go to their section head or head of department should they have a problem at work. A few (5%) still said I don't really know or I'll have to think further about it.

Although management in both Alpha and Beta Life adopt a cautious approach to trade unionism, from those interviewed only a few were opposed to the idea. Most do not appear to be actively opposed to some form of collective clerical worker representation. However, managerial strategies for grievance problem resolution and productivity improvement, particularly the personal goal and benefit system, based as it is on the individual approach, may have contributed to undermining the development of a collective consciousness. The possibility of a group consciousness inherent in the quality control circles or similar systems is in abeyance since the system has not been in operation long enough for clerks to recognise the value and strengths of a broader collective response. Additional factors which may limit clerks in developing a parallel perspective in other areas of their work is that the quality control circles or similar systems are based on small group interaction. Members of these groups do not interact with clerks outside of the working group when addressing work-related problems. The 'in-group' focus appears to be reinforced by the organisational structure of the two companies. Clerks tend to socialise with colleagues in their own sections or departments in tea- and lunch-breaks, and very rarely with colleagues in other sections and departments.
An additional factor that may have contributed to the inhibition of clerks developing a sense of collective identification is the hierarchical job grading system that exists in both companies. Radical labour-market theorists argue that this system is based on the divide and rule principle. Employees are drawn into a system which encourages individualistic striving within the internal labour market, thus enabling employers to achieve greater control over the work force through compliance. (34)

The above factors may explain why there has been an absence historically, of forms of clerical worker organisation in the two companies. In addition, clerical workers in the life assurance industry as a whole in South Africa have never been unionised, and thus no model exists for contemporary clerks in Alpha and Beta Life.

Managerial strategies and organisational structure are, however, not sufficient explanations for the individualistic orientation evident among the clerks interviewed. Factors such as the clerical labour force having been predominantly female for the past two decades and the fact that clerks perceive their work as having a higher status with better working conditions than industrial/manual work need to be taken into account.

Concerning career consciousness, both companies report a relatively high turnover among their female employees, ranging from 25 to 30%, mainly due to domestic commitments. Although in recent years, the number of women who stop work to start a family and do not return to their former employment is significantly decreasing, this has not been the case in the past. A general lack of commitment to work as a career may have played an important role in inhibiting a sense of collective identity
developing among female clerks, who have grown to be the major part of the clerical labour force.

3.5 Patriarchal Control

Patriarchal control is discussed separately (from the forms of control identified by Littler and Edwards) as Littler's identification of managerial strategies does not accommodate patriarchal control. While Edwards uses the concept 'patriarchal control', he does so in referring to paternalistic or face-to-face, personal control, rather than gender power imbalances used to enhance control. Paternalistic control, embodied in the personal power and authority of the capitalist over workers rooted in personal ties, tend to obscure the class differences between employers and employees. (35)

Research at Alpha and Beta Life revealed that paternalistic control over non-secretarial staff was insignificant both prior to and after computerisation. The reason is that clerks worked in large groupings rather than the one-to-one situation of secretaries and bosses.

Paternalistic control in the form of the personal relationship between clerk and employer, was absent just prior to computerisation. The existence of a managerial hierarchy accompanied by bureaucratic forms of control was already well established in the late forties/early fifties. The productivity schedule system was the primary means whereby management monitored and evaluated the pace and quality of work. Furthermore, members of management seldom approached clerks to do work on an individual basis. Most work was channelled to departmental heads, the majority of whom are males, who allocated it to section heads, who are mainly female. Section heads then divided the workload among clerks in the section. The existence of a bureaucratic form of organisation thus provided little scope for clerks developing personal ties and loyalties with employers as might have
been the case in smaller, less hierarchical organisations.

Patriarchal control refers to male superiors using gender power imbalances, which have their basis in the material and ideological subordination of women, to increase their control over females lower down the hierarchy. In the case of female office workers

Their loyalty and devotion to duty are secured through:— flattery and praise, the engendering of a sense of indispensability, as well as an underlying, albeit sometimes explicit, sexual innuendo. (36)

Barker, Downing and Armstrong have argued that patriarchal control was the dominant form used by management to control the labour power of clerical workers prior to the introduction of microelectronics. While Barker and Downing claim that patriarchal control is supplanted by deskilling accompanying the application of the new technology, Armstrong found evidence of it existing alongside technical and bureaucratic forms of control at Long Life, but that the latter were the dominant forms of control. Armstrong further qualifies her statement that patriarchal control coexists with other forms of control by saying that secretaries at Long Life are more directly affected by patriarchal relations as they are only part-time word processor operators. The remaining aspects of secretarial work entail playing the role of "office wife". (37) It is on this basis that Armstrong challenges Barker and Downing's argument that patriarchal control is replaced by more direct capitalist forms of control.

Patriarchal control in the seven divisions researched in Alpha and Beta Life was largely absent due to the way in which work was delegated, monitored and evaluated. The productivity schedule system combined with performance-based salary increments was used in pressurising female clerks to work harder rather than flattery and praise being used to engender a sense of indispensability. A potential for employing this aspect of patriarchal control does however exist with the personal goal/performance appraisal system, where clerks meet individually with department heads to discuss work performance. None of the clerks interviewed reported that
such techniques were noticed.

Some of the word processor operators interviewed did report that senior male clerks would flatter or charm them in order to have the work they brought to the operators completed quickly, especially when the latter already had large work loads. This happened only to those who worked within department and not the centralised word processing pools. It would seem that working in close proximity in smaller departments facilitated more personal ties developing between members of the department, and that senior male clerks utilised and overlayed these personal ties with elements of the sexual dimension of patriarchal relations to pressurise the operators. There is little evidence of male managerial staff exercising patriarchal control in this way for the reasons given. The use of patriarchal relations by senior male clerks to pressurise female word processor operators cannot, however, be equated with patriarchal control being exercised by management.

In the light of the above, it appears that, contrary to Armstrong's research findings at Long Life, the lack of a collective identity among clerks interviewed, does not arise from patriarchal control by management. Factors such as hierarchical organisational structure, grading, personal goal/performance appraisal and quality control circles or similar systems, individualised problem/grievance resolution, lack of commitment to work on the part of female employees, and perceptions of clerical work being different to manual work, contribute more significantly to inhibiting the development of a collective consciousness among clerks.
Armstrong's research findings at Long Life, the lack of a collective identity among clerks interviewed, does not arise from patriarchal control by management. Factors such as hierarchical organisational structure, grading, personal goal/performance appraisal and QCC or similar systems, individualised problem/grievance resolution, lack of commitment to work on the part of female employees, and perceptions of clerical work being different to manual work, contribute more significantly to inhibiting the development of a collective consciousness among clerks.

5. THE ABSENCE OF RESISTANCE TO COMPUTERISATION

Clerks in neither Alpha nor Beta Life collectively resisted the introduction of computerisation in the late fifties, early sixties nor the subsequent automation of clerical work. This was corroborated by both the management and longer-serving clerks in the two companies. While it is more difficult to establish whether clerks resisted computerisation either covertly or individually, research findings revealed little or no basis for assuming so.

According to some of the longer-serving clerks in both companies, who experienced the introduction of computers as well as subsequent automation, the quality and speed of work deteriorated in their department with the introduction of computers. However, they were all of the opinion that the slower work pace and increased error rate were due to clerks feeling insecure rather than a conscious attempt at 'go-slow' as a form of resistance. Feelings of insecurity were widespread, according to those interviewed as they had not been consulted about the introduction of computerisation, and the majority from the most junior to
lower management, felt their jobs were threatened.

Management's response to this situation was to inform all staff, who would be affected by computerisation, of future plans to further automate work and to give the assurance that nobody's job was in jeopardy. While management did not consult with clerks on if and how further work should be automated, their strategy of informing and reassuring clerks, combined with the fact that no redundancies actually occurred and work loads were increased resulted in clerks feeling more relaxed about computerisation.

Some of the longer-serving clerks in both companies still resent computerisation. Reasons given were varied:

- We were told it would reduce our work load and make it easier. It hasn't. It has created a lot more work. You have to do a lot more checking and that's boring.

- Some of the work has become more complicated and it more often than not takes longer to sort out problems made by the computer. Under the manual system it was quicker and easier to identify a problem and correct it.

- Work becomes more parrot-like...your brain becomes lazy because you rely too much on the computer.

When asked why they did not resist computerisation if they resented it, the common response was wherever you go companies are computerising, how can you act against that?

The majority of clerks interviewed saw both advantages and disadvantages in computerisation, and most thought the advantages outnumbered the disadvantages. The disadvantages cited were of a technical nature: computer-downtime, slow response, etc. Disadvantages were perceived to be related to machines by most clerks. Only a small percentage saw the disadvantages as being related to work being deskilled or being made more monotonous. The view that computerisation was more advantageous than
disadvantageous was particularly prevalent among clerks who had not worked under the manual system. Furthermore, none of the clerks interviewed felt that their jobs might be threatened by computerisation. Against this background there seems to be little or no basis for clerks resisting the further automation of their work.

The absence of organised resistance, as well as the apparent absence of covert resistance, in both companies should be viewed against the background of the factors discussed above: the dependency of employees on the employment relationship due to restricted or equivalent work sources elsewhere; management strategies to achieve clerical co-operation; the inhibition of clerks' capacity to organise collectively; and there being no apparent material basis for clerks resisting automation.

SUMMARY

Two main arguments were developed in this chapter. The first took issue with Braverman, Barker, Downing and Armstrong for suggesting that control over clerks' labour power is management's primary concern to ensure continued capital accumulation. It was pointed out that none of the authors viewed control as a dependent variable. Consequently they assumed control over clerical labour to be management's first priority in sectors and industries where surplus value was not produced because they did not distinguish between profits obtained from surplus revenue and surplus value obtained from surplus labour exchanged against capital. The finance sector and life assurance industry was discussed to illustrate the necessity of making the distinction and recognizing that control over clerical labour power need not always be an independent variable. The imperative to control is not only dependent on the stage of capital accumulation as Wright
suggested but on the sector or industry. Research in the life assurance companies revealed that control over clerical labour power was secondary in importance to procuring profits and the development of increasingly sophisticated life assurance policies in the struggle to retain or increase market share. In other words, extra-workplace dynamics play an important role in defining capitalist imperatives in this instance.

The second argument developed in the chapter relates to the manner in which Braverman, Barker, Downing and Armstrong have oversimplified the issue of control. The authors assumed that technological control and deskilling inevitably result from the imperative to control clerical labour power and generalise this to all clerical work. The assumption is the result of the authors' explanation of control being based on the notion of an incomplete exchange of wages for labour occurring between capital and workers, and that workers' efforts will not be sufficiently productive without management controlling their labour power. This line of argument ignores the possibility that workers are not invariably fundamentally antagonistic to capitalist goals, which appears to be the case in the two life assurance companies researched. Clerks have not resisted computerisation and in some cases initiate suggestions for further automation. Nor have they resisted the productivity schedule system aimed at increasing clerical productivity. Furthermore clerks in the two companies do not perceive the need to form a trade union or any other form of collective organisation to represent their interests.

An additional reason for Braverman, Barker, Downing and Armstrong having oversimplified the control issue is that none of the authors deal with the issue of the dual nature of the employment
relationship and consequently, that employers need to secure some degree of clerical co-operation. In both Alpha and Beta Life management have employed a number of methods for this purpose: the personal goal/performance appraisal, QCC or similar systems and benefits. Only one of these strategies has implied contradictory strategies for management as suggested by Cressey and MacInnes. The QCC and similar systems have resulted in increased clerical participation in deciding how the work is to be done and what is to be automated. Thus management have not fully subordinated clerical workers by removing all scope for decision-making with computerisation as argued by Braverman, Barker, Downing and Armstrong. The remaining measures employed to obtain greater clerical co-operation have supplemented management's attempts to increase clerical productivity and interviews with clerks indicate they are concurring with these management goals.

It was hypothesised at the beginning of the chapter that attempts to elicit greater clerical co-operation may result in all or one of the following: greater job autonomy, the creation of semi-skilled rather than detail workers, the substitution of control over how the work is done with other forms of control. Research revealed that the creation of semi-skilled rather than detail workers was the result of companies operating in an oligopolistic market rather than management's attempts to elicit increased clerical consent. A certain degree of job autonomy has been gained with the introduction of the QCC and similar systems as discussed above but management still exercises considerable control over how the work is done via the job manual system and limited usage of technical control. Thus control over how the work is done has not been substituted with other forms of control.
as hypothesised.

Littlers' and Edwards' conception of control were used to identify managerial strategies aimed at increasing control over clerical labour power at the two companies which indicated that in both companies equal, if not greater emphasis, was placed on bureaucratic forms of control rather than deskilling and technical control, contrary to the findings of Braverman, Barker, Downing and Armstrong. It was shown that technical control in the form of job design was one of two strategies to increase clerical productivity but that in the post-computerisation era management have adopted additional strategies for achieving this goal. The productivity schedule system, in addition to those discussed in the previous paragraph, are examples of additional control measures.

Furthermore research into job design showed that deskilling was not an inevitable outcome of the computerisation of clerical work. A lack of emphasis on deskilling arises out of changing managerial practices, related developments in computer software and the oligopolistic nature of the market.

A change in managerial practice is evident in the recognition that quality of working life is an important variable affecting productivity. Consequently in Alpha Life, and to a lesser extent in Beta Life, the microelectronic environment is being used to reduce job fragmentation rather than increase it as the authors suggest. Management's attempts to reduce job fragmentation has been greatly facilitated by developments in computer software which have resulted in the replacement of batch with transaction processing. The latter enables management to reduce job fragmentation while still being able to increase clerical
productivity.

A final factor reducing the scale of deskilling which occurs in the two companies is the oligopolistic market in which the companies operate. Intensive competition which is characteristic of oligopolistic markets has resulted in both companies marketing increasingly sophisticated policies. Due to these policies being more difficult to process a small number of new specialist job categories have been created to issue and administer them.

Research in both Alpha and Beta Life indicated that managerial control over clerks' labour power is not effected solely by means of technical control and deskilling following computerisation. Great emphasis is placed on bureaucratic methods of control in both companies. Furthermore the new technology has provided management with a choice in job design. Attempts are currently being made to reduce job fragmentation and both companies plan to continue doing so in the future.
FOOTNOTES

2 - Littler and Salaman, 1982, p.257
3 - ibid, p.257
4 - Braverman citing Marx classifies unproductive labour as that which is exchanged against revenue, and productive labour which is that which is exchanged against capital. (Braverman, 1974, pp.411 - 412)
5 - While it is not always clear where oligopolisation ends and monopolisation begins, the fact that neither of the two largest life assurance companies in South Africa have concluded an agreement not to compete on strategic matters - an important characteristic of monopolisation - suggests they are not acting as monopolies. The only matter on which the two companies have joint discussions is shared technology.
6 - Littler and Salaman, 1982, p.256
7 - ibid, p.256
8 - Edwards, 1979, p.16
9 - Littler and Salaman, 1982, p.259
10 - Littler and Salaman, 1984, p.54
11 - Cressey and MacInnes, 1980, p.14
12 - Salaman, 1979, pp.126 - 127 & pp.138 - 142
13 - Littler and Salaman, 1982; Crompton and Jones, 1984
14 - Armstrong, 1983, p.86
15 - ibid, p.110
16 - Littler and Salaman, 1984
17 - Edwards, 1979
18 - Littler and Salaman, 1984, pp.58 - 59
19 - Edwards, 1979, p.18
20 - ibid, p.25

130
21 - ibid, pp.32 - 33
22 - ibid, p.20
23 - ibid, p.24
24 - ibid, p.112
26 - the different names given to this strategy in each of the companies.
27 - Butler, 1984, p.84
28 - ibid, p.84
29 - Littler and Salaman, 1984, p.59
30 - ibid, p.59
31 - see footnote 26
32 - This applies to management as well. Individual managers meet the next senior manager in the hierarchy.
33 - Burawoy, 1979
34 - Crompton and Jones, 1984, p.59
35 - Edwards, 1979, p.27
36 - Barker and Downing, 1980, p.74
37 - Armstrong, 1983, p.90
CHAPTER 4: SKILL AND DESKILLING

The first part of this chapter considers in greater depth the various conceptions of deskilling reviewed in chapter 1. This discussion provides the necessary context for the writer's own findings on the impact of computerisation on the skills of clerks in Alpha and Beta Life Companies.

PART 1: THEORETICAL PERSPECTIVES ON SKILL AND DESKILLING

All the labour process studies on deskilling in the office reviewed in chapter 1 follow Braverman's thesis that the transition from 'formal' to 'real' control over the labour power of workers is realised with the introduction of computerisation which leads to profound deskilling. The process of deskilling entails the separation of conception and execution, the unity of which is intrinsic to craft skill, and the increasing fragmentation of work into smaller components. The worker caught up in such a detailed division of labour becomes subject to repetitive and highly specified work routines.

Implicit in these authors' conception of deskilling, is the view that deskilling is a structural feature of the capitalist organisation of the labour process. Deskilling is a long-term tendency which Braverman asserts is built into the structure of economics dominated by large-scale privately-owned enterprises producing for a fiercely competitive commodity market.(1)

While Lever is referring specifically to Braverman in this quotation it is valid to argue that Barker, Downing, Armstrong and Butler hold a similar view as the authors derive their view of deskilling from Braverman.

One problem with this notion of a "generic impulse to deskill"(2) is that the process of deskilling tends to be divorced from the influences of specific economic conditions. Thompson cites the
example of the influences of changes in ownership and control and international competition on the restructuring of work processes in the engineering industry in Coventry, and the subsequent deskilling. (3)

Littler has criticised Braverman for assuming that one can generalise from dynamics in the capitalist labour process in America to those of Britain. (4) This generalisation is also made by the authors cited earlier. They generalise their findings on deskilling in the capitalist labour process to all clerical work.

Dynamics in the labour processes in advanced economic systems influence and in turn are influenced by political and legal factors, nature of the class conflict, the composition of the country's workforce, and so forth. The way in which these factors influence the labour process will differ from country to country. It is therefore not necessarily valid to generalise capitalist labour process dynamics as the authors have tended to do.

Braverman, Barker, Downing and Armstrong portray the deskilling tendency as a linear, even process starting with the "all-round skilled artisan" (5) and culminating in the unskilled worker subjected to fragmented and highly routinised work procedures. When this latter stage is reached the capitalist has established full control over the labour process and the worker. Unlike these authors, Butler found evidence of both deskilling and an increase in skills of word processor operators and secretaries. While the author does not regard deskilling as occurring linearly, she argues the overall process is one of deskilling.

Certainly, it is true to say that these skills have to
some extent been replaced by the newer skill of operating a word processor...To this extent, these operators have been reskilled. But put in the context of the wider issues of the degradation of work - such as fragmentation, standardisation, loss of conception and control - it would be more true to say that even the "reskilled" workers have been "deskilled" as a result of the introduction of word processors. (6)

Viewing the process of deskilling as occurring in a linear fashion, as Braverman, Barker, Downing and Armstrong do, is flawed for a number or reasons. Firstly, it assumes that there was an "all-round skilled" clerk/typist who was master/mistress of his/her craft in the nineteenth century, and in the case of typists, well into the twentieth century. While Braverman does argue that the process of deskilling clerks had begun early in the twentieth century, numerous writers have criticised Braverman for his idealised conception of traditional craft workers which underlies his deskilling thesis. (7)

The same criticism can be made of Armstrong, Crompton, Jones and Butler as they do not focus on the pre-microelectronic division of labour and skill levels. The existence of various categories of typists - typists in centralised typing pools, departmental typists and private secretaries - was widely prevalent before the introduction of word processors. (8) The division of work between categories of typists often resulted in typists using only a small number of the skills they had acquired in training. Similarly, Crompton and Jones do not consider that work in large organisations, prior to computerisation, was labour intensive in spite of mechanisation. (9) As a result job design tended to be characterised by an extensive division of labour. Consequently, the skill level of clerks in the pre-computer era, in large organisations, would not be equatable with that of an all-round skilled clerk. This will be illustrated in section 1.2 and in
the second part of the chapter based on the writer's research.

While Butler acknowledges the existence of such a division of labour she does not attempt to assess what effect it may have had on the skill levels of the various job categories, for example, whether typists in a centralised typing pool may have used the same skills as secretaries.

The second problem related to viewing deskilling as a linear process is that important constraints exist which prevent deskilling from 'unfolding' in a linear, even way within the Captialist Mode of Production. The constraints are (a) the introduction of new technology which may create new jobs; (b) the variable nature of the application of new technology and (c) worker resistance.

(a) New technology and new jobs.

The introduction of new technology creates new jobs which require new skills. Computerisation has generated new job categories such as programming and systems analysis. These trends illustrate that upgrading can coexist alongside deskilling in an economy. There are cases where experienced clerks have been recruited as programmers, or to act as advisers to systems analysts in the transition to computerisation. This happened at Royal Exchange Bank in London (10) and at one of the largest life assurance companies in South Africa. In the latter, the job grading and salary was higher than that of the most senior clerk. (11)

It is necessary to point out, however, that these jobs can be subjected to standardisation and simplification as Thompson observes is happening to programming. (12) The essential point is that there are stages when deskilling coexists with upgrading
within the Capitalist Mode of Production. Therefore to view the process of deskilling as a linear, even process is an oversimplification of a complex series of events within and outside of the labour process working out on each other.

(b) Variable forms of the application of new technology

Factors such as cost and the nature of the industry tend to influence the form of application. It would be mistaken to think that the technology has one uniform application. Thompson cites small-batch production to illustrate this point. Because of the number of potential products and components, variations in the application of microelectronics are inevitable, according to Thompson.

Management approach to the technology is also an important factor. Butler, in her survey, found that in some companies distributed forms of word processing were preferred to centralised word processing centres as it was less disruptive to secretarial skills and office social relations.(13)

(c) Worker resistance

There is a tendency in analyses of the labour process to disregard worker resistance as a constraint on the way in which deskilling occurs because it has been ineffective in resisting deskilling in the long-term. Whilst it does seem that the working class has been ineffective in the long-term in resisting deskilling, it is no reason to ignore the role of worker resistance in the form of either organised, collective resistance or informal and unorganised resistance. To do so would be glossing over the concept of the labour process as a 'frontier of control' (14). Workers may lose control over certain aspects of the labour process but gain control over others (15). Certain
groups of workers may be weakened as a result of deskilling and as a result other groups may be in a stronger position. (16). Finally, management may find it necessary to introduce job enrichment and job re-design.(17)

As was pointed out in chapter 3, neither Braverman nor Armstrong address the issue of clerical resistance. Barker and Downing acknowledge that the nature and extent of trade union and working class responses to microelectronics are likely to affect the extent to which the new technology deskills typists/secretaries. None of the remaining authors reviewed in chapter 1 discuss, theoretically, the process of deskilling but they do address the issue of clerical resistance. Crompton, Jones and Butler found no evidence of overt resistance to deskilling, but neither of the authors attempted to ascertain whether or not informal, unorganised forms of resistance occurred, in spite of the fact that they identified quite a degree of dissatisfaction among a small percentage of research subjects.

1.1 SKILL AND DESKILLING - THE PROBLEM OF DEFINITION AND MEASUREMENT.

An important problem with the deskilling thesis is that of definition. What is meant by the concepts 'skill' and 'deskilling'? Skill can refer to a set of objective competencies: the type of job knowledge and the amount of training necessary to attain job proficiency; or it can refer to direct control over the work process; or it can be socially constructed, i.e. where custom, tradition and collective organisation define the skill content of a job rather than the objective competencies.(18) As Beechey points out these different conceptions of skill are not necessarily coterminous with one another, although they are frequently conflated within the literature and may well coexist in particular concrete instances.(19)
The problem of conflating these conceptions of skill is it tends to result in an oversimplified view of the process of deskilling. For example, to take at face value a socially constructed definition of skill can result in the confusion "between the ability of workers to retain skills and job control." (20)

According to Thompson, considerable evidence exists of workers having the power to determine working conditions and rewards even after deskilling has occurred. (21) Braverman, Barker, Downing, West, Butler, Crompton, Jones and Armstrong do not distinguish between clerks retaining skills and losing job control or vice versa. Consequently the authors do not attempt to ascertain whether clerks have retained power to determine working conditions and rewards despite having been deskilled. All the authors assume that because clerks have been deskilled they have lost control over their own labour power. It was shown in chapter 3 that those groups of clerks involved in quality control circles or similar systems have acquired some power to determine how the work is to be done and what is to be automated despite some of these clerks having been deskilled.

The above points raise the question of how one assesses whether a job has been deskilled or not. Can objective competencies be entirely free of the element of social definition? Fox provides a most useful means of classifying job knowledge: task range and the degree of discretion. Discretion refers to the amount of choice one can exercise in a particular job, which in turn is determined by whether the job is specifically or diffusely defined. (22) Littler has added to this conception of skill the time necessary to attain job proficiency. (23)

However, job learning time as a criterion of objective
competencies needs to be used circumspectly. Littler has pointed out the necessity of distinguishing between necessary training time and the training time stipulated by employers and/or trade unions. It may be in the interests of either or both parties to stipulate a longer training period than is necessary as was done in the Engineering Industry in Britain.(24) In this case it is difficult to separate the objective competencies and the socially constructed definitions of skill.

While Armstrong has acknowledged the problematic nature of the concept 'skill' due to the difficulty of distinguishing the objective competencies and socially constructed definitions, she nevertheless relies heavily on training time as an objective indicator of skill.(25) The author does not distinguish between necessary and socially defined training time to attain job proficiency. Consequently, Armstrong accepts too readily the word processor suppliers' notion of how "quick and easy" it is to learn word processing. It is in their interests to sell word processing as simple and easy to learn. Butler's study (26) and the writer's research do not support this view.

Finally, the occurrence of specialisation suggests that deskilling is not an even process. A more complex picture of the labour process emerges when specialisation is distinguished from fragmentation. Specialisation refers to the concentration of work into a smaller task range, where the worker exercises the same degree of discretion and still has some task range. Fragmentation refers to the diminution of both discretion and task range. Littler does point out that the process of specialisation can facilitate a later fragmentation process.(27)

Neither Braverman, Barker, Downing, Crompton, Jones nor
Armstrong attempts to assess whether specialisation coexists with deskilling. The reason for this appears to be their viewing the deskilling process as occurring in a linear fashion. Viewed historically, however, the assumption of a 'skilled' clerk prior to computerisation is questionable. The works of C. Wright Mills, Lockwood, Klingender and Braverman indicate the contrary. All four authors suggest that a division of labour was in the process of being implemented PRIOR to mechanisation, the stage PRECEDING computerisation. The increased size of the office and its new role as the control centre required control and coordination of the clerical activities themselves. Braverman expresses it succinctly:

the small office incidental to management develops into a labour process in its own right.(28)

This development can be broadly divided into two main phases:

the social division of labour and mechanisation.

(a) The social division of labour

The necessity for increasing efficiency and reducing clerical costs in the larger offices, where work was generally labour intensive, led management to introduce specialisation and/or job fragmentation and to feminise clerical labour. A further means of increasing efficiency was the rearrangement of the physical layout of the office to minimise time spent away from the desk. The introduction of pneumatic tubes and conveyor belts to facilitate communication within offices performed this function. The establishment of this "sedentary tradition" in combination with the increasing division of labour within clerical job categories was responsible for rendering numerous clerical jobs in the large office repetitive and routine even before the mechanisation of clerical work.
(b) Mechanisation

The first aspect of clerical work to be mechanised was the communication of data. Up to the end of the nineteenth century writing was considered to be the essence of the clerical process. (29) The introduction of the typewriter at the end of the nineteenth century had a significant effect on the nature of clerical work of that period. It made obsolescent the whole category of male writers and copyists - the activity from which the concept of "clerk" is derived (30) and it created the possibility of diversifying office work into specialised departments. (31)

The second aspect of clerical work to be mechanised was the processing of data. According to Klingender, the mechanisation of bookkeeping began before the First World War but became widespread only after the war, enveloping every branch of bookkeeping, invoicing, and statistical work, and later extended to methods of recording, filing and indexing. (32) The office equipment consisted of adding and calculating machines, mechanical punch-card machines, cash and credit registers, addressing, duplicating, dictating, envelope feeding, folding and stamping machines. As in the case of the introduction of typewriters, the use of these office machines furthered the division of office work into specialised departments and extended the division of labour, for example the mechanical punch-card machines. Data to be punched would be compiled by one group of clerks, another would punch the data, and in some cases a third group would be responsible for locating errors made by the punch operators. Separate departments were often created to contain the more noisy office machinery in order to reduce the disturbance level throughout the office.
While office mechanisation prior to computerisation reinforced and supported existing clerical functions rather than replacing them (33), some of the machines eroded clerical skills such as calculation in the case of adding and calculating machines.

PART 2: THE IMPACT OF COMPUTERISATION ON ALPHA AND BETA LIFE COMPANIES.

Chapter two suggested that departmental structure had a significant influence on job design. Where it has resulted in redesigning jobs in the two companies, computerisation was not a prerequisite. Since departmental restructuring has had a significant effect on job design in both companies it will be discussed before the impact of computerisation on objective competencies of clerks, the subjective experiences of clerks and the extent to which the latter corroborate the findings on objective competencies.

2.1. THE IMPACT OF DEPARTMENTAL STRUCTURE ON SKILL LEVELS IN ALPHA AND BETA LIFE COMPANIES.

At the head offices of both companies studied, a decentralisation of functions within Policy-Holders' Services/Client Services' Division took place. Up to the late 1960's departments within Policy-Holders' Services/Client Services' Divisions had been organised on a functional basis. Most departments each dealt with a specific function, with the result that clerks in those departments developed job knowledge in only that function. As a result of functional specialisation between departments, a single policy-holder's case would be passed backwards and forwards between departments, since clerks in a specific department could only handle a limited aspect of the case.

Due to the problem and time consumed in keeping track of the
movement of policies, the structure of Policy-Holders' Services/Client Services' Divisions was reorganised on a geographic basis. Whereas departments were functionally specific prior to reorganisation, each department now contained numerous administrative functions so that the same department could now complete administration of most aspects of the policy could be completed within one department. While the reorganisation did not reduce the extent of job fragmentation that existed when departments were functionally constituted, it did affect the skill level of clerks within the departments. Clerks, who prior to reorganisation specialised in only one aspect of administering policies, were required to attain job proficiency in the full range of jobs within the department organised on this basis. Promotion to a higher grade was conditional upon a clerk attaining proficiency in a number of the job categories existing in the department.

In one company, job satisfaction was one of three reasons for reorganisation of this division. An indication of how seriously job satisfaction is taken in this division can be seen in the attempt by departmental heads to implement job enrichment. Where long-serving clerks resisted job rotation, one of the means of job enrichment, some departmental heads imposed a wider job range on the clerks by allocating batches of work that required knowledge of a variety of jobs. Other departmental heads hoped that the grade promotion system, described above, would break down the clerks' resistance. Job enrichment, is not unambiguously intended to increase clerical job satisfaction which in turn increases productivity. Job enrichment also ensures that the departmental head has a core of sufficiently skilled clerks to do a variety of jobs when leave and/or illness
coincide with peak business periods. This tends often to be the primary reason given by departmental heads in both companies when asked why they introduced job rotation.

In the other company, job satisfaction was the outcome and not the primary reason for reorganising the Policy-Holders' Division. However, similar attempts to ensure that each clerk acquires a range of skills are made in Policy-Holders' Services in this company. The means of achieving this goal tend to be left to the discretion of the departmental heads as in the case of the previously discussed company.

2.2. THE IMPACT OF COMPUTERISATION ON OBJECTIVE COMPETENCIES IN ALPHA AND BETA LIFE COMPANIES.

The impact of computerisation on objective competencies in a number of job categories was investigated in four divisions within Alpha Life. These divisions were selected for three main reasons: firstly, they constitute the core of clerical work in that issuing and administration of life assurance policies is the main function of two of the divisions, New Business and Policy-Holders' Services Divisions. The Text Processing Division provides support to these two divisions. The fourth division, Medical Aid, provides one of the central services, other than life assurance, offered by the company to clients - the registration and administration of medical aid schemes. Secondly, the four are among the most extensively computerised clerical divisions, and thirdly, were among the divisions that had employed the largest number of clerks prior to computerisation due to the labour intensive nature of the work. The corresponding divisions in Beta Life were studied to enable a comparison of the impact of computerisation on objective competencies. In some cases this was not possible as a few of
the computerised job categories in Alpha Life were not automated in Beta Life.

A comparison of objective competencies required in the pre-and post-computerisation era was made for most of the job categories in each of the divisions studied. However, difficulties were encountered in assessing with any degree of certainty what the impact of computerisation had been on objective competencies in two of the divisions, Policy-Holders' Services and Medical Aid, in Alpha Life. The reasons were that: very few of the existing clerks had worked in the division prior to computerisation; the three clerks interviewed in Policy-Holders' Services found it difficult to recall in detail the variety of tasks constituting job categories they occupied at the time, and had even greater difficulty in doing so with jobs they, themselves, had not occupied. In Medical Aid none of the clerks currently employed had worked in the division prior to computerisation. Consequently, it was necessary to rely heavily on section heads, departmental heads and managers' descriptions of job categories. Here too, recollection proved to be a problem. In addition, managerial bias may play a role, particularly in relating subjective experiences of computerisation. A further complicating factor in Policy-Holders' Services is that the range of tasks a clerk performed within a job category and the degree of discretion required depended on his/her job grade. Thus, while a clerk may have occupied a job category entitled valuations clerk, the task range and degree of discretion would depend on whether the clerk was a junior or senior valuation clerk. Current managerial practice in Policy-Holders' Services however, is to distribute the more complex and routine work equally among clerks whether junior or senior, thereby
eliminating junior clerks necessarily having a limited task range and degree of discretion in their jobs. This practice complicates a simple comparison of job categories pre- and post computerisation.

Difficulties very similar to those in Alpha Life occurred in Beta Life. Briefly, these were the very small number of clerks who had worked in Client Services prior to computerisation and who had experienced the two stages of computerisation: the difficulty of recollection, managerial bias in relating subjective experiences; and changed managerial practice in the allocation of tasks within job categories. In addition, it was not always possible to examine the same job categories as researched in Alpha Life due to the job-holders not having done the work pre-computerisation.

In the case of Medical Aid Division the impact of computerisation on job categories is not clear as any attempt to make such an assessment is confounded by the radical departmental restructuring that occurred in 1983.(35) Furthermore, the departmental structure in Beta Life was very different from that in Alpha Life both prior to and after restructuring. In addition, none of the clerks in the division had worked there prior to computerisation (pre-1960) and a very small number of staff in the managerial ranks who had, were not available for interviews at the time of research.

It was possible to assess the impact of computerisation on objective competencies in New Business at both companies with a greater degree of certainty than in Policy-Holders' Services and Medical Aid. One of the reasons for being able to do so in this division rather than in Policy-Holders' Services/Client Services may be due to the fact that in both companies the latter division
tended to employ predominantly male clerks whereas New Business in both companies employed predominantly female clerks in the pre-computerisation era. Senior clerks and long-serving managerial staff recall that males tended to leave the clerical occupations in the sixties, which coincides with the transition to computerisation. The demasculinization of clerical work in the sixties is also borne out by the SA population census reports for 1960 to 1980. (See Tables 4 to 6 in chapter 5)

Although the assessment in Alpha Life is based on the recollections and reconstruction of two senior clerks within the division and an ex-senior clerk of the division, the three people went to great lengths to reconstruct as accurate a picture as possible. Events they could not remember were checked out with staff members in other divisions who had occupied the specific job category at the time. These staff members were mostly section heads or departmental heads in other divisions.

Similarly the reconstruction of the history of most job categories in New Business at Beta Life was undertaken by two senior clerks. As in the case of the three clerks in New Business, Alpha Life, these two clerks had worked continuously in the Division. Only two of the five New Business clerks had 'punctuated' their employment for child-birth, but returned to the same jobs soon after. A more rigorous evaluation of the effect of computerisation on objective competencies in Text Processing in both Alpha and Beta Life was possible as Electronic Text Processing (ETP) was introduced in the late seventies onwards. It was thus possible to interview a number of typists/word processor operators who had worked in the division (department in the case of Beta Life) prior to computerisation and recollection was not a problem as in the case of the other
divisions. In addition a smaller range of job categories existed in Text Processing unlike the other three divisions in both companies.

2.2.1 Definitions of Tendencies

A combination of Fox and Littlers' concept of objective competencies was employed in assessing the effect of computerisation on clerical skill levels. For the purposes of this study objective competence was defined as the type of job knowledge required in a job category, which included the task range and degree of discretion (36), and the necessary training time (37).

The problem of identifying to what extent social constructions - custom, tradition and collective organisation - define the skill content of a job rather than the objective competencies has already been discussed in section 1.1 of this chapter. However, in both Alpha and Beta Life it is unlikely that social construction plays a significant role in defining the skill level of jobs as collective clerical organisation has historically been absent. In addition, it was shown in chapter 3 that little or no evidence existed of either collective, overt or covert resistance to automation by clerks. Consequently it is unlikely that management have attempted to redefine skill levels in an attempt to overcome clerical resistance.

2.2.2 A General Overview of the Tendencies in Alpha and Beta Life.

Diagram 1 shows that computerisation affects the skill levels of job categories in a number of ways. The tendency to upskilling manifested itself in differing degrees in six divisions and one department in both companies as follows:
## Diagram 1: Tendencies in the Effect of Computerisation on Skill Levels of Job Categories in Alpha and Beta Life

<table>
<thead>
<tr>
<th>DIVISIONS:</th>
<th>Policy-Holders</th>
<th>New Business</th>
<th>Medical Aid</th>
<th>Text Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upskilling</td>
<td>Upskilling</td>
<td>Upskilling</td>
<td>Upskilling</td>
</tr>
<tr>
<td></td>
<td>Deskilling</td>
<td>Deskilling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Job Categories</td>
<td>New Job Categories</td>
<td></td>
<td>Reduced Fragmentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALPHA</td>
<td></td>
<td></td>
<td>Reduced Fragmentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stationary</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Job Categories Not Affected</td>
<td></td>
</tr>
</tbody>
</table>

### Stationary

<table>
<thead>
<tr>
<th>DIVISIONS:</th>
<th>Client Services</th>
<th>New Business</th>
<th>Medical Aid</th>
<th>Text Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upskilling</td>
<td>Upskilling</td>
<td></td>
<td>Upskilling</td>
</tr>
<tr>
<td></td>
<td>Deskilling</td>
<td>Specialisation</td>
<td>Specialisation</td>
<td>Reduced Fragmentation</td>
</tr>
</tbody>
</table>

### Specialisation

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BETA</td>
<td></td>
<td></td>
<td>Increased Fragmentation</td>
<td>Job Categories Not Affected</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(a) a slight narrowing of task range but a significant increase in degree of discretion, and to a lesser extent, the time taken to become job proficient;
(b) retaining the same task range and degree of discretion but a slight increase in job proficiency time;
(c) an increase in all three aspects of objective competencies; and
(d) an increase in both task range and degree of discretion but job proficiency time remaining constant.

The tendency to upskilling in New Business in Beta Life is weaker than its counterpart in Alpha Life. The main reason for this difference is the absence of the managerial practice in this division of either reallocating the simpler tasks of more skilled job categories to less skilled job categories, or collapsing two or more job categories into one as is done in Alpha Life.

The increase in skill levels of word processor operators in both companies is an illustration of a strong tendency to upskilling due to an increase in all three aspects of objective competencies. Senior word processor operators still have to plan the lay-outs of tables, schedules and envelopes manually as in the pre-ETP era but have acquired the additional task of programming these documents for standardization. As a result of having to learn the simple programming required in standardizing lay-outs for a variety of documents the senior word processor operator has acquired an additional skill. Furthermore, planning lay-out on a word processor can be a more creative exercise than on a typewriter as the word processor has more facilities for varying lay-out than on the typewriter. The senior word processor operator can, therefore, exercise a greater degree of discretion in design and lay-out. Training time to attain job
proficiency has also increased as a result of having to learn simple programming.

In addition to the above developments, word processor operators in Beta Life have experienced an increase in task range as a result of management reducing the extent job fragmentation which existed in the department prior to ETP. The elimination of copy typing has made it possible for management to move away from an extremely detailed division of labour. Prior to ETP, senior typists would specialise in typing certain categories of documents, for example, one typist doing only claims, another typing endorsements, and so on. From management's point of view this detailed division of labour was suitable for maximum productivity. For the typist, however, it meant designing the lay-out for only one type of document and copy typing. As many documents came to be stored in a standardised format on the CPU with the introduction of ETP copy typing was no longer necessary. Freed of all the copy typing, it would not have been cost effective, in management's terms, to continue such a detailed division of labour as insufficient work could be generated to keep specialist typists fully occupied on a daily basis, according to the supervisor. Job rotation was consequently introduced so that word processor operators could become fully proficient in the planning and lay-outs of all documents produced in the department.

The tendency to deskilling occurred in varying degrees in four divisions in both companies:

(a) task range remained constant while both degree of discretion and training time were slightly decreased;
(b) both task range and training time were unaffected but some
tasks were diluted, resulting in a slight reduction in discretion;
(c) an increase in task range accompanied by the dilution of some tasks and consequently a decrease in the degree of discretion required in these tasks, while some tasks were expanded as a result of acquiring additional job knowledge, as well as training time being slightly decreased;
(d) task range remained constant but all were diluted, as well as there being a considerable reduction in the degree of discretion and to a lesser extent, training time; and
(e) finally a decrease in all three aspects of objective competencies occurred. In one of these divisions the slight tendency to deskilling as a result of computerisation was strengthened due to departmental reorganisation.

The job of calculating values is an example of a strong tendency to deskilling occurring in both companies due to task range remaining constant but all tasks having been diluted, and the degree of discretion and training time having been considerably reduced as a result of computerisation. In the pre-computer era the values clerk had three tasks: locate relevant data and policy files from a number of sources which was a straightforward procedure requiring minimal, if any, discretion. The second task was the calculation of either the loan - or surrender values. This could be a simple procedure in the case of a surrender value where the status of the policy had not been changed or a loan taken out against the policy. If the latter was the case the values clerk would have to scrutinise the policy's history and decide which company rules applied to the changed status/conditions of the policy. Once this was done, the values clerk would have to select the relevant series of calculations.
These calculations were done according to pre-calculated formulae, some of which were uncomplicated, and others, complicated.

Calculation of loan values followed a procedure similar to that of surrender values, but the procedure tended to be more complicated than that of even the most complex surrender values.

As a result the values clerk had to exercise considerable judgement. In addition, the work manuals that existed only specified the formulae. The selection of calculations relevant to the policy was only broadly specified in the manual. It took approximately two to three years to become job proficient.

Task dilution and a significant diminution of discretion/judgement occurred gradually. With the introduction of the first mainframe one of the tasks required more job knowledge, the task range and training time was unaffected but the degree of discretion decreased slightly. However, with the introduction of the second mainframe, more sophisticated programmes could be written as memory and speed of processing increased considerably. The effect on the values job category was significant. All three tasks were diluted. The values clerk no longer had to interpret print-outs to obtain relevant data (first computer), only read the file for the policy and the policy history. The second task of having to select the relevant calculations and then doing them has been considerably diluted. Currently, approximately ninety-seven percent of values are automatically calculated. The clerk's judgement in selection has been further limited by the use of pre-printed memos. These are forms the values clerk fills in and sends to the punching department. They are structured in such a way as to guide the clerk in his/her selection of the calcula-
Latterly, terminals have been installed and all valuations clerks trained in using them. Programmes have been written which guide the clerk by a series of questions posed on the screen.

The programmed questions considerably limit the need for selecting relevant calculations for specific conditions of the policy. The third task, correspondence, has also been considerably diluted as memos and letters to the branches who requested the value of the policy, are automatically produced on the computer. The clerk only writes letters and memos for three percent of all the values calculated. Letters to banks and policy-holders are in the process of being standardised and computerised.

New job categories were created in two of the divisions in Alpha Life, Policy-Holders' Services and New Business. The decentralisation of programming and systems analysis resulted in these divisions having acquired their own programmers and systems analysts. Only a small number of senior clerks are affected in that it provides them an alternative route to promotion, by becoming programmers. Prior to computerisation, their only scope for promotion was supervisor, the first rung on the managerial ladder. No new clerical job categories have been created.

No new job categories were created in the divisions researched at Beta Life as Systems and Programming are centralised in a separate division unlike these functions being decentralised at Alpha Life.
Additional job categories were created in one division of each of the companies. These job categories had existed elsewhere in both companies prior to computerisation, not in the divisions researched, and were established in the two divisions in the post-computer era due to the increase in work generated as a result of automation.

The postal job category is an illustration of additional job categories being introduced as a result of increased flow of documents between departments within a division. The large volume of paper work generated by computerisation created bottlenecks between departments. Postal clerks currently act as a central receiving and distribution point of all documentation within the division.

Specialisation occurred in three divisions - one in Alpha Life and two in Beta Life. The task range and training time were reduced but the degree of discretion required was retained. The job of underwriting illustrates this tendency in Alpha Life.

Prior to automation, junior underwriters had three tasks: sorting out single-life from multi-life policies and deviant from non-deviant policies; underwriting; and initiating correspondence if necessary. As a result of the computerisation of certain criteria used in underwriting, junior underwriters no longer had to sort the various policies into the categories mentioned above. Furthermore, if the branch indicates the policy fulfills the computerised criteria, the policy is then automatically issued at head office. Approximately 20% of the total number of policies are automatically underwritten. However, the junior underwriter still has to manually underwrite deviant single-life and all multi-life policies as the underwriting for the latter has not
been automated.

It is uncertain to what extent automation of underwriting is possible. According to one of the managers interviewed, attempts at extensive automation of underwriting have failed in the USA, and South African Life assurance companies tend to be more conservative than their counterparts in the United States of America.

Specialisation has not occurred in underwriting at Beta Life as it was still being manually done at the time of research. According to the manager of the Underwriting Department, it is unlikely to be computerised as attempts to do so in America have failed.

An example can be given where the objective competencies in one job category in Alpha Life remained stationary under the impact of computerisation, in spite of having been affected in the early stage of computerisation.

The new business clerical category at the regional offices was deskill ed in the first stage of computerisation, but reverted back to the position prior to computerisation, as the degree of discretion and training time are the same, with the task range only slightly decreased. Prior to computerisation the new business clerk had two tasks: checking policy - membership details on the application form, the medical fee account, and the application form against the typed summary sheet; and issuing the provisional notice of acceptance. Both these tasks required little discretion. In the first stage of computerisation, the checking task was diluted when the summary sheets were produced on the computer, resulting in even less discretion being required.
of new business clerks. Only the application form had to be checked before being sent off to head office. The issuing task was automated which resulted in a reduction in task range for the new business clerk. The combination of reduced task range and discretion resulted in the new business clerk being deskilled at this stage of computerisation.

With the introduction of terminals and the decentralisation of certain functions to regions, new business clerks regained levels of discretion that existed prior to computerisation. The new business clerk once again has to check the application form against the computerised summary sheet and initiate corrections at the region on all details except policy - and debit-order details. Working with computer print-outs has resulted in a slight densification of the checking task as the new business clerk has to learn computer codes whereas the typed summary sheet was straight-forward reading. This has not, however, increased the degree of discretion as it requires no exercise of judgement to learn computer codes. The introduction of the debit-order system has also resulted in a slight intensification of the checking task with the additional debit-order detail on the application form. As the correction of debit-order details is done at head office, the intensification has not affected the degree of discretion required.

A few job categories in two divisions - one in Alpha and one in Beta Life - have not been affected by computerisation. These tend to be half-day jobs and the very routine tasks, for example, collecting batches of policy pages produced on the computer and inserting, in the correct order, additional documentation; the punching, binding and enveloping of policies.
were interviewed. However, it was suggested that it would not be
invalid to assume that the findings based on interviews with the
longer-serving clerks in both companies could provide some degree
of reliability in generalising the findings to the total clerical
workforce in both companies, especially since a few clerks in
each of the companies had gone to great lengths to corroborate
the accuracy of their own recollections of how objective
competencies had been affected by automation.

Furthermore, while only half of the divisions that employed
predominantly clerical workers in both companies were researched,
computerisation was most advanced in these divisions at the time
the study was undertaken. They had also employed the largest
number of clerical workers prior to computerisation and
constituted the core of clerical work in both companies.
Therefore it would be reasonable to make a tentative assumption
that as the remaining clerical divisions in both companies
reached a similar level of computerisation to those studied,
analogous tendencies are likely to emerge. The extent to which
these tendencies may parallel those in the divisions researched,
however, does depend on managerial practices. It was shown that
differing managerial practices in Alpha and Beta Life had a
differential impact on objective competencies. In Alpha Life
there appeared to be a more conscious design in reducing job
fragmentation with the result that tendencies to upskilling were
stronger in one of the divisions than its counterpart in Beta
Life. In another division in Beta Life management chose to
increase job fragmentation rather than reduce it in order to
increase clerical productivity whereas a conscious attempt was
made to reduce job fragmentation in the corresponding division in
Alpha Life.
It is, however, more difficult to estimate which of the tendencies identified in both companies are the predominant ones, especially in Policy-Holders'/Client Services as these divisions contain a large number of job categories, of which only half were studied in-depth. The effect of computerisation on objective competencies in the remaining job categories were based on reconstructions by clerks who had not actually occupied those jobs in the pre-computerisation and computerisation eras and were not able to corroborate their recollections with staff outside of the division as was done in New Business. The same reservation applies to Medical Aid in both companies for similar reasons. In addition, none of the clerks currently employed in either company had worked in the division prior to computerisation. It has, however, been possible to estimate with a greater degree of certainty which of the tendencies identified in New Business and Text Processing in both companies are the predominant ones for reasons cited previously.

In terms of frequency of occurrence, diagram 1 shows that upskilling and deskilling appear to be the dominant tendencies, with upskilling having occurred in six divisions and one department, and deskilling in five divisions. A strong tendency to deskilling occurred in three of the five divisions and a slight tendency to deskilling in three of the five divisions. Specialisation and a reduction in job fragmentation are tendencies that occur most frequently after upskilling and deskilling. Each of these tendencies are present in three of the six divisions and one department researched.

As regards specific job categories, a greater number appear to have been deskilled than upskilled in Policy-Holders'/Client
Services in both companies. The reason appears to be that clerical work in this division largely involves numerical work – the calculation of various types of values – which lends itself to automation.

A greater number of job categories in Medical Aid in both companies appear to have been deskillled rather than upskilled. As in the case of Policy-Holders'/Client Services numerical work forms a substantial portion of the work in this division and appears to be the reason for deskillling being the predominant tendency. However, in Beta Life departmental reorganisation and job fragmentation have played a more significant role in deskillling clerical work than has computerisation.

A larger number of job categories in New Business in both companies seem to have been upskilled rather than deskillled for two main reasons. Firstly, calculations form only a small percentage of the work done in this division. Those jobs that were deskillled dealt mainly with calculations. Most work entails checking to ensure that the prospective policy-holder meets all the requirements of the particular policy applied for which requires varying degrees of discretion to be exercised by clerks. As policies marketed by the companies have become increasingly sophisticated a much larger range of variables need to be checked making it difficult to write programmes that accomodate all the variables. Secondly, the managerial practice of reducing job fragmentation by collapsing two or more job categories into one at Alpha Life has resulted in the upskilling of several jobs.

It would seem that all job categories in Text Processing in both companies have been upskilled. Although it is not possible to assert unequivocally that the work of junior word processor
operators in both companies has been upskilled, it would seem on balance that that has been the case since the task range has not changed with the introduction of ETP, and while some job knowledge has been lost with the automation of certain typing functions, the loss needs to be weighed up against the acquisition of additional job knowledge of learning to use special function keys. Barker and Downing argued that learning to use these keys cannot be regarded as increasing word processor operator skills as it did not take as long to become proficient in their use as centering and tabulation, which are now automatically done on word processors. However, research at both companies shows that calculations for centering and tabulation did not seem to require more discretion than using special function keys as a standard formula was used for these calculations. Furthermore, due to the wide range of special function keys, learning time is greater than that for becoming proficient in calculations and tabulations done on a typewriter, according to a supervisor.

2.3 THE SUBJECTIVE EXPERIENCES OF CLERKS IN ALPHA AND BETA LIFE

The subjective experiences of clerks were researched in order to assess clerks' perceptions of the effect of computerisation on their level of skill. This was considered to be important as an assessment of clerical perceptions can indicate whether a basis exists for the development of various forms of worker resistance to computerisation.

The clerks' subjective experiences largely corroborated the writer's findings on the effect of computerisation on objective competencies and management's responses to the question: "Do you think computerisation had decreased or increased the level of
skill required in your job and in clerical work in your division"? While research on the latter revealed several tendencies, clerks were asked only whether they thought their work required more or less job knowledge. Consequently, research findings on subjective experiences reveal only these two tendencies. Of the forty-six clerks (including terminal and word processor operators) interviewed in both companies, twenty-five (54%) had worked in either the pre-computer or pre-terminal stages and therefore had experience of doing the work manually as well as in the computerised mode. Seventeen of the twenty-five clerks (68%) thought their own work had been upskilled. The following two quotes are representative of the responses of these clerks:

Some expertise has been taken over by the computer but I've acquired new and additional expertise which makes this a more skilled job.

Work has become more complicated in our department because there are more variables in assessing and more codes to decipher as the policies we sell have become more complex ... we have to exercise a lot more judgement. We would never have been able to handle such complex policies without computers.

Two of the twenty-five clerks (4%) commented that they knew of other job categories that had been deskilled.

Computerisation removes the boring work to an extent; one can immediately locate errors, work faster and be neat but in certain divisions it becomes too stereotype, there is little variation, but my own job requires more skill.

The majority of work has been enriched but only in some cases has there been a decrease in discretion and initiative ... in downline situations the work stops ... is boring; the clerk is less involved in his work; there is less challenge in calculating premiums. My own job requires more thinking ... I have to exercise more judgement.

In one division where no clerks had worked prior to either stages of computerisation, three managers and a section head, who had
had been clerks in the pre-computer era, thought deskilling had not occurred on any significant scale. According to a junior word processor operator her work had neither been deskilled nor upskilled as a result of ETP but had become "more interesting".

Six of the twenty-five (24%) thought their work had been deskilled as a result of computerisation, and the seventh (4%) due to departmental reorganisation.

You aren't told why you are doing a thing in a particular way anymore because it's organised by the computer ... we think less because the computer does everything.

The staff become lazier because they have to think less ... they've come to rely on the computer. If they needed to calculate the premium they would not be able to do it.

One of the twenty-five (4%) was ambivalent as to whether her work had been deskilled or not.

Computers are useful but they generate a lot of checking work ... sometimes it is repetitive ... but there are times when you have to have all your wits about you and draw on all the experience you've accumulated over the years.

All but one of the clerks interviewed would not choose to revert back to the manual system, in spite of their having been deskilled as it eliminated a lot of frustrating work, greater accuracy was possible and the speed with which tasks were completed had been significantly increased. The following responses suggest why computerisation is perceived as beneficial and desirable despite its tendency to deskill in some cases:

you had to write out the renewal onto a codified form, take the batch to the punch-card operators. On receiving the computer print-out the next day you had to check for errors. If there were errors you would have to take them back to the punch-card operator and stand in a queue waiting for the corrections to be done. Sorting out the errors in a batch could take up to three days and in the meanwhile the premiums on some of the renewals in that batch might be changed and then you would have to do those all over again. It was terrible, terrible, and so frustrating! ... Now you do it yourself.
on the VDU; its quicker because you don't have to walk around so much; there are fewer delays now and that's important when the amount of work you do is being measured.

We can give better service to clients ... when they phone in we can just look up their policy history on the terminal and answer them then and there, and that gives you tremendous job satisfaction.

One of the forty-six clerks was ambivalent about computerisation:

There is so little you have to do except checking. Personally I feel you rust ... you rely on the computer. Everything is so computerised ... often I think a thing can be done differently and better but the question is how to programme it that way - they always talk about expenses. There is very little development and thinking for the new staff around here because we all work according to the machine. When I started here (10 years ago in New Business) You had to do 50% of the thinking yourself, now you do only about 20%. Before we got the terminals it was very frustrating to have to search for the information you needed. If you wanted a file everybody had to stop work and look for the file on their desk and it slowed down your work which is a bad thing when they're measuring how much work you do. Now the important information is stored and you get it within a split second. You still need a degree of discretion to find and correct errors ... the amount of time to learn the job is less because a lot of the work has been taken over by the machine. The machine is making life so easy you become bored more quickly (than in the pre-terminal era) and you can't move from job to job every 2 to 3 years ... Before you had to think more but there was a lot of frustrating work. Now there's still a bit of frustration but little thinking. I don't know which is worse. Some days I wish we had to think more. Other days I'd rather think less and have less frustration.

Twenty-one of the forty-six clerks (46%) had not experienced working prior to either of the stages of computerisation. The extent of job satisfaction differed mainly according to task range and length of employment. One of the clerks thought that the productivity schedule system was an additional factor affecting job satisfaction:

The productivity rate makes it impossible to both examine the account and think about it ... I really enjoy the difficult claims but then I only average 60 a day (as opposed to her usual 350 to 400 per day), but then I don't enjoy it anymore because at the merit assessment in June I won't get my salary increase.
Only seven of the forty-six clerks (15%) would prefer to do work different from their current occupations if they had the choice. Even here most of the alternatives expressed were some other type of clerical or secretarial work.

2.4. QUALITY OF WORK-LIFE

As is evident in the literature reviewed in chapter 1 and in chapters 3 and 4 of this thesis, computerisation significantly increases management's capacity to exercise greater control over clerks' labour power. It provides management with the facility to supplement bureaucratic with technical control over the direction, monitoring and pacing of work, although it is not widely used for the latter purpose in either of the companies researched. Chapters 3 and 4 showed how technical control over the direction of work further reduces the scope for some groups of clerks for exercising discretion, the job manual system having performed this function prior to computerisation.

Computerisation not only reduces the degree of discretion in some job categories but also results in a narrower task range and consequently the time taken to attain job proficiency is reduced. Job habituation occurs earlier in job categories thus affected by computerisation. It was not possible to obtain information on whether deskill ed job categories had been down-graded or whether salaries had been decreased. According to a Personnel Manager in Alpha Life, clerical grades have been redistributed as a result of computerisation as follows:

a) jobs in grades one and two were reduced by approximately 50%
b) increased in grades three to five by approximately 20%, and
c) increased in grades six to seven by approximately 15%.
Crompton and Jones have expressed reservations about the redistribution of job categories into higher grades being used as an indicator of upgrading because management tend to use this strategy as a compensation for deskilling. (38) My own research findings, however, indicate that the redistribution of job categories in this company does not seem to be performing such a function. A detailed comparison of job categories pre-computerisation and after the introduction of VDUs in two of the four divisions (39) supports the view that a number of job categories have been upskilled, as do the subjective experiences of many of the long-serving clerks interviewed.

While computerisation has further reduced clerks' control over their own labour power and apparently cheapened their labour power (although as mentioned above it was not possible to obtain information to verify this), it has also reduced job fragmentation to an extent, upskilled some job categories, increased the degree of discretion and time taken to attain job proficiency, and consequently increased the period before job habituation is experienced.

Computerisation has, however, also greatly improved the quality of working life for many clerks. It has eliminated the necessity of having to work overtime for long periods, which according to one of the longest-serving clerks interviewed who had had to work overtime for up to eight months in a year, was a nerve-wrecking experience, after three months our nerves were shot ... we needed the beers after work.

Many clerks reported that computerisation had taken over a lot of the "sloer werk". Clerks who had been responsible for journals and balancing welcomed the automation of these tasks as it reduced the pressure generated by not being able to balance the
journals and having to work overtime to make them balance. Overtime is still required of clerks but for much shorter periods and generally only when the computer goes down.

Some clerks, who had worked in the pre-computer era, recalled having to work in the basement, where all the loan files were stored, when calculating the interest rates on loans.

It was like a dungeon down there ... they used to issue us with overalls because our clothes got so dirty.

A terminal operator who had been an addressograph machine operator, preferred working on terminals as it was much cleaner and considerably less noisy.

Our fingers used to be covered in black ink by the end of the day ... after a few months on the job you couldn't get it out from under your finger-nails ... it was rather embarrassing to walk around like that.

All of the clerks interviewed thought computerisation was more advantageous than disadvantageous. Even those who thought they had been deskilled or that some of the work had been made more monotonous, as a result of computerisation, did not want to revert back to working in the pre-computer era. Disadvantages relating to computerisation were perceived as being of a technical nature by the majority of clerks. Only a small percentage saw the disadvantages being the result of deskilling or greater monotony. The apparent absence of resistance to computerisation is further evidence of automation being viewed on the whole favourably by clerks in the two companies researched.

A small number of the clerks interviewed thought that computerisation generated a lot of tedious work such as checking, but as mentioned above, would not want to change back to processing policies manually, mainly due to the volume of created as a result of computerisation. Very few clerks thought that
computerisation was a health hazard. Only a couple of full-time junior word processor operators reported getting headaches and nausea from working continuously on word processors, and did not take the recommended breaks because of productivity pressures. A policy checker in one company also developed headaches as a result of having to work continually at proof-reading large numbers of policies daily.

Factors not directly related to computerisation resulted in clerks working under pressurised conditions, and some reported that job satisfaction was thereby greatly reduced, for example, the productivity schedule system. However, there were departments where job satisfaction was considered to be an important management goal. Attempts were made to increase job satisfaction among clerks by introducing the quality control circle or similar systems to encourage greater clerical participation in deciding how the work was to be done. Job rotation was also introduced to foster job satisfaction. The implementation of the personal goal/performance appraisal system throughout both companies appears to have succeeded in motivating clerks to work harder while simultaneously promoting job satisfaction, a good example, of the dual nature of the employment relationship.

It was suggested in chapter 3 that the introduction of these new strategies to elicit clerical co-operation should be viewed against the background of a gradual shift in managerial practice, namely, that the means by which productivity was to be increased was weighed up against the effects on the clerical labour force, based on the dictum: 'a happy clerk is more productive'.

Finally, the benefit system seems to have succeeded in eliciting
greater clerical co-operation as well as making clerks feel "we're being looked after" by the company.

Given that computerisation has greatly improved the quality of working life for many clerks, it would seem that authors who argue

... the degradation and dehumanisation of office work ... has accompanied the introduction of microelectronic technology into ... the office(40)

have not paid sufficient attention to clerical working conditions prior to computerisation. Research in both Alpha and Beta Life Companies suggests that many clerks would not agree with such a view.

SUMMARY

In the first section of this chapter three constraints were identified in the literature as inhibiting deskilling from unfolding in a linear, even fashion.(41) These were the creation of new jobs; the variable application of the new technology; and the possibility of worker resistance. The findings on the effect of computerisation on objective competencies in Alpha and Beta Life show that deskilling has not occurred in a linear, fashion, contrary to the assumptions of Braverman, Barker, Downing and Armstrong discussed at the beginning of this chapter. A number of tendencies other than deskilling are present, and in two of the divisions in both companies, upskilling appears to be the predominant tendency.

New job categories, programming and systems analysis were created, to which clerks in two divisions in Alpha Life had access, resulting in greater scope for upward mobility for a small number of senior clerks. As regards the second constraint, the new technology has not been used in the same way in Alpha and
Beta Life. It was shown in chapter 3 that extensive use was not being made of technical control. Loss of control over clerical labour power occurred primarily by means of bureaucratic forms of control contrary to the findings of such writers as Barker, Downing and Armstrong. Furthermore, computerisation was being used in both companies to reverse job fragmentation rather than increase it, (as suggested by Braverman, Barker, Downing and Armstrong), resulting in tendencies to upskilling and specialisation in some job categories. Differences in the use of the new technology were also evident between Alpha and Beta Life, where clerks were given differential access to the mainframe. While this has not significantly affected the skill level of the clerks involved, it has meant that where direct access to the mainframe exists, job fragmentation has been reduced.

While worker resistance was not a constraint on the way in which computerisation has been introduced in either of the companies (chapter 3 discussed the reasons for the absence of clerical resistance to computerisation), management's attempts to increase clerical productivity and job satisfaction by means of job rotation, and reducing job fragmentation, have in some cases inhibited the tendency to deskill clerks and in other cases, have upskilled specific job categories.

Because Braverman, Barker, Downing and Armstrong assume a "generic impulse to deskill" they fail to take cognizance of the fact that managerial strategies are neither homogenous nor static. Chapter 3 revealed that managerial practices, under the influence of the humanisation of work movement, are increasingly focussing on how to increase clerical productivity by means of raising levels of job satisfaction. The result of this
development in the two companies has been that management have sought to increase clerical skill levels by introducing job rotation so that clerks develop a wider range of objective competencies in the course of their working lives. Indications of managerial strategies not being homogenous were found in the different approaches to job fragmentation in Medical Aid in Alpha and Beta Life. Medical Aid Division management in the latter company chose to increase job fragmentation whereas in the former company management consciously reduced job fragmentation.
FOOTNOTES

1 - Lever, 1983, p.9
2 - Thompson, 1983, p.104
3 - ibid, pp.104-105
4 - Littler, 1982
5 - Lever, 1983, p.5
6 - Butler, 1984, p.28
8 - Butler, 1984; Tepperman, 1976; and the writers' research
9 - Marais, 1981, and the writers' research
10 - Mumford and Banks, 1967.
11 - writers' research
12 - Thompson, 1983, p.116
13 - see chapter 1
14 - Stark, 1980, p.92
15 - Thompson (1983) citing as an example Brecher's study of the electrical workers (p.107)
16 - Thompson (1983, pp.107-108) referring to Rubery's study
17 - Lever (1983, p.8) refers to the work of Berggren to illustrate this point
18 - Littler, 1982, p.9
19 - Beechey, 1982, p.63
20 - Thompson, 1973, p.107
21 - ibid, p.107
22 - Littler, 1982, p.7
23 - ibid, p.7
24 - ibid, p.9
25 - Armstrong, 1983, p.95
26 - Butler, 1984, p.11
27 - Littler, 1982, p.18
28 - Braverman, 1974, pp.304-305
29- Klingender, 1935, p.55
30- ibid, p.55
31- Barker and Downing, 1980, p.69
32- Klingender, 1935, p.60
33- Braverman, 1974, pp 326-328
34- see Chapter 2, section 3
35- see Chapter 2, section 3
36- Littler citing Fox (Littler, 1982, p.7)
37- ibid, pp 7-11
38- Crompton and Jones, 1984, p 47
39- It was not possible to do such a detailed comparison in the other two divisions for reasons cited in the chapter.
40- Armstrong, 1983, p.113
CHAPTER 5: EMPLOYMENT OPPORTUNITIES AND THE COMPOSITION OF THE WORKFORCE

Introduction

Two principal issues are discussed in this chapter: the effect of computerisation on clerical employment opportunities and the composition of the workforce in Alpha and Beta Life. The literature surveyed in chapter 1 suggests that while no clerks have been made redundant, job losses have occurred on a significant scale through 'natural staff attrition'. This refers to practice of keeping staff levels constant while expanding both volume and intensity of work through the use of increasingly sophisticated labour-saving technology. In some cases the workforce has expanded momentarily due to new work generated as a result of automation, but relative to increases in workload the expansion is small.

The composition of the workforce was studied to establish whether automation had had any effect on the sexual and racial divisions of labour.

1. THE IMPACT OF COMPUTERISATION ON EMPLOYMENT OPPORTUNITIES

1.1 ALPHA LIFE

It has not been possible to obtain exact figures on the loss of jobs in three of the four divisions researched at Alpha Life since records of the number of staff employed in the pre-computer era were not kept. However, figures which give an indication of the scale of loss are available.

1.1.1 POLICY HOLDERS' SERVICES DIVISION

The figures below include staff at the regional offices and branches. It was calculated that in 1977 that if Policy-Holders' Services had not computerised three times the existing staff would have been necessary to cope with the volume of work at that
time. However by 1979, 918 000 policies were handled in Policy-Holders' Services and New Business by 351 workers, and in 1984, 1 452 000 by 509 staff. Thus while policies administered increased by 58% staff rose by 45% indicating a widening ratio of workload to workers overall. Taking Policy-Holders' Services alone for the same period workload in policies increased by 55% and staff by 29% (240 - 310). About 20% of these policies are presently too complex for automation; thus administering them is time-consuming. This underscores how few clerks are needed to administer automated policies.

New jobs were created in the Systems Department of PHS following computerisation. In 1963 only 4 programmers were employed but by 1970 the figure had increased to 100 and included junior- and senior programmers, project leaders and systems analysts. All of these jobs are graded higher than the majority of clerical categories, though only project leaders and systems analysts are graded higher than senior clerks.

1.1.2 NEW BUSINESS DIVISION

A considerable amount of repetitive work in this division has been automated with the result that a number of stages in the processing of a policy has been eliminated. For example, if administration finds there are no exceptional circumstances in the policy, a bar code system is used to issue the policy automatically without it having to go through the other two departments. As a result of this simplification considerably fewer clerks are involved in the issuing of straight-forward policies.

According to the manager 2 000 to 3 000 clerks would be required to do the work 400 clerks dealt with in 1984 using electronic
aids. The latter total included all typists, clerks and cashiers throughout South Africa, involved in issuing 20,000 to 25,000 policies per month. Moreover the staff at the branches would have been doing work additional to new business. In contrast during 1960 approximately 120 staff issued 4,500 policies per month. While the number of people involved in new business has increased three-fold from 1960 to 1984, the volume of work generated by new business has increased five-fold in the same period. A further indicator of the effect of computerisation on employment opportunities is the increase of speed in issuing a policy. In 1960 it took 32 days and in 1984 an average eight to nine days.

Five new job categories were brought into being in New Business as a result of computerisation. According to the division manager these provided few work places compared with the job loss involved.

1.1.3 MEDICAL AID DIVISION

Once again it was not possible to obtain exact figures on job losses for lack of records but the figures below are an indication of the scale of attrition.

Prior to the introduction of terminals 40 claims assessors and 10 check clerks processed the claims of 40,000 medical aid scheme members. Currently, in the post-terminal stage, 26 claims assessors and two check clerks process the claims of 83,000 medical aid scheme members. Thus while the workload more than doubled the number of staff was reduced by 44%. According to the manager of Medical Aid, job losses similar to that of the claims assessors apply to other job categories in this Division.

As in Policy-Holders' and New Business two new work categories,
programming and systems analysis, have been created in Medical Aid but these represent once again only a small increase in employment when compared with the reduction in job opportunities in the Division as a whole.

1.1.4 TEXT PROCESSING DIVISION

Exact figures on the changing balance of job opportunities in Text Processing were available as ETP was introduced in 1980, much later than computerisation of the other three divisions.

The centralised typing pool in the pre-ETP era employed 70 junior- and senior typists whereas the word processing centre now employs only 23 junior- and senior word processing operators a reduction of 67%. The volume of work, however, is almost twice that of the pre-ETP era.

A new department was created in the Division as a result of the introduction of ETP but provided an increase of only 12 work places as compared with the loss of 47 in the word processing centre. All twelve in the new Technical Department are graded higher than the jobs lost.

Additional positions have also been created in the phototypesetting department. In the pre-ETP period only two people were involved in very basic composition work as most was contracted out. With the introduction of ETP, a Phototypesetting Department was created to deal with the company's complete phototypesetting requirements. Employment rose to 7 representing an increase of 5 new jobs.

To summarise, a total of 47 jobs evaporated while only 17 were created, in spite of a significant increase in the volume of work.
1.2 BETA LIFE

It was also not possible, for the lack of records, to obtain exact figures on the loss of employment in the three divisions researched Beta Life.

1.2.1 CLIENT SERVICES DIVISION

Contraction of employment in Client Services is indicated in one department by the work load increasing by 9% in the past year with no additional staff. In a second department the volume of work increased by 19% in the same period with only one new staff member - an increase of 3%.

In the Membership Registry Services and Addressographs Departments approximately 30 to 40 clerks and 10 machine operators were employed respectively prior to computerisation, pre-1960. The majority of addressograph machine operators were placed in the Membership Registry Services Department after their jobs became obsolescent with electronic addressing, increasing the number of clerks in the department to between 40 or 50. By 1974 there were some 60 clerks in Membership Registry but the volume of work had almost doubled.

Seventeen typists were employed in the Text Processing Department prior to ETP, whereas currently only 10 word processor operators do almost 50% more work than in the previous era.

The Client Services' manager reports that the established pattern is no different in other departments: very modest staff increases with a significant rise in through-put of work.

1.2.2. NEW BUSINESS DIVISION

It was difficult to obtain figures which reflected the impact of computerisation on employment opportunities in this division.
However, according to the Division manager, between 1975 and 1983 a staff increase of only 10% occurred while the workload increased by 30%.

In the Policy Issues Department 22 policy typists were employed prior to 1970. By 1984 this figure had been reduced to 5%, as a result of policies being processed on the computer.

1.2.3 MEDICAL AID DIVISION

The only evidence regarding employment opportunities lost in Medical Aid as a result of computerisation derives from an interview with the manager of this division. He claimed a staff saving of 25% in spite of a 100% increase in volume of work from 1982 to 1985.

SUMMARY

In three of the seven divisions researched staff increases occurred after computerisation but these were much lower than the increase in work volume. Four of the seven divisions experienced a decline in staff numbers with significant increases in workload.

The general tendency in the divisions researched in both companies is towards a variable loss of employment opportunities in spite of large increases in workload, notwithstanding some new jobs being created in four of the seven divisions researched. New job categories were absent in three of the divisions researched at Beta Life as a result of the work moving away under computerisation to another division.

2. COMPOSITION OF THE WORKFORCE IN ALPHA AND BETA LIFE

A number of the studies surveyed in chapter 1 argued that the labour power of clerical workers had been cheapened as a result
of the feminisation of clerical work and deskilling, and that the new technology has considerably advanced this process. Armstrong also suggests that blacks will be increasingly employed in the life assurance industry as a cheaper source of labour.\((1)\) While the feminisation of clerical work introduced a sexual division, the latter development will initiate a racial division of labour into a previously white-dominated sector of the workforce.

In order to establish whether computerisation resulted in the cheapening of clerical labour power in Alpha and Beta Life, a historical analysis of salary and grading structures would have to be made. This was not possible as emoluments were considered confidential in both companies. Furthermore, it was possible only to obtain information on the current distribution of employees within the grading structure in Alpha Life where it seems that many jobs have been upgraded. Unfortunately it was not possible to establish the exact reasons for upgrading, nor whether salaries were concomitantly increased.

While computerisation has created new job categories which are on a higher grade than most clerical jobs, these are few and offer clerks limited occupational mobility. Furthermore, it appears that promotion into these jobs is available to clerks only in Alpha Life, and not in its competitor, Beta.

In the absence of past information on distribution of employees it was not possible to establish whether computerisation had affected the sexual and racial divisions of labour in either of the companies. The longer-serving clerks recalled that females were increasingly employed in both companies from the 1960s onwards. However, it is not clear whether feminisation of the clerical workforce in the two companies was related to automation.
which began concurrently. Clerks in both companies recall that blacks were not employed in clerical job categories at that stage, their entry being a recent event.

In spite of not being able to ascertain whether computerisation affected the sexual and racial divisions of labour, research into the composition of the workforce, while tangential to the main focus of the thesis, is useful as it may lay the basis for further research in this area.

Before embarking on a discussion of the composition of the workforce in Alpha and Beta Life, the horizontal sexual and racial divisions of labour within the South African economy will be dealt with to situate the findings within a national framework.

2.1 The Horizontal Division of Labour
The horizontal division of labour refers to the distribution of employees between separate industries or labour processes. This division occurs in two forms: sexual and racial. While the two are integrally linked in the South African economy, each will be dealt with in separate sections as they are independent variables, where discussion may throw light on the integral relation between the two variables.

2.1.1 The horizontal sexual division of labour
The horizontal sexual division of labour refers to the concentration of males and females in particular types of work. Tables 4 to 6 show that the movement of all races, male labour, from the decades 1960 to 1980 in farming, forestry and production was from 75.9% to 64.7%, the decrease reflecting a 14.7% change from 1960. A steady drift toward relocation in non-manual areas of work is evident, with small prominences in service, clerical
### TABLE 4

Racial and Sexual Breakdowns of Occupations as a Percentage of the Total Economically Active South African Population - 1960

South African Population Census Report

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| TOTAL MALES |    |                     |        |      | 2.07  | 1.084 | 4.882 | 5.026 | 26.72  | 31.809 | 4.486 |
| TOTAL FEMALES |  |                     |        |      | 1.96  | 0.117 | 3.353 | 11.640 | 3.536  | 1.548  | 2.333 |

Total Economically Active = 5 719 850
<table>
<thead>
<tr>
<th>Population</th>
<th>Gender</th>
<th>Professional &amp; Administrative</th>
<th>Clerical</th>
<th>Sales &amp; Service</th>
<th>Farm,</th>
<th>Product &amp; Not Classified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Work</td>
<td>Work</td>
<td>Forestry, Fishing &amp; Transport</td>
<td>Worker</td>
<td>Hunting</td>
</tr>
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<td>m</td>
<td>1,879</td>
<td>0,933</td>
<td>1,971</td>
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<td>0,061</td>
<td>2,990</td>
<td>10,698</td>
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<tr>
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<td>0,994</td>
<td>4,962</td>
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<td>m</td>
<td>0,128</td>
<td>0,011</td>
<td>0,319</td>
<td>10,175</td>
<td>0,279</td>
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<tr>
<td></td>
<td>f</td>
<td>0,188</td>
<td>0,000</td>
<td>0,125</td>
<td>10,113</td>
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<td>m</td>
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<td>0,025</td>
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<td>0,151</td>
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<td>f</td>
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<td>0,001</td>
<td>0,007</td>
<td>10,043</td>
<td>0,043</td>
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<tr>
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<td>0,126</td>
<td>0,026</td>
<td>0,316</td>
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<td>0,450</td>
<td>0,027</td>
<td>1,089</td>
<td>10,755</td>
<td>3,519</td>
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<tr>
<td></td>
<td>f</td>
<td>0,683</td>
<td>0,004</td>
<td>0,086</td>
<td>10,217</td>
<td>9,006</td>
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<td>0,027</td>
<td>1,175</td>
<td>10,972</td>
<td>12,525</td>
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<td>0,996</td>
<td>3,657</td>
<td>12,480</td>
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<td>TOTAL FEMALES</td>
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<td>1,897</td>
<td>0,63</td>
<td>3,238</td>
<td>10,976</td>
<td>10,656</td>
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</table>

Total Economically Active = 8,109,407
### TABLE 6

RACIAL AND SEXUAL BREAKDOWNS OF OCCUPATIONS AS A PERCENTAGE OF THE TOTAL ECONOMICALLY ACTIVE SOUTH AFRICAN POPULATION - 1980

South African Population Census Report

<table>
<thead>
<tr>
<th>Population</th>
<th>Gender</th>
<th>Profession</th>
<th>Administrative</th>
<th>Clerical</th>
<th>Sales</th>
<th>Service</th>
<th>Farm, Forestry,</th>
<th>Fishing &amp;</th>
<th>Transport &amp;</th>
<th>Total Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>'white'</td>
<td>m</td>
<td>2,683</td>
<td>1,308</td>
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<td></td>
<td></td>
<td>1,841</td>
<td>11,485</td>
<td>1,387</td>
<td>0,978</td>
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<td></td>
<td>f</td>
<td>1,600</td>
<td>0,143</td>
<td></td>
<td></td>
<td></td>
<td>3,988</td>
<td>10,772</td>
<td>0,410</td>
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<td>1,451</td>
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<td>4,829</td>
<td>12,257</td>
<td>1,797</td>
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<td>m</td>
<td>0,252</td>
<td>0,029</td>
<td></td>
<td></td>
<td></td>
<td>0,441</td>
<td>10,231</td>
<td>0,448</td>
<td>1,432</td>
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<tr>
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<td>f</td>
<td>0,339</td>
<td>0,005</td>
<td></td>
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<td></td>
<td>0,365</td>
<td>10,210</td>
<td>1,315</td>
<td>0,352</td>
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<td></td>
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<td>0,806</td>
<td>10,441</td>
<td>1,763</td>
<td>1,784</td>
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<td>m</td>
<td>0,170</td>
<td>0,046</td>
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<td></td>
<td></td>
<td>0,445</td>
<td>10,344</td>
<td>0,136</td>
<td>0,063</td>
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<td>f</td>
<td>0,090</td>
<td>0,003</td>
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<td>0,166</td>
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<td>0,005</td>
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<td>0,049</td>
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<td>0,611</td>
<td>10,428</td>
<td>0,190</td>
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<td>0,042</td>
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<td></td>
<td>1,819</td>
<td>10,994</td>
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<td>f</td>
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<td>0,004</td>
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<td>0,496</td>
<td>10,923</td>
<td>8,599</td>
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<tr>
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<td>3,151</td>
<td>0,155</td>
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<td>5,015</td>
<td>11,989</td>
<td>10,378</td>
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</table>

Total Economically Active = 8,689,726

181c
TABLE 7
DISTRIBUTION WITHIN OCCUPATIONS AS A PERCENTAGE OF TOTAL ECONOMICALLY ACTIVE RACE: EXCLUDING GENDER

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Profes-S</th>
<th>Administra</th>
<th>Clerical</th>
<th>Sales</th>
<th>Service</th>
<th>Farm</th>
<th>Products</th>
<th>IS</th>
<th>Technical &amp; Man.-cal</th>
<th>IS</th>
<th>Related I</th>
<th>IS</th>
<th>Fishing &amp; Trans-</th>
<th>IS</th>
<th>Hunting</th>
<th>IS</th>
<th>Port &amp; IS</th>
<th>IS</th>
<th>Labourer</th>
</tr>
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<td></td>
<td>'white'</td>
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<td>5.12</td>
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</tr>
<tr>
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<td>0.26</td>
<td>3.5</td>
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<td>21.05</td>
<td>38.67</td>
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<td></td>
<td>'asian'</td>
<td>4.14</td>
<td>1.89</td>
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<td>9.21</td>
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<td>6.81</td>
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<td>17.81</td>
<td>16.9</td>
<td>44.57</td>
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<td>17.81</td>
<td>40.36</td>
<td>30.36</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>19.49</td>
<td>6.64</td>
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<tr>
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<td>0.32</td>
<td>7.53</td>
<td>4.12</td>
<td>16.47</td>
<td>16.6</td>
<td>41.74</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>'asian'</td>
<td>8.8</td>
<td>1.67</td>
<td>20.71</td>
<td>11.5</td>
<td>6.48</td>
<td>2.3</td>
<td>40.63</td>
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<tr>
<td></td>
<td>'african'</td>
<td>3.17</td>
<td>0.07</td>
<td>3.59</td>
<td>2.98</td>
<td>19.7</td>
<td>19.9</td>
<td>38.4</td>
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</tr>
</tbody>
</table>
and professional/technical categories by 1980.

Total female employment for all races presents a more variable picture. In the 1960's service plus farming, forestry and production absorbed 69.7% of total economically active female labour. On its own, service accounted for 48.5% of the female labour force. By 1970 total economically active female labour is much the same at 70.1% in the three main employment categories, but service now retains only 31.2%. However, by 1980 a strong reversal occurs and service outnumbers production and farming by 141%. This is due to marked falls in farming, forestry and production employment figures and their redistribution to clerical and professional/technical occupations, with a less pronounced movement to sales.

It is noteworthy that while there are now more 'producers' among females under the production category in the larger population of 1980, 3.74% of total economically active work force as against 1.54% in 1960, more than twice as many, the balance from manual to non-manual has been stationary; 31.8% in 1960 and 31.6% in 1980.

The 1960 census combined figures for clerical and sales, and doing so for 1970 shows that males in the category increased by 79.6% and females by 77.7%.

2.1.2 The horizontal racial division of labour

The racial division of labour refers to the concentration of various 'population groups' in particular types of work. Table 7 shows that in 1970 'whites' were concentrated predominantly in clerical and production work, but by 1980, in clerical and
professional work. The number of 'whites' employed in clerical and related occupations had increased by 3%. Thus there was a significant shift in employment patterns among whites away from manual to mainly white-collar occupations.

'Coloureds' in 1970 were to be found mainly in production and service work, the distribution being unchanged by 1980. 'Coloureds' thus continued to straddle manual and white-collar occupations in 1980.

Indian South Africans in 1970 occupied predominantly farm and production occupations but by 1980 had moved from farm and forestry to clerical and sales work, while the number employed in production and related occupations had increased by 0.8% from 1970 to 1980. The redistribution from farm and forestry to clerical and sales indicates the beginning of a shift away from Indians mainly in manual work towards their entry into white-collar occupations increasing.

Blacks were to be found primarily in farm and production work in 1970, but by 1980 a shift away from farm and forestry occupations to service work was evident, so that blacks were concentrated mainly in production and service work. While the number of blacks employed in production and related work had increased by 6% in 1980, the number in farm and forestry declined had declined by 34.3%, with only a slight increase of 0.6% in service work.

When one looks at the horizontal sexual and racial divisions of labour together, the racial distribution between white-collar and manual occupations emerges more clearly. Tables 5 and 6 reveal that between 1970 and 1980 'white' women were concentrated predominantly in white-collar occupations and black women (including 'coloureds', asians and africans) in service, farm,
forestry and production work - the manual work occupations; 'white' males in professional, technical and production work; and black males in farm and production work. Blacks as a whole were concentrated predominantly in farm and production work. A breakdown of the white-collar occupations reveals that 54% of all economically active 'white' women were employed in clerical work from 1970 and 55% in 1980; that in 1970 they formed 65% of the teaching staff, 95% of the nurses, 85% of the social workers and 85% of the librarians.

The three tables below indicate the changing racial and sexual composition of the clerical workforce in South Africa.


<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>'Whites'</th>
<th>'Coloured'</th>
<th>Indians</th>
<th>Africans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
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<td>1,3</td>
<td>3,2</td>
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<tr>
<td>1960</td>
<td>5,5</td>
<td>24,0</td>
<td>1,6</td>
<td>6,5</td>
<td>0,5</td>
</tr>
<tr>
<td>1970</td>
<td>6,9</td>
<td>26,7</td>
<td>5,0</td>
<td>14,1</td>
<td>1,8</td>
</tr>
<tr>
<td>1980</td>
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<td>26,5</td>
<td>7,6</td>
<td>20,7</td>
<td>3,6</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>'Whites'</th>
<th>'Coloured'</th>
<th>Indians</th>
<th>Africans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>100</td>
<td>72,9</td>
<td>6,5</td>
<td>4,7</td>
<td>15,9</td>
</tr>
<tr>
<td>1980</td>
<td>100</td>
<td>61,0</td>
<td>8,4</td>
<td>6,4</td>
<td>24,2</td>
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</table>
Table 10: PROPORTION OF MALES TO FEMALES (IN PERCENTAGE) EMPLOYED IN THE CLERICAL SECTOR IN SOUTH AFRICA IN 1970 AND 1980

<table>
<thead>
<tr>
<th>Year</th>
<th>Total 'whites'</th>
<th>'Coloureds'</th>
<th>Indians</th>
<th>Africans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m f</td>
<td>m f</td>
<td>m f</td>
<td>m f</td>
</tr>
<tr>
<td>1970</td>
<td>53 47</td>
<td>72 28</td>
<td>95 5</td>
<td>85,5 14,5</td>
</tr>
<tr>
<td>1980</td>
<td>48 52</td>
<td>55 45</td>
<td>73 27</td>
<td>58 42</td>
</tr>
</tbody>
</table>

(Tables 8 to 10 were compiled from National Manpower Commission Reports)

These figures show that clerical workers as a percentage of the economically active population has increased by 5% from 1951 to 1980; that there has been a 12% increase in the number of blacks employed in the clerical sector from 1970 to 1980 and an increase of 66.5% of female black employees for the same period, which indicates that while they are concentrated predominantly in agriculture, domestic service and production they are gradually shifting to the clerical sector. Furthermore, there is a tendency towards an increasing feminisation of the clerical workforce in South Africa, the percentage of females having increased by 5% and the percentage of males having declined by 5% from 1970 to 1980.

2.2 The Vertical Division of Labour

The vertical division of labour refers to the uneven distribution of various groups of employees in certain types of job categories within each labour process, and occurs in two forms: sexual and racial. The workforce in Alpha and Beta Life is characterised by a sexual and racial division of labour. Each will be discussed in separate sections as they are independent variables.
2.2.1 The vertical sexual division of labour in Alpha and Beta Life

In both Alpha and Beta Life a vertical sexual division of labour exists in that the overwhelming majority of females occupy clerical job categories and management positions are almost exclusively male. A large percentage of section heads in both companies are female but these positions tend to be more of a supervisory nature, rather than being characterised by decision-making powers over the allocation of resources as are management positions. In addition, they are considerably fewer in number than are clerical job categories. A very small number of women are departmental managers, and generally hold this post only at regional and branch offices rather than at the head offices. Furthermore, only a small percentage of women are employed in the higher graded occupations such as systems analysis, actuaries and representatives.

Characteristic of the vertical sexual division of labour is the disadvantaged position in which it places women. Being concentrated in the lower levels of the company hierarchy they receive lower salaries, fewer fringe benefits and less promotion. Their work is seen as having lower status in terms of prestige, authority, responsibility and skill relative to male employees. Furthermore, the majority of part-time workers are female which means fewer benefits and even less status.

The sexual division of labour within both companies is reflected in the distribution of employees within the grading structure. The grades are organised numerically in opposite directions in the two companies. In Alpha grade 1 stands lowest and in Beta, highest in hierarchy. Grades one to seven are clerical work grades in Alpha Life and grades thirteen to sixteen in Beta
Life. Most female clerical workers are concentrated in grades three to six in Alpha Life and grades thirteen to fifteen in Beta Life. 'Coloured' male clerks tend to be concentrated mainly in grades 1 and 2 at Alpha Life. Male clerks tend to be located predominantly in grades four to seven in Alpha Life and grades fifteen to sixteen in Beta Life, these being the most senior clerical grades in the two companies. The majority of 'white' male employees are to be found in grade seven upwards, with the highest concentration from grade ten upwards - the managerial posts - in Alpha Life. In Beta Life the majority of males are in grade twelve and downwards, with highest concentration in grades ten to one.

2.2.2 The vertical racial division of labour in Alpha and Beta Life

As in the case of the vertical sexual division of labour, its equivalent in the racial division of labour results in an uneven distribution of white and black employees within job categories. A vertical racial division of labour exists in both companies, but to a lesser extent in Beta than in Alpha Life. The majority of black employees in Beta Life occupy service and lower clerical job categories with very few blacks in the more senior clerical job categories, and in positions such as section heads, assistant departmental managers and technical staff in the Personnel Division. Beta Life's employment policy regarding blacks is that they may not constitute less than 25% of the total workforce. In Alpha Life the majority of black employees are similarly concentrated in the service and lower clerical job categories with a small minority occupying higher grade positions.

The racial division of labour in both companies is reflected in their grading structures. In Alpha Life grades one to two, which
are service and clerical grades, (the lowest) are comprised mainly of 'coloured' male employees with a very small number located in the higher clerical grades, that is from grade three onwards. There are no 'coloured' males employed as section heads or assistant departmental managers in the clerical divisions researched. In Beta Life most black clerks are concentrated in grades thirteen and fourteen, the lower clerical grades. Most black employees (non-clerical) are located in grade sixteen upwards (the lowest grades) and very few in grades sixteen to ten.

Tables 11 to 13 illustrate the sexual and racial composition of the clerical workforce in Alpha and Beta Life, and in the Life Assurance Industry as a whole.

Table 11: THE RACIAL AND SEXUAL COMPOSITION OF THE CLERICAL WORKFORCE AS A PERCENTAGE OF THE TOTAL CLERICAL WORKFORCE AT ALPHA LIFE HEAD OFFICE.

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Gender</th>
<th>Percentage</th>
<th>Total Race</th>
<th>Total Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>'white'</td>
<td>male</td>
<td>16,5</td>
<td>74</td>
<td>(m) 26</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>74</td>
<td>0</td>
<td>(f) 74</td>
</tr>
<tr>
<td>'coloured'</td>
<td>male</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 12: THE RACIAL AND SEXUAL COMPOSITION OF THE CLERICAL WORKFORCE AS A PERCENTAGE OF THE TOTAL CLERICAL WORKFORCE AT BETA LIFE HEAD OFFICE.

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Gender</th>
<th>Percentage</th>
<th>Total Race</th>
<th>Total Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>'white'</td>
<td>male</td>
<td>17,4</td>
<td>52</td>
<td>(m) 37</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>69</td>
<td></td>
<td>(f) 63</td>
</tr>
<tr>
<td>'coloured'</td>
<td>male</td>
<td>18</td>
<td>10,4</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>asian</td>
<td>male</td>
<td>1,33</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>black</td>
<td>male</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Year</th>
<th>Population Group</th>
<th>Male</th>
<th>Female</th>
<th>Total Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>'whites'</td>
<td>45</td>
<td>41</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>'coloureds'</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>asians</td>
<td>0,1</td>
<td>0,002</td>
<td>0,12</td>
</tr>
<tr>
<td></td>
<td>african</td>
<td>1,7</td>
<td>0,04</td>
<td>1,74</td>
</tr>
<tr>
<td></td>
<td>Total Gender</td>
<td>57</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>'whites'</td>
<td>43,5</td>
<td>42</td>
<td>85,5</td>
</tr>
<tr>
<td></td>
<td>'coloureds'</td>
<td>8</td>
<td>2,7</td>
<td>10,7</td>
</tr>
<tr>
<td></td>
<td>asians</td>
<td>3</td>
<td>0,6</td>
<td>3,6</td>
</tr>
<tr>
<td></td>
<td>Total Gender</td>
<td>55</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

(The figures on the sexual and racial divisions of labour in the two companies were obtained from the respective personnel divisions, and those for the industry from the South African population census reports.)
The racial composition of the clerical workforce in Alpha Life reveals that deracialisation has not kept pace with that in Beta Life - where blacks (including 'coloureds', asians and africans) constitute a third of the clerical workforce, as compared to only 10% in Alpha Life. Another significant difference between the two companies is that females constitute a greater percentage of the clerical workforce in Alpha Life (74%) than in Beta Life (63%). Furthermore, 11% are blacks among the female clerical workforce in Beta Life whereas in Alpha there are none.

Figures for the life assurance industry indicate only a very slight increase in the percentage of blacks employed, from 14% in 1960 to 15% in 1980 and therefore no significant deracialisation of the industry. A slight upward tendency in the feminisation of the industry is evident in that the percentage of females employed has increased by 3% from 1960 to 1980. The percentage of black females has increased by 1% for the same period although figures for African women are not included.

According to management personnel interviewed in both companies, there is no sexual or racial discrimination towards employees. Salaries are paid according to the employee's grade; benefits are provided on the basis of length of employment and marital status; and promotion is based on job competency, and for some positions, on vacancies. However, there are fewer promotion possibilities available to clerical employees as the ratio of section head posts to clerical job categories is much lower, and more so in the case of managerial positions which are fewer the higher one goes up the hierarchy. Thus it is women, and to a lesser extent, blacks who have fewer promotional opportunities.

Both companies currently employ more black male than female
clerks with the result that most black clerks, being male, have greater promotional opportunities (within the limits mentioned above) than their female counterparts (who are mostly 'white') as their careers are not punctuated by domestic commitments as are the careers of most female clerks.

The above statistics on the composition of the clerical workforce in the two companies show a marked difference exists in the racial division of labour between the two companies. It was not possible to ascertain exactly the reasons for there being a low level of deracialisation in Alpha Life, only 10% of blacks constituting clerical labour at head office. In Beta Life a more significant move towards deracialisation exists where blacks form 30% of clerical labour at head office. The following is a tentative explanation, based on informal conversations with many of the interviewees, after a rapport had been established.

The slow pace of deracialisation in Alpha Life is probably the outcome of a legacy inherited during its founding years. The formation of Alpha Life assumed a particular trajectory in the early social struggles associated with Afrikaner reaction to hegemonic English capitals.

An Afrikaner economic movement informed by nationalist sentiment and mobilized through institutional channels and the press appeared early in the century. Growing out of the Helpmekaar (Mutual Aid) movement to assist persons imprisoned in the 1914 Rebellion, Alpha Life was formed four years later.

The Chairman's report of 1921 encapsulates an ethos that was to prevail for many decades:

Alpha Life is an authentic institution of the Afrikaner volk in the widest sense of the word. As an Afrikaner, you will naturally give preference to an Afrikaner
institution. I would just remind policy-holders that we are busy furnishing employment to young Afrikaners, and training them in the assurance field. We hereby intend to provide a great service to South Africa. If we want to become economically self-reliant then we must support our own institutions. To that end, Alpha Life offers you the opportunity. (2)

The early role of Alpha Life was self-consciously messianic in direction. The institution saw its function as harvesting the meagre savings of many small producers, and those of a few rich agricultural capitalists, to concentrate and then centralise the accumulated capital and shift it toward Afrikaner commerce and industry. Almost eight decades later Alpha Life has become a financial power and is one of the three largest conglomerates in South Africa. With its financial muscle and commitment to upliftment of the 'volk', Alpha Life was as important as press and party to the success of Afrikaner nationalism.

An ethos based on the nationally-minded 'volk' has deeply imbued the institution and while it is not possible to explore the connections between ideology and practice here, it is contended that the birthmarks of early class struggles at Alpha are still carried in the present generation of employment practices at Alpha Life: the good of Alpha was the good of the 'volk', which gave rise to a preferential employment policy, employing 'white' Afrikaners rather than any other grouping in South Africa.

The role of Alpha Life in the concentration and centralisation of Afrikaner capital and its growth into a rival of Anglo-American was achieved in great part through construing the Afrikaner volk as a new historical subject, underscoring antagonisms between 'volk' and outsider groups, notably English imperialism and black workers. 'Christian Nationalism' became the embodiment of 'volk' ideological practice.
While Christian National ideology informed managerial practice and encapsulated the main tenets of capitalism, its elaboration of a strong racial bias brought it into eventual conflict with a modernizing capitalism. The coincident emergence of black mass markets was both problem and opportunity to managerial practice in Alpha Life, imbued with elements of Christian Nationalism. Under the spur of competitive effort to overtake its major contender, management thinking needed to accommodate a more open employment policy if it was to make gains in life assurance sold to black consumers. Two generations later, although there is little or no explicit advocacy among senior management in Alpha Life for a racial employment policy, deracialisation is slower than at Beta Life.

Two reasons are offered for the different rate of deracialisation. In conversation with a senior manager race sensitivity among clerical personnel was advanced as the reason for Alpha's "evolutionary" approach to the appointment of more black clerks. This gradualism combined with the inherited lack of educational qualifications among blacks appropriate to the company's needs is the second reason contributing to a slower pace of deracialisation. While the latter applies to Beta as well, its effect in Alpha is to reinforce the slower pace of change.

In Beta Life the issue of deracialisation derives from an altogether different trajectory of development. Bozzoli finds in the re-structured English-speaking capitals, after Sharpeville and by the 1973 labour unrest, a clear indication of a drive toward new legitimations for the advanced capitalism of the time. She attempts
to demonstrate some aspects of the complex relationship between the indefinable quality of English-speakingness and capital. (3)

The progressive elements within the early "South Africanist ideology" (4) with its limited consensus approach, the kernel of the United Party's standpoint, essentially petit-bourgeoise, called for transformation to meet new qualitative needs arising out of quantitative accumulations in capitalism.

The formation of Liberty Life is a paradigm of the new economic climate. It was formed in 1958 with a modest capital of 100,000 R2,00 shares. It transformed into a Stock Exchange listed company in 1962, and was a take-over exemplar by 1964, when a world-wide insurance group acquired it. With a market capitalization of R55 million by 1968, a R2,00 share became R500 in 10 years. (5)

The phenomenon was different and novel and called for new managerial ideologies in contrast to early models based on pioneering ventures, when changes were gradual, from small producer to large and diversified firms. The times called for a managerialism freed of earlier ideological constraints. English-speaking capitalism, in the form of Beta Life, sponsored the new ideological "indoctrination" (6) process at University of Cape Town with the formation in 1967 of the Graduate School of Business.

Nobody goes through that course and comes out the same person. Your whole character, you whole outlook, everything is different. They break you down to nothing... (7)

Bozzoli comments:

the methods used to do this are the accepted methods of ideological restructuring and fully re-trained individuals are sent back to their firms equipped with the ideas of modernity, dynamism and advanced capitalism. (8)
The readiness of the new generation of managers, with their restructured ideologies to modernise is reflected in the racial employment practices in Beta as against Alpha Life. This must be seen as coincident with the realisation in advanced capitalism of an awakening mass market in African consumerism, a distinct feature of the early 1970s. The goal at Beta Life of employing a minimum of 25% black staff looks hesitant but should be seen perhaps, against the background of the conservative racial employment practices of its giant rival, which in 1984 drew level with it in premium income.

An additional difference in the composition of the clerical workforce between the two companies is the gender distribution within the clerical category. Alpha employs 11% more female and 11% less males clerks than Beta Life. The reason for the variance appears to be the higher percentage of black male clerks employed in Beta than in Alpha Life (20% as opposed to 10%). It has been a general principal that the process of deracialisation begins with employing a larger number of black males than females. This derives from differential educational endowments between the genders, which itself is a product of pre-existing patriarchal relations.

Figures on the composition of the work force in the life assurance industry and the racial distribution within the clerical sector generally, show that the trend toward deracialisation in the clerical sector generally is further advanced than in the life assurance industry. Given that the life assurance industry is among the largest employers of clerical labour one would expect to find a parallel strength in the deracialisation trend in the life assurance industry. There
are two possible explanations for this discrepancy. One suggestion came from an official of the Life Offices' Association of South Africa, the official mouthpiece for the life assurance industry. According to the official, a combination of sophisticated labour-saving technology, widely used within the industry from the early seventies onwards, and the educational back-log of blacks at the time, the product of apartheid policy in South Africa, suggests why deracialisation in the life assurance industry is not as strong a tendency as in the clerical sector generally. The recruitment rate in life assurance companies has been steadily decreasing as a result of widespread use of the new technology and this converges with few blacks having been sufficiently qualified to fill clerical and higher posts. Consequently, new recruits tend to be drawn mainly from the 'white' employment-seekers.

The Life Offices' Association official's explanation suggests that as the recruitment rate in the life assurance industry further declines with advancing automation, even fewer clerical positions will be available to blacks entering the labour market with the 'appropriate' qualifications. Hence, it is probable that the trend toward deracialisation of clerical work in the life assurance industry is unlikely to become much stronger than is presently the case.

A second possible explanation for the slower move to deracialise the life assurance industry as compared to the clerical work force as a whole, are the constraints dominant companies place on employment policies in the industry. Alpha and Beta Life together employ approximately 50% of the total clerical work force in the industry.(9) Neither company began employing blacks in clerical and higher positions until the mid-seventies. This
combined with Alpha's slow move to deracialise would therefore be reflected in the statistics. In addition, Alpha Life may be acting as a break on Beta Life's preparedness to speed up the process. This possibility, together with the prevalent racism among 'white' South Africans, could have acted as a constraint on Beta Life in a highly competitive market for attracting policyholders.
FOOTNOTES

1 - Armstrong, 1983, p.96
2 - O'Meara, 1983, p.98
3 - Bozzoli, 1974, p.1
4 - ibid, p.1
5 - ibid, p.4
6 - ibid, p.9
7 - ibid, p.9
8 - ibid, p.10

9 - Officer of the Life Offices' Association in conversation with the writer.
CONCLUSION

Research on the nature of the new technology used in Alpha and Beta Life revealed that it provided management with the potential to technically control the labour power of clerks which corroborates the findings on the labour process studies surveyed in chapter 1. However, management may not or cannot, fully exploit this potential for various reasons. This study suggests that such reasons include: a) technical control's lesser effectiveness than bureaucratic control; b) the need to elicit clerical co-operation; c) constraints arising out of the oligopolistic market in which the companies operate.

Management in both companies had developed what appeared to be effective methods of controlling the pacing and monitoring of work prior to computerisation. The only evidence of technical control was increasing automation of job manuals aimed at reducing the potential for clerks to make errors, which it seems will reduce the degree of discretion required in numerous clerical job categories. The pacing and monitoring of work has, however, not been subjected to technical control as management apparently prefers bureaucratic forms of control such as the productivity schedule system and personal goal/performance appraisal systems. Furthermore, some departmental managers in Alpha Life found technical control not as effective as the bureaucratic forms of control and that the latter method enabled section heads to monitor which clerks were ready for promotion. According to a departmental manager, this encouraged clerks to realise their full potential and was considered to be important in eliciting the maximum co-operation from clerks to be more productive. Further attempts by management to elicit clerical co-operation in increasing productivity and improving the quality
of work were evident in the introduction of quality control circles and similar systems. Thus clerical participation in designing work methods has tended to increase in spite of the automation of job manuals. The above-mentioned factors suggest that the choice of control strategies by management is largely informed by the need to "manufacture consent", one of the results of the dual dependency of capital and labour on the employment relationship.

It was suggested in chapter 3 that competition between large insurance companies operating in an oligopolistic market played an important role in influencing managerial control strategies. Management in both companies was confronted with the situation that increasingly sophisticated life assurance policies had to be marketed in order to either retain or increase market share but the new policies tended to be too complex for automation. Furthermore, in terms of cost-benefit assessments automating the issuing and administration of these policies would not be economically viable. This suggests that management is faced with the contradictory situation of creating work that requires a number of clerks to have considerable job knowledge which limits their capacity to extensively control these clerks' labour power. Management therefore have to rely on bureaucratic rather than technical control which means that the 'real' subordination of these clerks' labour power is not yet possible.

Furthermore, advances in programming manifested in the transition from batch to transaction processing provided management with a choice in job design, between increasing or reducing job fragmentation, without affecting clerical productivity, for the first time since the application of scientific management principles to the clerical labour process. Consequently a
detailed division of labour was not the only option open to management in their attempts to increase clerical productivity. Research revealed that a tendency toward specialisation was emerging alongside the process of deskilling, and that management in both companies envisaged a greater reduction in job fragmentation in the future as more and more programmes were written in the transaction processing mode. However, it was not clear to what extent this development would decrease the degree of discretion required in the various clerical job categories, whilst it would clearly result in an increased task range in many such job categories.

These findings demonstrate that it is not valid to assume that computerisation inevitably results in the real subordination of clerks by means of technical control, deskilling and the concomitant fragmentation of jobs as a number of writers do. A further questionable assumption made by such studies is that increased managerial control and deskilling are concomitant processes. In Alpha and Beta Life control over most 'clerks' labour power (excluding those participating in quality control circles and similar systems) has been increased with the expansion of the range of control measures employed in the post-computer era, while some of these clerks' jobs have been upskilled rather than deskilled. Furthermore, the ahistorical approach of several authors leads them to conclude that computerisation facilitates deskilling - the separation of conception and execution in clerical work. It was shown that the labour intensive nature of clerical work prior to computerisation and the use of job manuals in both companies had already effected the separation of conception and execution.
The reasons given for management not choosing to, or not being able to fully exploit the potential of the new technology to technically control clerks' labour power, suggests that not all managements/companies are faced with the same constraints in effecting the real subordination of clerks. In addition, it was shown that a shift away from autocratic styles of management to a more consultative one due to the emergence of the human relations approach to managing workers - weighing up the means to increase productivity against the effect on the workforce - was evident in both companies. A consultative approach may inhibit the real subordination of clerks, for example, where quality control circles and similar systems are introduced. However, this is not to say that all managements may be evolving in this direction.

In spite of not being able to determine the exact impact of computerisation on employment opportunities in the two companies there is sufficient evidence to suggest that computerisation is contributing significantly to a loss of clerical employment opportunities in the life assurance industry and thus creating a problem of technological unemployment. The loss of clerical job opportunities is reflected in staff levels remaining constant while the volume of work increases substantially or a low rise in staff number relative to significant increases in workload - the process known as 'natural staff attrition'. These findings concur with those of West, Hines and Searle, the Nora-Minc report, the Siemens study and Sherman and Jenkins. The scale on which clerical jobs are being lost as a result of computerisation poses the crucial problem of how the increasing number of black matriculants, especially females, are to be absorbed into employment. Although research in banks and building societies is incomplete and does not form the subject of this thesis,
sufficient research was done in such institutions to indicate job opportunities were being lost on a similar scale to that in the two life assurance companies. Thus the finance sector, which has traditionally been among the largest employers of clerical workers after the civil service, will no longer be able to fulfill that role.

In the light of computerisation resulting in a significant loss of employment opportunities and the occurrence of natural staff attrition in both companies, it would seem that a similar ratio of white to black clerical employees as exists at present is likely to remain for a considerable time. The question is whether the increasingly smaller number of new clerical recruits, even if they are predominantly black, will significantly affect the existing clerical white, black ratio?

The research findings on the impact of computerisation on control, deskilling and general working conditions suggest that those writers on the clerical labour process who conclude that automation degrades clerical work, and has resulted in the 'proletarianisation' of clerical labour, have been overhasty in their assessment. Once again, their failure to examine these issues in the pre-computerisation era has resulted in their conclusions having a rather slender basis as is evident from the subjective experiences of the longer-serving clerks in both companies.
APPENDIX 1

QUESTIONNAIRE USED IN PILOT STUDY (FIRST STAGE QUESTIONNAIRE).

1. What do you think the advantages and disadvantages of computerisation are: a) generally; b) for this company; and c) for clerks?

2. What effect has computerisation had on organisational structure in this company?

3. How were the various clerical job categories in the various departments affected by computerisation?

3.1 How do you foresee clerical job categories being affected in the future?

4. How have qualifications and training for clerks been affected by computerisation?

4.1 How do you foresee these being affected in the future?

5. How has computerisation affected job design?

6. Has computerisation affected the degree of work satisfaction among clerks?

7. Has computerisation affected the distribution of males/females and blacks/whites in clerical job categories?

7.1 If yes, how?

ADDITIONAL QUESTIONS ADDRESSED SPECIFICALLY TO MANAGEMENT:

1. What is your total staff complement?

2. How many of those are clerical?

3. What proportion are male and female, black and white?

4. Which departments employ the most clerks?

5. Do employees have a trade union or staff association?

6. If yes, is there one specifically for clerical workers?
ADDITIONAL QUESTIONS ADDRESSED SPECIFICALLY TO COMPUTER SYSTEMS PERSONNEL:

1. When was the first computer installed in this company?
2. Was it a first or second generation computer?
3. What generation of computer is currently in use?
4. How many mainframes are in operation?
5. Where are they situated?
6. How are the networks constituted?
7. What linkages exist between workstations and mainframe(s)?
8. How were the networks and linkages developed over time?
9. What is the extent of computerisation at this time?
10. What are future plans for extending computerisation?
11. Was the transition to computerisation via Hollerith?
12. Were there any other forms of mechanisation prior to computerisation?
13. If yes, what were they?

QUESTIONNAIRES USED IN SECOND STAGE. IN-DEPTH INTERVIEWS.

Management Questionnaire:

General Questions:

1. Computerisation is generally considered to be advantageous for two main reasons:
   a) it increases productivity and efficiency (after initial teething problems) dramatically, and
   b) it takes over the mundane and repetitive tasks from employees and frees them to do the more interesting tasks. Has this been the case in the firm/your Division?
2. Computerisation is considered to be disadvantageous because it poses the problem of large-scale unemployment in years to come. Is this likely to occur in your firm/Division?
Organisational Structure:
1. How is your Division structured?
2. How does this differ from the pre-computerisation era?
3. How do you foresee the Divisional structure being affected by further computerisation in the future?
4. Can you detail the organisational changes with each of the computer generational advances?
5. Can you specify the clerical job categories in each of the departments of the Division?
6. How do these differ from those in the pre-computerisation era?
7. In what way do you expect clerical job categories to alter with further computerisation?

Content of the Job Categories:
1. Can you outline task composition of the clerical job categories as given?
2. How does the present task composition differ for each of the stages of computerisation?
3. What future effects do you visualise as a result of further computerisation?

Job Design:
1. In your experience has computerisation increased the division of work in your Division/department?
2. If no, has the work division remained the same or have jobs been collapsed?
3. If yes, can you give examples?
4. Are there any features of job design as a result of computerisation that you would particularly like to mention?
Control and Deskilling:

1. How does management go about eliciting maximum productive effort from clerical staff?
2. Do you think computerisation has generated more work?
3. What type of work emerged?
4. How does it compare with work in the pre-computer era in terms of: a) job knowledge, b) training time, c) more or less routine and d) level of challenge?
5. Can you itemise how each of these elements changed with each stage of computerisation?
6. Has the level of work satisfaction in your Division/department changed as a result of computerisation?
7. Do you monitor/measure the pace and quality of clerical work?
8. How: presently, and in the pre-computer era?
9. Has computerisation facilitated such monitoring/measurement?
10. If there have been changes in the amount of job knowledge have these changes been reflected in the clerks' grading and salary structures?
11. Has grade mobility been affected by computerisation?

Questionnaire addressed to Clerks:
All questions addressed to managers were put to clerks as well. Variations and additions introduced are set out below:

Introductory Questions:
1. Name, age, marital status, children?
2. How long have you been employed at ......, and in this department?
3. What is the official title of your job?
4. What does it entail?
5. What was your previous job (where applicable)
6. Were you consulted by management about the introduction of computers?

Skills:

1. Have any of the stages of computerisation affected the task range, degree of discretion and training time in your job? (addressed only to people who had worked before the final stage of computerisation)

2. If you have moved from one job to another within this Division, can you recall (the above effects) how your work changed with computerisation?

3. In your opinion how has work in your department as a whole been affected by computerisation?

Subjective Experiences:

1. What do you think have been the advantages and disadvantages of computerisation in your job?

2. Do you think computerisation has generated more or less work?

3. Do you feel your work has become more of a routine or less?

4. Do you feel the variety in your work has decreased or increased?

5. Do you feel you exercise more judgement in your work?

6. Do you feel it takes longer to become job proficient?

7. Do you feel at all subordinate to the computer?

8. How do management check the quality and pace of your work?

9. Do you feel the computer controls the pace of your work?

10. What do you feel about job satisfaction in your post?

11. If you had a choice would you do any other type of work?

12. If yes, what would you like to do?
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