RESTRUCTURING SKILLS: CAPITAL'S INITIATIVES IN THE BLACK EDUCATION AND INDUSTRIAL TRAINING ARENAS SINCE 1976

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It must be recognised that the specifically mental requirements of most working class jobs are very limited; that these jobs are indeed, anti-educational. The alternative is to recognise that the attainment of popular educational rights and needs involves the transformation of capitalist and patriarchal forms of social organisation; that serious educators, in short, have good reason to become serious socialists and feminists.

From: CCCS, Unpopular Education (London, 1981) p 161.

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ABSTRACT

This study explores capital's initiatives in the black education and training arenas since 1976. It examines why capital has viewed involvement in the provisioning of black education and industrial training as a central component of its reformist programme, which has been geared to resolving the crisis facing capitalism in South Africa since the mid-1970's. The study begins by engaging the theoretical debates concerning the relationship between the capitalist economy and the education system. It highlights the crucial role of segmented labour markets which act to differentiate the value of educational credentials between black and white labour in the economy. The study also constructs a more rigorous definition of industrial skill. This definition identifies three components of skill: an ideological, technical and socially contructed component. Once equipped with this composite view of skill, the study provides new insights into the 'skill shortages' and 'deskilling-reskilling' debates which have been a central concern in Industrial Sociology over the last decade. On a more descriptive level, this thesis presents a case study which focuses on industrial skills in the metal industry of the Pretoria-Witwatersrand-Vaal region. The findings of this case study indicate that both deskilling and reskilling tendencies occur simultaneously, and that there have been significant technical as well as ideologically defined skill shortages in the metal industry since the mid-1970's. The study concludes with a critique of capital's initiatives in black education and training. The final chapter identifies the main weaknesses and contradictions contained within this skills restructuring programme.

CONTENTS

ABBREVIATIONS

AID	Agency for International Development.
AMCHAM	American Chamber of Commerce in South Africa.
ANC	African National Congress.
ARMSCHOR	Armaments Corporation.
CAD	Computer Aided Design.
CAM	Computer Aided Manufacturing.
CCCS	Centre for Contemporary Cultural Studies.
CNC	Computer Aided Numerical Control.
COSATU	Congress of South African Trade Unions.
DET	Department of Education and Training.
ESCOM	Electrical Supply Commission.
HLM	High Level Manpower.
HSRC	Human Sciences Research Council.
ILO	International Labour Organisation.
ISCOR	Iron and Steel Corporation of South Africa.
LLM	Low Level Manpower.
MAWU	Metal and Allied Workers Union.
MLM	Middle Level Manpower.
MNC	Multi-national Corporations.
NFE	Non-formal Education.
NIPR	National Institute for Personnel Research.
NMC	National Manpower Commission.
NPI	National Productivity Institute.
NTB	National Training Board.
NTC	National Trade Certificate.
NUMSA	National Union of Metalworkers of South Africa.
PACE College	'Planned Advancement in Community Education' College.
P-W-V	Pretoria-Witwatersrand-Vaal Region.
R&D	Research and Development.
SACHED	South African Council for Higher Education.
SACTU	South African Congress of Trade Unions.

SADF	South African Defence Force.
SALB	South African Labour Bulletin.
SAR	South African Railways.
SEIFSA	Steel, Engineering and Iron Federation of South Africa.
UDF	United Democratic Front.
UNISA	University of South Africa.

INTRODUCTION

Reproduction, crisis and restructuring

This study explores capital's initiatives in the black education and industrial training arenas in the context of the crisis which has gripped South African capitalism since the early 1970's (1). The analysis is specifically concerned with issues relating to the provisioning of educational credentials and industrial skills. Conducted within the general theoretical framework of Historical Materialism, this work has drawn heavily on concepts generated in the field of Materialist Sociology of Education (2). These ideas situate an understanding of education in capitalist societies within a broader analysis of the nature and functions of the state and its apparatuses, and the particular requirements of capitalist production. Education needs to be viewed as part of this wider configuration of economic, political and ideological factors.

'Reproduction Theory' is a central component of this Materialist Sociology of Education. Althusser, in his definitive 1971 article 'Ideology and ideological state apparatuses', argued that reproduction characterized the essential nature of the capitalist state:

> The bourgeoisie can only secure the stability and the continuity of exploitation (that it imposes in production) on condition that it wages a permanent class struggle against the working class. This class struggle is fought by perpetuating or reproducing the material, ideological, and political conditions of exploitation. It is carried out within production (cuts in the wages intended for the reproduction of labour power, repression, sanctions, redundancies, anti-union struggle, etc). At the same time, it is conducted outside production. It is here that the role of the state - of the RSA and of the ISA's - intervenes in order to subject the working class by both repression and ideology. (3)

Althusser identified the school as the major apparatus in reproducing capitalist social relations, and particularly in reproducing a skilled workforce, through the inculcation of a submission to the established rules of the social order, and by the creation of bourgeois aspirations and consciousness. In his own words, the inculcating of:

> ...the attitudes that should be observed by every agent in the division of labour, according to the job he is destined for; rules of morality, civic and professional conscience which actually

> means rules of respect for the socio-technical division of labour and ultimately the rules of the order established by class domination. (4)

Bowles and Gintis, in a 1976 study of the education system in the United States of America, adopted and developed the Althusserian notion of reproduction in their articulation of the 'Correspondence Principle'. They observed that:

> The educational system helps integrate youth into the economic system, we believe, through a structural correspondence between its social relations and those of production. The structure of social relations in education not only inures the student to the discipline of the workplace, but develops the types of personal demeanour, modes of self-preservation, self-image and social class identification which are crucial ingredients of job adequacy. Specifically, the social relationships of education - the relationships between administrators and teachers, teachers and students, students and their work - replicate the hierarchical division of labour. (5)

This study by Bowles and Gintis has been heralded as a major materialist analysis of schooling in capitalist society. Their book presented an effective rejection of liberal Human Capital Theory dominant at the time (6). They argued that schools do not promote social equality, nor do schools function to develop the full moral, cognitive and aesthetic potential of each and every individual. Rather, schools function as a disciplining institution in the interests of capitalist accumulation.

Bowles and Gintis also developed a theory of educational change:

> The fact that changes in the structure of production have preceded parallel changes in schooling establishes a strong prima facie case for the causal importance of economic structure as a major determinant of educational structure. (7)

In addition, the two authors identified the possibility of a 'mismatch' in the context of changed economic requirements:

> The independent internal dynamics of the two systems present the ever-present possibility of a significant mismatch arising between economy and education....Thus, the relatively static education system periodically falls out of correspondence with the social relations of production and becomes a force anti-

thetical to capitalist development. (8)

Recently, however, the contributions by Althusser, as well as Bowles and Gintis, have been severely criticized. Althusser has been accused of being functionalist in his analysis of ideology and the state (9). He overstresses the reproductory role of the state, and paints a distorted picture of an endlessly successful and unfolding capitalism. According to several critics, he underestimates the possibility of disjuncture, contradiction or resistance. There is no recognition of the fact that the reproduction of conditions necessary for stable capitalist production have to be won continually in ongoing class struggle. Similarly, the Correpondence Theory of Bowles and Gintis has been criticized for being overly deterministic. Giroux writes that:

> ...we are treated to views of casuality, domination and consciousness that are framed solely within the logic of capitalist production. The locus of domination appears to exist primarily within the economic realm. (10)

Giroux argues that such a theoretical approach is substantially flawed, for it rests on a simple base/ superstructure model of reproduction in which political and ideological practices and institutions appear as epiphenomenal, as secondary forces with no autonomous existence of their own. These political/ ideological institutions and practices end up being dictated to by the imperatives of capitalist production. Thus Althusser, and Bowles and Gintis ignore the complex interplay of ideological, political, cultural as well as economic factors which together determine the functioning of schooling. These factors act upon each other, and create the possibility of contradictory effects which will not always be synonymous with those required by capitalist production. Giroux concludes his critique of the work of Bowles and Gintis by suggesting that:

> Political action is subsumed within the reproductive functions of capitalist production and stripped of its possibilities as a form of resistance that originates in the contradictions and struggles in the cultural/ ideological sphere. (11)

But for all these criticisms, the reproduction of the economic needs of capital remains an important part of the purpose of schooling. Barrett, concerned by a growing tendency in recent educational literature to overstress these criticisms and to develop a strong anti-functionalist orientation, argued that:

> Education systems are generally, in capitalism, instruments of state policy in a sense that is simply not true of, say, systems of cultural production. We should not let a general hostility to 'functionalist' forms of explanation blind us to the fact that some institutions of capitalism are the product of explicit state policy and that therefore any account of them must inevitably be a 'functionalist' one. (12)

Hyslop's recent article on reproduction theory and its application to South Africa, makes a similar point:

> In capitalist society - and especially in those capitalist societies which have entered a phase of industrialization under monopoly conditions - the state inevitably uses the school as a direct instrument of policy, consciously tailoring the education system to what policy makers perceive as economic, political and social ends. While ideological factors and fractional interests may mean that these perceived needs are not identical with the requirements of capitalist accumulation, it would be strange indeed if there were not some relationship between the two. Therefore, I would argue that a historically sensitive application of a concept of reproduction or 'correspondence' between school and the capitalist labour market can be made without lapsing into functionalism. (13)

Barrett suggests that the educational system's directly functional links with economic needs can be seen in several ways: firstly, in the crucial role education plays in enhancing the value of skilled labour power; secondly, in its role in providing selection criteria for the allocation of agents to different occupational categories in the economy; thirdly, in the very close 'Research and Development' links between the higher echelons of the educational apparatus and industry; lastly, this functional link is evident in ongoing pressures within state apparatuses to make education more vocationally oriented. Barrett concluded that educationalists, rather than pursuing the relatively autonomous characteristics of schooling, thereby restricting an examination of the functional links between schooling and the state, should ask of themselves the following question: why does the state not succeed in attaining its required educational

policy outcomes? The answer to this question must be found in an analysis that accepts the reality of this functional link between the state educational apparatus and the economy, whilst taking into account the impact of class struggle, contestation from within the various quarters of the ruling bloc and from the working class, and the inefficiency and failure of the capitalist state in securing its needs (14). This theoretical framework has helped to shape this study of state restructuring of black education and industrial skills in South Africa.

In attempting to develop an understanding of the nature and determinants of capitalist crisis and educational change, it soon becomes apparent that Bowles and Gintis' notion of educational change is indeed inadequately theorized. During critical historical conjunctures when accumulation is threatened, and is thus in need of transformation, schools are looked upon by the state and by capital as crucial institutions capable of performing the task of moulding a crisis-ridden society to meeting the needs of the economic system. But, contrary to Bowles and Gintis' analysis, this 'moulding' operation cannot be portrayed as a smooth fit of new state policy measures to suit changed economic requirements. Rather, it is an ongoing process of struggle, whereby changes are fought for and made acceptable to different constituencies (15). Reform initiatives in education do not occur automatically when the need arises, but are contested from within the various quarters of the ruling bloc, as well as by the dominated classes. Educational change has to be struggled for continually. As a consequence, it is regularly modified and reformulated.

A much more persuasive theoretical approach to capitalist crisis and educational (ideological) change is contained in the works of Gramsci, as well as in the contributions of a number of Neo-Gramscians writing in the 1970's and 1980's (16). Hegemony is the crucial concept in Gramsci's formulations. Gramsci defined hegemony as the 'intellectual and moral leaderhip' of the dominant class:

> A social group can, indeed must, already exercise 'leadership' before winning government power (this is indeed one of the principal conditions for the winning of such power); it subsequently becomes dominant when it exercises power, but even if it holds it firmly in its grasp, it must continue to 'lead' as well. (17)

Gramsci's notion of moral leadership suggests that a class only becomes hegemonic once it has gained the consent of other classes and social groups. This consent is gained through the construction of a system of alliances via a process of ideological and political struggle (18). The dominant class, in seeking hegemonic power, needs to take into account the interests of other classes and find ways of incorporating them with its own interests. Simon elaborates:

> (The dominant class) has to go beyond sectional, or what Gramsci calls economic-corporate struggles, and be prepared to make compromises in order to become the national representative of a broad bloc of social forces. (19)

Ideology acts as the cement in binding together this bloc of diverse classes and social forces, a synthesis taking into account the ideological/ cultural contibutions made by each of these diverse social groups. Sharp definee this hegemonic ideology as:

> ...a set of assumptions, theories, practical activities, a world view through which the ruling class exerts its dominance. Its function is to reproduce, on the ideological plain, the conditions for class rule and the continuation of the social relations of production. Hegemonic beliefs and practices thus shape practical ideologies and penetrate the level of common sense, mixing and mingling with ideological practices more spontaneously generated. (20)

Gramsci believed that state power would not be mantained if the dominant class confined itself to pursuing its 'pure' class interests. Hegemony has to be continually fought for and constructed via an alliance of diverse class forces. There are always countervailing tendences which emerge as a result of class struggle. More specifically, Gramsci developed the concept of 'War of Position' defined as the struggle of contesting ideologies - the hegemonic ideologies of the dominant class versus the oppositional ideologies of the working class. The creation of a counter-hegemony clearly depends on the strength and prevailing legitimacy of the dominant hegemonic ideologies. However, it also depends on the success of the working-class political parties and trade unions in generating new oppositional ideological constructs. In other words, class struggle is

the determining force in the maintenance of hegemony. Once a working-class counter-hegemony has been constructed, then the state power of the ruling class is seriously threatened. Gramsci believes that the possibility of the assertion of working class hegemony is heightened during the moments of economic and political crisis which seem to be endemic to capitalism:

> A crisis occurs, sometimes lasting for decades. This exceptional duration means that uncurable structural contradictions have revealed themselves ... and that, despite this, the political forces which are struggling to conserve and defend the existing structures itself are making efforts to cure them within certain limits, and to overcome them. These incessant and persistent efforts ... form the terrain of the conjunctural and it is upon this terrain that the forces of opposition organize. (21)

Efforts to cure the crisis combine both formative efforts - the formation of a new balance of forces within the ruling bloc, new political philosophies and ideologies - and more repressive measures. During heightened moments of this organic crisis, the 'determinate role of coercion within the power structures of contemporary capitalism, in the final instance', plays its most visible role (22). In fact, in times of heightened crisis the coercive necessarily displaces the ideological as the dominant mode of bourgeois power. Anderson has noted that "this is a law of capitalism: it is the rule of the end-game situation". (23)

The approach adopted in this thesis is influenced by the reproduction model as qualified by the criticisms raised earlier and the Barrett/ Hyslop contributions. Such a theoretical framework is a very useful analytical tool with which to understand the relationship between the educational system and the economy. Gramscian notions of 'hegemony', 'organic crisis' and 'the determinate role of coercion...in the final instance' are also key concepts informing this study. For example, many of the observations made throughout this thesis concerning the South African crisis are indebted to Saul and Gelb, who pioneered the application of Gramscian notions to the South African situation. They depicted the present upheaval in South Africa as an 'organic crisis of the racial-capitalist state' (24).

The specific aim of this thesis is to understand the way in which capital, and to a lesser extent, the state through its 'reformist alliance' with capital, have responded to the present crisis (25). In particular, it attempts to understand the way in which they have acted to 'conserve and defend the existing structures within certain limits'. Whilst the precise relationship between the state and capital is not a major focus of this study, it nonetheless remains a central concern of any materialist analysis of crisis and restructuring. Concepts such as 'capital', the 'state-capital alliance', and the 'class composition of the ruling bloc' require definition and clarity - a task which can only be obtained via a historical examination of the shifting balance of class forces within the ruling bloc since 1948. Such an examination will now be briefly attempted.

The Nationalist Party, representing a political alliance of Afrikaner capitalist agriculture, non-monopoly industrial, commercial and finance capital, white labour and the Afrikaner petty bourgeoisie, came to power in 1948. On the other end of the white political spectrum, the interests of monopoly capital were represented within the state apparatuses, first by the United Party and later by the Progressive Federal Party, as well as through non-state institutions such as the Chamber of Mines and the Federated Chamber of Industries. These political forms of class organization substantially changed during the decade of the 1970's, leading to a new alignment of class forces within the ruling bloc. The key factor initiating this realignment was the emergence of Afrikaner monopoly capital as a major force in the South African polity and economy in the late 1960's and 1970's. This came about largely as a result of state support which 'provided emerging Afrikaner capital with the economic clout to direct the path of accumulation in its own interests' (26). For example, parastatals such as Iscor, IDC, Escom, Armscor, Sasol and Foscor have over a long period of time benefited Afrikaner industrial capitalists by providing them with lucrative state contracts. In addition to this, the massive Afrikaner finance houses such as Sanlam, Santam and Volkskas have substantially aided investment activities by Afrikaner capitalists. By the early 1970's the top two corporations in South Africa were: the Anglo-American Corporation controlling 70 companies with a market value of R47 000 million; and Sanlam, controlling 38

companies with a market value of R8,4 million (27). Afrikaner control of private industry rose from 10% to 21% between 1948 and 1975. If the parastatals were to be included in this statistical observation, then Afrikaner control of industrial output constituted 45% by the latter date. (28)

Occurring simultaneously with this growth of Afrikaner capital, particularly in the 1960's, was a process of industrial expansion characterized by a high degree of centralization, concentration and interpenetration of capitals (29). An important consequence of these processes was that many of the mergers and acquisitions that occurred during this period cut directly across the traditionally hostile and separate economic groupings of English and Afrikaner capital. This economic integration brought about a far closer political working relationship between Afrikaner and English monopoly capital.

Furthermore, the increased economic and political power of Afrikaner industrial and finance capital resulted in it playing a far more dominant role in the Nationalist Party and the state. At the same time, as a result of the severity of the conditions of crisis by the mid-1970's, leading organizations of Afrikaner monopoly capital - Sanlam, Rembrandt and Volkskas amongst others - began to question their previously rigid commitment to Afrikaner Nationalist ideology. As a consequence of this reappraisal, these elements of Afrikaner capital began to seek a closer working relationship with English monopoly capital in a joint quest for structural changes to the racial apartheid economy and polity. These processes of transformation within Afrikanerdom were to lead to a fundamental reshaping of the composition of the dominant class alliance within the ruling bloc. The Nationalist Party was transformed into a political party representing the South African bourgeoisie. (30)

O'Meara examines this party political transformation in terms of the conflicts fought out between party 'verkramptes' and 'verligtes'. Writing about the events leading up to the actual split within the party ranks in 1982, he portrays the verligte phenomenon as stemming from those nationalists who:

> ...realized that the social base of Afrikaner Nationalism had shifted profoundly, and who wanted to transform the ideology and politics to suit the changing class composition of the volk. (31)

The verkrampte phenomenon was a consequence of those nationalists who demanded:

> ...a maintenance of tight influx control measures, restrictions on the employment of skilled African labour, no form of recognition of African trade unions, and continued state control of the infrastructural sectors of the economy. (32)

This conflict within the Nationalist Party paralysed its ability to respond to the crisis which had dramatically expanded throughout the country. Only with the 1978 scandal involving the Department of Information, which led to the eventual dismissal and expulsion of Connie Mulder, then leader of the 'verkrampte' faction, did the reformist wing under the leadership of P W Botha emerge as hegemonic within the party. Botha's rise was significant not only because he advocated the necessity of reform, but more importantly, he was also the Minister of Defence. Botha supported the 'Total Strategy' ideology articulated by the military. This approach recognised that only the incorporation of some sectors of black society within the institutions and values of the so-called free enterprise system would provide a basis of defence against the perceived internal and external 'total onslaught'. In the words of the SADF Chief of Staff in 1979:

> The lesson is clear. The South African Defence Force is ready to beat off any attack...but we must take into account the aspirations of our different population groups. We must gain and keep their trust. (33)

The reformist alliance of the Botha administration, Afrikaner monopoly capital and the South African military, immediately sought the co-operation of English monopoly capital. In November 1979, leaders of the Nationalist Party and the SADF met with representatives of capital at the Carlton conference, and together they defined the beginning of a relationship committed to the introduction of structural changes to the apartheid order.

There are significant differences between large and small capital with regard to the need for economic and political change in South Africa. Large (monopoly) capital has played the dominant role in the lobbying for and implementation of changes which have been perceived to be

necessary in the interests of capital in general. Monopoly capital requires a more stable, educated and skilled urban black workforce, with an improved standard of living and increased purchasing power which would facilitate an enlarged market for South African consumer goods. Increased black purchasing power can only be obtained, without a negative effect on profit levels, through an increase in labour productivity. For this to be achieved, improved education and training of the entire black labour force is required, and a work environment conducive to positive improvements in worker motivation and perceptions of capitalism is essential. Large capital has also sought the provision of mechanisms for political participation for urban black communities, hoping that this would act to diffuse political discontent, and create stable conditions essential for a new phase of prosperity. (34)

However, small capitalist enterprises have very different production imperatives with regard to black labour. They are still heavily reliant on the abundant supplies of cheap and unskilled workers which apartheid's influx control policies have so readily provided. They have not been severely affected by the shortages of skilled labour, as they have been able to 'poach' their small skilled labour requirements from the larger companies and the parastatals. Furthermore, they do not have the financial resources to support the reformist projects of big business. The Urban Foundation, an important mouthpiece of monopoly capital, openly acknowledges its inability to unite all of capital behind its reformist projects:

> Our supporters' boundless faith in the ability and willingness of the private sector to solve South Africa's educational problems seems overtly optimistic. This view of the situation presupposes a homogeneous private sector working in concert with endless financial resources, whereas in reality this sector of the economy consists of heterogeneous organisations in a competitive relationship, with finite resources limited by an economic recession, and without, in many cases, a sense of social responsibility. (35)

Although the number of monopoly corporations is small in comparison with the total number of firms, it is these large companies which dominate most economic activity - be it in terms of the size of the market they control, the profits they accumulate, or the numbers of skilled and operative workers they employ. Indeed, their initiatives in education and training have a substantial influence precisely because of the large numbers of workers affected.

The alliance of state and capital should thus be understood as an alliance between the reformist wing of the ruling party with strong military backing, along with reformist elements within the state apparatuses, and English and Afrikaner monopoly capital. It would be simplistic, however, to overstress the unity of this alliance. Saul, in a 1986 examination of the deepening crisis in South Africa, pinpoints the growing disillusionment within the ranks of capital with regard to the state's inability since the 1979 Carlton Conference, to restructure the apartheid system substantially:

> (The state's so-called reform) efforts have continued and, indeed, the question of their substance and adequacy has become the focus of sharp debate within the ruling circles. In particular, capital, worldwide and local, has become sceptical to an unprecedented degree as to the likely ability of the National Party regime to steer the system through dangerous waters. (36)

Chapters Five to Eight will elaborate on this complex relationship between the state and capital.

Educational credentials and Segmented Labour Market Theory

Hussain, writing on education in capitalist societies, has noted that:

> It is through the labour market that one has to approach the relation between the capitalist economy and educational institutions. For the present purpose the important implications of the distribution of the labour force into occupations through the labour market are: first, the division of work into discrete categories of occupations is determined by employers and not by employees; and secondly, it is employers who decide both the volume of employment and the requirements of entry into occupations. (37)

With this insight in mind, this study attempts to highlight the crucial role of labour markets in the relationship between the economy and educational apparatuses. It does so by employing Segmented Labour Market Theory (38), a theoretical model not previously applied to educational studies in South Africa. Conclusions made in Chapter One are that educational qualifications take on a totally different relevance in each of the three segmented labour markets: namely, the secondary, subordinate primary and independent primary labour markets. Educational credentials are of central importance to the selection criteria and the status of jobs in the independent primary labour market, but they are of little significance to secondary market jobs. Consequently, education is irrelevant to the job situations of the majority of African workers entering low paid, unskilled secondary market jobs.

The 'Segmented Labour Market' approach provides a useful explanation for the seemingly contradictory educational phenomena currently occurring in this country. On the one hand, a significant expansion of black educational credentials has occurred over the last decade, as can be seen in the case of the growing number of African matriculants, whilst on the other hand,a subtle devaluation of the market 'worth' of these educational qualifications has taken place. As a result of this devaluation process, educated African workers are still discriminated against in the occupational structure, but less because of traditional racially differentiating (job reservation) mechanisms, than through a newly emerged educationally-based class differentiating mechanism. This argument has profound implications for those who believe in the beneficial role of educational expansion in alleviating underdevelopment, poverty and unemployment in South Africa.

Defining skills

Because the specific research focus of this thesis is on industrial skills restructuring, this has necessitated an examination not only of the formal educational system, but also an evaluation of the industry-based, in-service industrial training system. Such an evaluation requires looking at both the acquisition of technical abilities - one component of the definition of industrial skill - as

well as examining the production of ideological value systems and behavioural patterns that are required in an expanding capitalist economy. The ideological component of skill is produced both in the formal school, and also in the training programmes on the factory floor. Conventional logic would argue that ideological 'moulding' takes place in schools, and technical training is done in industrial training centres, or on the shopfloor itself. Such analytical divisions are misleading. In this current period of crisis and the consequent restructuring taking place in education and training, there is a definite trend in the schooling system itself towards technical and vocational education for black South Africans. The division between what constitutes 'education' and 'training' has thus become very arbitrary. (39)

The study of industrial skills contained in this thesis has been greatly influenced by the debate in Marxist Industrial Sociology concerning deskilling and the nature of work under capitalism. In a seminal study of the capitalist labour process, Braverman predicted that work under monopoly capitalism would become increasingly deskilled and fragmented, as a result of the incorporation of science and technology into capital, and the growing application of scientific management techniques to the more effective control of the working class (40). Even though this analysis represented a major contribution to the understanding of the labour process in capitalist economies, its predictions about the nature of work under monopoly capitalism have not materialized. Braverman has been criticized for failing to anticipate the unevenness of capitalist development, and for ignoring the very real possibilities of reskilling tendencies occurring in capitalist production. (41)

The conventional view of the capitalist labour process in materialist scholarship on South Africa has presented deskilling processes as the major tendential force in capitalist production. Whilst Webster's study of the moulding trade, for instance, has demonstrated its occurrence for specific trades and industries (42), deskilling has not occurred on a large scale within other sectors of manufacturing and within the broader South African economy. This thesis shows through a case study of the metal industry in the Pretoria-Witwatersrand-Vaal

region, that both deskilling and reskilling tendencies occur simultaneously. These phenomena occur as a result of a number of factors. Deskilling is undoubtedly a concrete process present within the labour processes operative in the metal industry. Deskilling has been particularly noticeable in companies with products and market opportunities that allow for long runs and mass production. Most of these companies are medium to large corporations, with the necessary financial resources available to acquire expensive machinery. Deskilling has also occurred amongst particular trades where technological advances have been the greatest: moulding, welding and turning. However, it is important not to underestimate some of the very real constraints on further mechanization in many metal companies. High costs of imported technology, restricted domestic demand, skilled labour problems and low worker productivity are some of the constraints discussed in depth in Chapter Two.

Of greatest significance in terms of the reskilling phenomenon are: the persistence of jobbing production in South Africa's metal industries which has amplified South Africa's reliance on highly skilled and competent Artisanal workers; and the massive skills upgrading process which hundreds of thousands of previously unskilled African workers have undergone over the last decade.

Another priority of this study has been to present a more rigorous definition of industrial skill than that provided in the Industrial Sociology literature to date. The definition developed in these pages identifies three components of skill: an ideological, technical and socially constructed component. This composite definition of skill contributes to two crucial areas of current academic debate: the skill shortages crisis in South Africa, and the restructuring processes occurring in the black education and industrial training arenas. The skill shortages debate has been riddled with confusion. While strongly opposing arguments have been presented, they have been hampered by an inadequate definition of the meaning of skill. Meth and Chisholm, for example, visualize skill primarily in ideologial terms. They argue that the skill shortages crisis of the late 1970's was merely an 'ideological smokescreen' to facilitate and camouflage changes required in the labour process. Alternatively, scholars such as Davies

argue that South Africa underwent a severe technical skill shortages crisis in the 1970's (43). By contrast, this thesis suggests that neither approach is adequately substantiated. Rather, through the employment of a composite definition of skill, Chapter Four shows that there have been significant shortages of and deficiencies in industrial skill over the last decade. These skill shortages have been of a technical as well as an ideological nature. This study attempts to periodize the impact and severity of this crisis which peaked during the mini-boom phase of 1978-1981. As a result of the recession which set in after 1981, the skills crisis dissipated. However, it is the view of this study that many of these skill deficiencies are structurally embedded in the organization of work in the South African economy, and therefore still exist - albeit in a temporarily dormant and non-activated form.

Restructuring skills

Over the last decade, South Africa has undergone a substantial transformation in the organization of work. This process of change has resulted in new production requirements and new skill definitions. As Chapter Two highlights, mechanization, job dilution, deskilling, the persistence of jobbing production and the emergence of reskilling phenomena are all processes in the metal industry which have placed new demands on the technical and ideological components of skills required in production. These new demands have not been readily met by existing supplies of skilled and semi-skilled labour. At the same time, struggles at the point of production and in the oppressed communities, which have greatly intensified since the Durban strikes of 1973 and the student explosions of 1976, have seriously affected capitalist stability and profitability. Workers organized in trade unions have become greatly empowered in the factories. Furthermore, there has been a significant ideological shift by the organized working class away from capitalist values towards a commitment to a socialist transformation of South African society.

By the late 1970's, capital was forced to respond to these complex problems. Black education and training were seen as central components of reformist programmes geared to resolving these crises. Capital

viewed schools as being capable of preparing workers technically for changed production demands, and of conditioning young workers ideologically towards dispositions more favourable to capitalism. Chapters Five, Six and Seven document these private sector initiatives in the black education and industrial training arenas. Significantly, the private sector, with substantial assistance and support from the state, has invested vast financial resources and energies in this area. Nonetheless, Chapter Eight argues that capital's initiatives have encountered numerous problems. It identifies the main weaknesses and contradictions contained within capital's skills restructuring programme.

FOOTNOTES

(1) The official categorization of South Africans as Blacks, Whites, Coloureds and Asians is rejected by the approach underpinning this study. However, the history and present reality of South Africa are such that government-imposed categories indeed have a powerful significance, shaping the very material conditions that govern the South African way of life. In this study, the word 'black' will refer to all persons not classified white. However, this study focusses specifically on the education and training of 'Africans'. The regular usage of the term 'African' is done not because of an acceptance of statutory racial definitions, but because it is an unavoidable necessity in any study attempting to understand the purposes of education and training in South Africa. The terms 'black' and 'African' will be interchanged throughout the thesis: 'black' being applied in a general sense, as a less offensive description of persons not classified white; and 'African' being used for the specific description of one of the four racially defined systems of education and training in South Africa. For the purposes of this study, however, both terms are intended to describe the education and training circumstances affecting African people in South Africa.

(2) Among the more important texts to have emerged from the materialist Sociology of Education tradition are the following:
L. Althusser, 'Ideology and ideological state apparatuses', in

L Althusser, Lenin and Philosophy and Other Essays (London, 1971); H Gintis and S Bowles, Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life (London, 1976); R Sharp, Knowledge, Ideology and the Politics of Schooling (London, 1980); M Apple (ed), Cultural and Economic Reproduction: Essays on Class, Ideology and the State (London, 1982); H Giroux, 'Beyond the correspondence theory: notes on the dynamics of education, reproduction and transformation', Curriculum Inquiry, 10 (3) 1980; M Sarup, Marxism and Education (London, 1978); M Barrett, 'The educational system: gender and class', in M Barrett, Women's Oppression Today: Problems in Marxist Feminist Analysis (London, 1980); M Apple, Education and Power (London, 1982); A Hussain, 'The economy and the educational system in capitalist societies', Economy and Society, 5 (4) 1976; M Erben and D Gleeson, 'Education as reproduction: a critical examination of some aspects of the work of Althusser', in M Young and G Whitty (eds), Society, State and Schooling (Lewes, 1977); R Dale et al, Education and the State I, Schooling and the National Interest (Lewes, 1981).

(3) As quoted in G Mc Lennan, V Molina, R Peters, 'Althusser's theory of ideology', in Centre for Contemporary Cultural Studies, On Ideology (London, 1978) p 92.

(4) Althusser (1971) p 132.

(5) Bowles and Gintis (1976) p 131.

(6) See T W Schultz, 'Investment in human capital'; and M Blaug, 'The rate of return on investment in education', in M Blaug (ed), Economics of Education I: Selected Readings (London, 1968). See also H Gintis and S Bowles, 'The problem with human capital theory - a Marxian critique', American Economic Review, 65 (2) 1975.

(7) Bowles and Gintis (1976) p 224.

(8) Ibid, p 236.

(9) See Erben and Gleeson (1977); Mc Lennan, Molina and Peters (1978).

(10) Giroux (1980) p 229. Bowles and Gintis's analysis has been criticized by several scholars. See T Fluxman, 'Education and the economy: a critique of S Bowles and H Gintis's 'Schooling in Capitalist America'', Perspectives in Education, 5 (3) 1981; M Apple, 'The other side of the hidden curriculum: correspondence theories and the labour process', Journal of

Education, 162 (1) 1980; S Gorelick, 'Undermining hierarchy: problems of schooling in capitalist America', Monthly Review, 29 (5) 1977. See also S Bowles and H Gintis, 'Reply to Sherry Gorelick', Monthly Review, 30 (6) 1978.

(11) Giroux (1980) p 229; See also Fluxman (1981). For a useful analysis of the determining influence of the economic, political and ideological levels of the capitalist social formation and the articulation of all of these levels, see E O Wright, Class, Crisis and the State (London, 1979).

(12) Barrett (1980) p 120.

(13) J Hyslop, 'The concepts of reproduction and resistance in the sociology of education: the case of the transition from 'missionary' to 'Bantu' education 1940-1955', Perspectives in Education, 9 (2) 1987 p 4.

(14) Barrett (1980) p 121.

(15) L Chisholm and P Christie, 'Restructuring in education', in South African Review, (1) 1983 p 255.

(16) A Gramsci, Selections from the Prison Notebooks (London, 1971); P Anderson, 'The antimonies of Antonio Gramsci', New Left Review, (100) 1977; A Showstack-Sassoon (ed), Approaches to Gramsci (London, 1982); R Simon, Gramsci's Political Thought - An Introduction (London, 1982); S Hall, B Lumley, G Mc Lennan, 'Politics and ideology: Gramsci', in CCCS, On Ideology (1978); C Mouffe, 'Hegemony and the Integral State in Gramsci: Towards a new conept of politics', in G Bridges and R Brent (eds), Silver Linings: Some Strategies for the Eighties (London, 1981).

(17) Gramsci (1971) pp 57-58.

(18) Simon (1982) p 23.

(19) Ibid, p 23.

(20) Sharp (1980) p 102.

(21) Gramsci (1971) p 178.

(22) Anderson (1977) pp 43-47; Anderson is critical of Gramsci for ignoring the coercive aspects of the capitalist state. He argues that Gramsci gives the impression that bourgeois power is based purely on the construction of hegemony, and in so doing ignoring the 'armoury of coercion'.

(23) Ibid, p 44.

(24) See J S Saul and S Gelb, 'The crisis in South Africa: class defence, class revolution', Monthly Review Press, July-August 1981. This study has been revised and updated. See Saul and

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pp 193-207.

(35) The role of the private sector (Unpublished Urban Foundation

Gelb, The Crisis in South Africa (London, 1986).

(25) This study will not provide a detailed examination of the political determinants of the present crisis, primarily because of space constraints, but also because a rich body of materialist writing already exists on the subject. Chapter Two of this study, however, does provide an overview of the economic determinants of the present crisis, and Chapters Six to Eight address key educational issues that have emerged out of the current phase of political struggle. For further reading, see Saul and Gelb (1986); S Greenberg, Race and State in Capitalist Development: South Africa in Comparative Perspective (Johannesburg, 1980); C Charney, ' Class conflict and the National Party split', Journal of Southern African Studies, 10 (2) 1984; D O'Meara, 'Muldergate: The politics of Afrikaner Nationalism and the crisis of the capitalist state in South Africa', University of Dar es Salaam, seminar paper, November 1980; G Moss, 'Total Strategy', Work in Progress, (11) 1980; R Davies and D O'Meara, 'Analysis of Total Strategy - its limits and possibilities', Review of African Political Economy, (29) 1984.

(26) Saul and Gelb (1981) p 18.

(27) D Innes, 'Aspects of Monopoly Capitalism in South Africa' Witwatersrand University, unpublished African Studies Institute seminar paper, 1983, p 11.

(28) Charney (1984) p 270.

(29) See Chapter Three of this thesis for further details on the processes of capital concentration and centralization in the late 1960's/1970's. See also G Bloch, 'The development of Manufacturing Industry in South Africa 1939-1969' (University of Cape Town, unpublished M.A. thesis, 1980); A Sitas, 'African worker responses on the East Rand to changes in the Metal Industry, 1960-1980' (Witwatersrand University, unpublished Ph.D. thesis, 1983).

(30) See O'Meara (1980); Moss (1980); Davies and O'Meara (1984) p 68; Charney (1984) p 270.

(31) O'Meara (1980) p 10.

(32) Ibid, p 11.

(33) Ibid, p 12.

(34) See Saul and Gelb (1981) pp 25-31, 75-82; Greenberg (1980) pp 193-207.

(35) The role of the private sector (Unpublished Urban Foundation

document, Johannesburg, 1985) p 85.

(36) Saul and Gelb (1986) p 211.

(37) Hussain (1976) p 164.

(38) See D Gordon et al (eds), Segmented Work, Divided Workers: The Historical Transformation of Labour in the United States of America (Cambridge, 1982); R Edwards, Contested Terrain: The Transformation of the Workplace in the Twentieth Century (New York, 1979). W James has recently provided a brief critique of Segmented Labour Market Theory. He argues that it posits a politically-based notion of class, and not an exploitation-based one. James is concerned by its distance from the Marxian Labour Theory of Value as the central explanatory tool in materialist labour process studies. He is particularly critical of Webster's (1985) marrying of the two theoretical models - the politically-centered Segmented Labour Market Theory with the exploitation-centered Labour Theory of Value. See Correspondence, Social Dynamics 13 (2) 1987. It is the view of this study that it is necessary to move from the 'noisy sphere of production', to the political/ ideological levels of society (and therefore necessary to adopt the Segmented Market view) in order to understand fully the persistence of differentiation within the South African working class, and more particularly the social construction of skill and the differing relevance of educational credentials in production. These realities of the workplace do not emanate directly from the process of labour exploitation and surplus extraction itself.

(39) The arbitrariness of the divide between what constitutes 'education' and 'training', from capital's point of view, has become an increasing reality in the United Kingdom: The terms 'training' and 'education' have been commonly used as a rough and ready means of distinguishing between learning to perform specific vocational tasks (training) and the general development of knowledge, moral values and understanding required in all walks of life (education). But such definitions have obvious shortcomings. The majority of 16-18 year olds are in the course of acquiring...knowledge and skills which will enable them to perform particular jobs, manage their private affairs, develop their leisure interests, and so on. The concept of vocational preparation treats the entire process of learning, on and off the job, as a single entity, combining elements of

training and education to be conceived and planned as a whole. See S Baron et al, 'Schooling, skills and social relations', in Centre for Contemporary Cultural Studies, [Education Group], Unpopular Education: Schooling and Social Democracy in England since 1944 (London, 1981) p 237. This arbitrariness between 'education' and 'training', and the emphasis on vocational preparation has also become an increasing phenomenon in South Africa, reflected in the language of capital when speaking of both 'education' and 'training'. See papers delivered at the National Institute of Personnel Research Symposium, The Development and Training of Black Employees in Industry, Rand Afrikaans University, 1980. Interviews with Training Officers undertaken in the metal industry of the East Rand confirm this arbitrariness. Trainers make very little distinction between what they consider as 'education' and 'training'.

(40) H Braverman, Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century (New York, 1974)

(41) See P Thompson, The Nature of Work: An Introduction to Debates on the Labour Process (London, 1983); C More, 'Skill and the survival of apprenticeship', in S Wood (ed), The Degradation of Work (London, 1982); Baron et al (1981); L Loots, 'Deskilling, class structure and reform in South Africa', Witwatersrand University, unpublished Association of Sociologists of Southern Africa Conference paper, 1984.

(42) See E Webster, Cast in a Racial Mould: Labour Process and Trade Unionism in the Foundries (Johannesburg, 1985). References are also made throughout this study to Webster's Ph.D thesis upon which the above mentioned book is based. Thesis references are made specifically when material contained in the Ph.D thesis is excluded from the book. See E Webster, 'The labour process and forms of workplace organisation in South African Foundries', Witwatersrand University, Ph.D. thesis, 1983; A Schaffer, 'South African Industrial Training discourse and policy, 1977-1982', University of Cape Town, unpublished M.Ed thesis, 1985. Webster's study examines the deskilling process in the moulding industry. While deskilling has certainly been the major tendential force in this particular industry, conclusions drawn from this study cannot be automatically extended to other sectors. Schaffer's study of industrial training discourse accepts uncritically that

deskilling is the dominant process occurring within the capitalist labour process. See Chapter Four, footnote (44) of this thesis for a typical example of the predominance of this 'deskilling' assumption.

(43) See C Meth, 'Shortages of skilled labour power and capital reconstruction in South Africa', Witwatersrand University, unpublished African Studies Institute seminar paper, 1981; L Chisholm, 'Redefining skills: black education in South Africa in the 1980s', Comparative Education, 19 (3) 1983; R Davies, 'Capital restructuring and the modification of the racial division of labour in South Africa', Journal of Southern African Studies, 5 (2) 1978. In the review of literature on skill shortages, substantial additional material on topics such as 'Skill shortages in South Africa', 'Manpower needs and projections', and 'The demand and supply of skilled labour in South Africa' was uncovered. Most of these researched documents were produced by the HSRC. In reading through the bulky HSRC material, it became apparant that the research methodology was firmly rooted in the positivist tradition, a tradition which behind the cloak of alleged objective scientific rigour and method, leaves unquestioned the dominant social relations of capitalist society which are at the root of all inequality. What these research projects have to offer is a mountain of statistical data, which on closer examination replicates the data available in the primary sources published by the state. A tragedy in many ways, that so much energy has gone into producing so little!

CHAPTER ONE INDUSTRIAL SKILLS AND THE RELEVANCE OF EDUCATIONAL QUALIFICATIONS IN THE SOUTH AFRICAN ECONOMY.

The notion of 'skill' has an undefined and almost mysterious quality when associated with the capitalist production process. Different commentators attribute different qualities to the nature of industrial skill, depending on whether they act as production managers or write as Marxist labour process scholars (1). For the purposes of overall clarity, the first priority of this chapter is the presentation of a comprehensive definition of industrial skill. The approach employed here identifies three components of skill: a technical, ideological and socially constructed component. The discussion then moves on to analyse the role of segmented labour markets in differentiating the relevance of educational qualifications. The chapter concludes with a discussion of segmented labour markets in South Africa, and focuses on the relevance of educational qualifications to the work situation in the South African economy.

THE NATURE OF INDUSTRIAL SKILLS

The technical component of skill

Contemporary capitalist production requires a range of workers with a variety of technical competencies. This is so even whilst the tendency towards deskilling and fragmentation of work occurs. For example, traditional artisanal skills are still essential to most production processes even though mechanization and automation have made major inroads into reducing the reliance on living labour to perform these tasks. Even semi-skilled workers require particular technical knowledge to facilitate an understanding of the machinery they operate, and to enable them to perform basic maintenance work. Operators are also required to record certain 'time and motion' statistics, which relate to the speed of production and the quantity of output. They are also required to read and understand technical instructions on production order forms which define the nature and quantity of the product required. Clearly, definite skills in literacy, numeracy and in verbal/ written communication are required.

It is also important to realize that no single labour process exists uniformly within any given capitalist economy, or within any sector of that economy. Capitalism develops unevenly along the path towards monopoly capitalist relations of production. Consequently, several labour processes often co-exist within a single economic sector. Certain leading corporations may employ capital-intensive 'continuous-line' forms of production. These firms would be dependent primarily on semi-skilled productive labour, with small numbers of artisans and technicians performing mainly maintenance and service work. By contrast, the majority of smaller enterprises may not have the financial resources to be capital-intensive, and would be dependent on the skills of significant numbers of artisans in production. Here, in the absence of sophisticated machinery, the technical contribution of skilled workers in production is crucial. The point being made is that there is undoubtedly a technical component to the skills required in production, and the magnitude of this technical knowledge will be determined by the organic composition of capital: that is, the extent of capital concentration which will be determined by the degree to which monopoly capitalist relations of production have penetrated the various sectors of the economy, or alternatively, the extent to which competitive forms of production continue to be prevalent.

However, particularly in those sectors where monopoly capitalist relations of production have penetrated, or have begun to penetrate, the tendency towards the deskilling of labour will have left its mark. Work will have been fragmented into multiple parts, each part requiring minimal technical competencies in production. Rather, workers perform as operators, instructing expensive machinery to perform the necessary production tasks. A vast hierarchy of levels of labour is constructed on the factory floor to ensure that this fragmented and stupefying system of production completes its full cycle. The production hierarchy unfolds as follows: unskilled workers perform the manual tasks of handling the raw material inputs in production, and the transporting and packaging of the finished outputs of production. Operatives man the machines. Supervisors and foremen ensure that production runs according to schedule and that any labour force deviance and agitation are effectively corrected and

disciplined. Artisans service and maintain the plant equipment, and assist in the setting and adjusting of complex machinery. They also contribute to technical decisions concerning the way in which the commodity is produced. The technicians and engineers conceptualize and design the commodity, the production run and the factory floor layout. Managers ensure that all those employed, from labourer to engineer, fulfil their job functions.

The ideological component of skill

In the historical transformation of work towards monopoly capitalist relations of production, there has evolved a great separation of the manual and mental aspects of production. Capital, primarily through the employment of machinery and scientific management techniques, has in many sectors of the economy been successful in denying workers their traditionally all-embracing knowledge of the production process. Work has become deskilled, fragmented and dehumanized. The mental task of conceptualizing the production process has been appropriated by the capitalist employers. This has empowered them with the knowledge and ability to more effectively control production and thereby manage production so as to maximize profits. Workers, on the other hand, have become enslaved by their machinery, mechanically paced and controlled.

To augment such control, the hierarchical division of labour (referred to above) was evolved. It is precisely because of this control requirement in capitalist production that managerial and supervisory personnel, as well as certain higher levels of technical labour, have a common characteristic concerning their job responsibilities. Not all aspects of their work relate directly to the specific technical requirements of the production process itself, but many tasks relate rather to the function of supervising and controlling lower levels of labour so as to maximize profit.

It is as a result of this need on the part of capital to maximize profit, maintain control over labour in production and to secure the stability of the hierarchical division of labour, that another component of the skill required by capital of its work force has emerged. This is the ideological component. For capital to succeed in

achieving the above tasks, the work force will need to aspire to a certain value system and display certain behavioural traits. These include a belief in the values of the free enterprise system, a recognition of management's legitimacy at the top of the hierarchy, and a recognition of the control and command functions of higher levels of labour. Workers need to accept as 'natural' their unequal status, recognising the superiority of higher levels of labour. The wage which each worker receives for the labour services rendered must be accepted as an equivalent and just exchange. Behavioural traits such as obedience, diligence, punctuality, and respect for authority are essential for increased productivity and effective labour control. And lastly, each and every worker is required to improve his/her own productivity in the interests of the company, whilst nevertheless believing it to be in their own interests too.

Thus the definition of skills required in the economy, and the selection of workers who have these skills, is not only based on certain technical competencies, but also encompasses these ideologically defined criteria. Such an ideological component of skill is made particularly explicit in the way, for instance, certain South African state agencies define 'education' and 'training'. In the National Manpower Commission (NMC) Annual Report of 1980, for instance, 'education' was defined as 'the moulding of someone through the addition of knowledge, skills, values and attitudes', and 'training' was defined as the 'acquisition of related skills, technical knowledge, values and attitudes to qualify someone for a specific task, job or occupation in a particular industry'. Clearly, skills are not defined purely in terms of technical criteria, but also in terms of the 'moulding of values'. (2)

Many industrial training programmes, rather than being geared to developing the technical competencies of workers, are in fact aimed at consolidating these required ideological characteristics. At an Iron Foundry Conference in November 1982, a leading British foundry director advised a Johannesburg audience of businessmen that:

> Training is one of the most effective tools management has which can positively influence the success of a company....People's attitudes to their work and their company can be and indeed are affected by training. (3)

There has been a great expansion of this sort of training in South Africa in the last decade. This expansion has been directed chiefly at black supervisors, managers and semi-skilled operatives. The purpose of these courses has been to develop a closer loyalty amongst black supervisors and managers towards the company. Also, courses such as the 6M programme, which is today fairly widely used within industry, attempt to develop a more positive understanding amongst black semi-skilled workers of the functioning and advantages of the free enterprise system. These training programmes, established under conditions of expanding crisis and working class struggle during the late 1970's and 1980's, represent a restructuring of the definition of skills required in industry, as employers are now stressing the urgency of acquiring these behavioural traits and value systems within their work complements. (4)

The socially-constructed component of skill

The definition of skill has a third determining component: a social component constructed as a consequence of class struggle. In noting the dominant tendencies towards greater mechanization and deskilling, it is essential not to ignore the countervailing tendencies which are generated as a result of working class struggles and resistance. As a result of these struggles, workers may be able:

> ...to colonize, to mould or indeed to invent forms of expertise, real or apparent. They may achieve control over their own labour and over entry into their own 'trade'. (5)

More, in a study on the preservation of apprenticeship, defines 'skilled' as a:

> ...social artefact, which comes into being through the artificial delimitation of certain work as skilled, the purpose of this delimitation being the reservation of certain kinds of work for those who have acquired the label 'skilled'. (6)

This is precisely the situation that has developed in South Africa, where skilled white artisans have been able to colonize, through trade union organization and political party mobilization, access to skilled jobs. Faced with the prospect of deskilling and job fragmentation, white artisans have successfully demanded that certain types of work

be done only by skilled artisans, even though the content of much of this work in reality requires only semi-skilled labour. Similarly, the shift over the last two decades of black workers in the manufacturing sector, from unskilled labour positions into semi-skilled operative positions, has resulted in black workers acquiring increased skills. This in turn has resulted in the attainment by black workers of effective workplace organizational abilities, and the power to demand the protection and increased upgrading of their skills.

Capital, on the other hand, has the power to transform the division of labour, thereby restructuring the skills required for the completion of certain work tasks. It must be accepted that job definitions are very arbitrary, and that there is a loose connection between the skill required and the specific nature of the job itself. Boundaries between varying job categories are determined not by technical necessity alone, but are strongly influenced by employer criteria. These job criteria may change if the requirements of profitable accumulation necessitate it. Webster writes that skill is not something that can be defined objectively. It is socially constructed, and therefore can be appropriated by either of the contestants in struggle - capital or labour. (7)

THE ROLE OF THE EDUCATIONAL SYSTEM IN ALLOCATING AGENTS TO POSITIONS IN THE CAPITALIST DIVISION OF LABOUR

At the outset, it is important that certain realities concerning the world of work be identified. Firstly, the division of work into fragmented job categories, and the exact volume of employment, are determined by employers. They are not dependent on any processes of educational certification. Secondly, entry requirements into particular occupations are also determined by employers, who might well promote their own evaluations of the 'good worker' over and above those attested to in educational certificates. As evidence later in this chapter will highlight, formal educational qualifications play quite a minor role in employment decisions.

There is, however, a tighter link between scientific and technical education and training, and certain specifically technical jobs. Nonetheless, these jobs constitute a minority within the occupational structure. Furthermore, they are subject to continuous processes of technical change with the result that the occupational boundaries between these technical jobs are fairly arbitrary at any given point in time. Also, the skill component of many of these jobs have been socially constructed by well organized skilled workers on the factory floor. Hence, the link between educational qualification and the job, for many of these technical categories, is fairly loose and employer or employee defined.

The role of educational qualifications

This chapter has stressed that competency for certain occupations is not determined by technical qualities alone. Social and ideological criteria influence the determination of this competency too. Furthermore, the establishment of effective capitalist control over the workforce, and the maintenance of a hierarchical division of labour are crucial determinants of capitalist profitability. Bearing this in mind, Hussain has written that the function of an educational qualification:

> ...is to serve as a basis of differentiation, and as a result, the significance that an educational qualification has as a basis of differentiation can only be determined with respect to other educational qualifications and their distribution in the labour force. (8)

By placing one occupation in relation to others, these differentiated educational qualifications serve to maintain and legitimate the hierarchical division of labour in production. These differences in educational requirements for entry into occupations, delineate and order these occupations vis-a-vis each other. Hence educational qualifications provide bosses with selection criteria to employ and rank agents competitively. But they are mere criteria, which may be disregarded in favour of other selection qualities. Educational qualifications are not entitlements to jobs.

Poulantzas, writing on the capitalist division of labour, warns against the tendency to misread the function of this ranking of educational qualifications, seeing it as actually contributing to the structuring of differing occupational places in production. He writes of the need to identify two clearly separate processes. The first is the reproduction of agents needed in production and their moulding into different kinds of subjects - for example, clerks, managers and technicians. The second process is the reproduction of these actual places within the production process (9). Schooling contributes directly to the former. The latter occurs outside of the educational apparatus, within the economy itself.

Schooling thus plays a major supportive and legitimating role for capitalist production by, firstly, creating layers of mental labour that are taught how to 'think', plan, innovate, lead and control subordinate labour, and secondly, by excluding the working class from these categories of mental labour, leaving them with no other option but to take up positions of manual labour. This differentiation of educational achievement is obtained as a direct result of the nature of schooling in capitalist society. Working class pupils undergo very different educational experiences to those of middle class pupils. Curricula are generally graded and differentiated, with working class youths taking the more vocationally oriented career directions. Most working class youths choose exit points well before the completion of secondary education, so as to enter the world of work. These choices are a result of both school and family pressures. Working class families often perceive the irrelevancy of further schooling, and thereby terminate the education of their children at particular levels of educational development. In most cases, working class school practices are generally rote-oriented and authoritarian. Schooling attempts to engender the correct workplace values of obedience, loyalty and an un-questioning attitude to working conditions. Whether this is achieved in reality in all working class schools is a complex issue, for as the introduction to this study indicated, the reproductory functions of schooling are not obtained automatically without contradiction and contestation.

Alternatively, in most middle class schools, pupils are encouraged to pursue the highest educational goals possible. They are equipped with critical thinking, questioning and problem-solving skills, so as to enable them to adequately inherit the places of leadership and decision-making later in their lives. Individual achievement and leadership over others is continuously stressed. Greater financial resources are made available to the further education of these pupils, and most enter tertiary institutions such as Universities, Technikons and Training Colleges.

A serious analytical problem with the above description is that it presents schooling as being comprised of two seperate systems that correspond with the two antagonistic main classes: the bourgeoisie and the working class. This division also coincides with the separation between mental and manual labour. Poulantzas argues that this bipolar division is a very tendential one (10). He argues that such a bipolar outline of capitalist schooling obscures the specific place of the new petty bourgeoisie in the education apparatus. He suggests that the education system plays a very direct and specific role in allocating the new petty bourgeoisie to places in the capitalist division of labour:

> ...the education apparatus thus plays quite a specific role for the new petty bourgeoisie, directly contributing to reproducing its place in the social formation. This is directly reflected in the role that this apparatus plays in distributing agents among places of the social classes, a role which is very important for the new petty bourgeoisie, while it remains a secondary one for both the bourgeoisie and the working class. The agents of these two basic classes, or alternatively their children, are not themselves distributed by the educational system in any literal sense, or rather they are distributed while remaining in the same place, everything happening as if they were bound to these places, with the school simply sanctioning and legitimizing this connection. The petty-bourgeois agents, on the other hand exhibit...a quite remarkable shift, directly bound up with the educational apparatus. These are real processes with considerable repercussions on the ideology of the new petty bourgeoisie, an ideology directly bound up with its special relationship to 'knowledge', 'instruction', 'culture' and the educational apparatus. (11)

As a result of these class-based processes, agents with a range of differentiated educational credentials are produced by the educational system. But if this analysis is to heed Poulantzas' earlier warning, it cannot then be assumed that this educational differentiation will automatically constitute the criteria for the acquisition of positions in the occupational structure. How then do these differentially trained agents get to hold positions in the occupational structure? This can only be answered with reference to the functioning of segmented labour markets, which play a central role in mediating the allocation of these differentially educated agents to positions in the occupational structure.

SEGMENTED LABOUR MARKETS

Segmented labour markets are the principal means whereby employees are hired into their various jobs. Employees entering each of these segmented labour markets experience distinct processes and outcomes. The relevance of increased educational qualifications and the extent of job mobility differ greatly in each of these markets. (12)

To understand the forces which established and structured these labour markets, it is first necessary to examine the historical development of differing systems of labour control in capitalist society:

> Labour markets are segmented because they express a historical segmentation of the labour process. A distinct system of control inside the firm underlies each of the labour market segments. (13)

The point has already been made that the transformation of the capitalist labour process has been very uneven in most capitalist economies. In some sectors of the economy, monopoly capitalist relations of production have penetrated. In other sectors, competitive small-scale forms of production still predominate. Therefore, differing systems of labour control will prevail and co-exist, depending on the degree to which the labour process has been transformed towards monopoly capitalist relations of production - the most advanced stage of capitalist development.

Simple control and secondary labour markets

Simple control is the first type of labour control. Central to this basic system of control is the arbitrary power of the supervisor, who directs the work, monitors its progress and disciplines the workforce. This form of labour control in its contemporary form generally co-incides with small firms which are reliant on cheap labour inputs, and which are without the financial resources to mechanize and expand the volume of production.

Secondary labour markets are the market forms associated with this simple type of labour control. Its market characteristics include low-skill and low-paid jobs, employment of a casual nature, no job security and heightened job vulnerability. Workers compete with each other for a limited supply of secondary market jobs. No previous training and minimal educational qualifications are required. Very little trade union organization emerges. The reserve army of unemployed constitutes a readily available supply of workers for this labour market.

Technical control and subordinate primary labour markets

The second type of labour control system co-incides with the mechanization of production, and the transition from despotic supervisory control to machine control. This 'technical control' is structural, in the sense that it is embedded in the technological structure of production. Pacing and supervising the production run is built into the functioning of the machinery and the assembly line itself. Supervisors now perform purely checking and co-ordinating functions. The tyranny of the bosses has now been effectively disguised, for workers do not confront capitalist control directly, but experience it indirectly through the control of the machine.

However, this form of labour control results in contradictory outcomes. The increasing tendency towards the homogenization of the workforce has the effect of uniting workers together across the plant. One labour disruption at some point along the assembly line disrupts the whole production operation at plant level. This phenomenon creates very favourable conditions for worker organisation. Technical control is very quickly confronted by powerful industrial trade unions, composed mainly of machine operative labour. These workers are able to organise effectively for better wages, working conditions, and the upgrading of their industrial skills.

The subordinate primary labour market co-incides with this technical form of labour control. This market allocates potential employees to both the semi-skilled and unionized production jobs, as well as to the lower level sales, clerical, supervisory and administrative jobs. Because of the organizational impact of industrial trade unions, these jobs are better paid, more secure, and have some prospects of job advancement (based mainly on seniority). All of these job benefits have been obtained through union agitation and struggle. Retrenchments are usually not arbitrary, but are based on juniority in the firm: the 'last in, first to go' principle. A certain degree of technical skill and educational qualification is required, mainly as a basis for further industrial training and retraining. Schooling and training do reap concrete, although limited benefits. (14)

Bureaucratic control and independent primary labour markets

The third form of labour control emerges with the development of monopoly capitalist forms of production. The growth of these monopoly corporations results in a massive expansion of 'new petty-bourgeois', non-productive white-collar workers. Bureaucratic control emerged out of the need to control both the productive as well as the non-productive components of such an expansive workforce. However, it also emerged in response to the need to overcome the might of trade unionism that had emerged during the previous (mechanization) phase of capitalist development. Bureaucratic control is:

> ...embedded in the social and organizational structure of the firm, and is built into job categories, work rules , promotion procedures, discipline, wage scales, definitions of responsibility etc. (15)

Company rules become the basis of control. Trade union co-operation is obtained, and company rules and procedures are negotiated in a consensual environment. Capital has come to accept the reality of powerful unions, and now seeks rather to incorporate them within a collective bargaining system. A new accommodationist attitude has emerged between the employers and the trade unions.

Bureaucratic control is also geared to breaking the homogeneity of labour by recreating many seemingly separate strata of jobs. Differing job titles and definitions have proliferated, and within each job strata, differing pay grades are structured. Hence the workforce has come to be greatly stratified. One significant consequence of this is the need to increase the number of supervisors, whose task it is to monitor the implementation of all these job descriptions, company rules and procedures. Bureaucratic control has also institutionalized a system of positive personal incentives - higher pay, promotion opportunities, more job responsibility - which has had the effect of eliciting greater worker co-operation and compliance. These occupational incentives encourage workers to identify with company-defined workplace behavioural patterns. They also encourage workers to further their own individual job mobility, thereby inhibiting the formation of an organized collective working class identity. Encouraging 'good worker attributes' has now become the most important aspect of this system of labour control. (16)

The segmented labour market associated with this system of labour control, is called the independent primary labour market. It is defined by the following characteristics: stable employment and considerable job security and autonomy; meaningful opportunities for career progression and mobility. Most of the occupations linked with this labour market require educational credentials, many of them obtained at tertiary institutions. There is a definite fostering of occupational consciousness amongst most of these independent primary (essentially petty bourgeois) jobs. Earnings increase in direct relation to educational qualifications, seniority and career progressions. The job categories linked with this market are: all skilled technician and artisan work; the middle to upper layers of clerical, sales, supervisory work; the professional categories which is comprised of accounting, engineering, company legal work, management and administration.

The co-existence of differing systems of labour control

Due to the very uneven development of capitalism towards monopoly relations of production, these three forms of labour control have tended to co-exist in the same sectors of the economy. Systems of labour control employed in the advanced core firms are very different from those employed in the small-scale firms. This co-existence of differing systems of control forms the basis for the emergence of segmented labour markets. Differing labour market practices have developed historically around certain categories of work, and have inserted distinctive characteristics to these jobs, particularly qualities relating to the relevance of education and the potential for occupational mobility. The determining factor in the emergence of these job characteristics has been the way in which workers in these differing occupational categories have come to be differentially controlled. In other words, even within the large monopoly corporations, employees will be differentially controlled according to these three labour control/labour market systems. It must be noted that many of the large firms are still reliant on unskilled secondary market workers. Nonetheless, the semi-skilled production workers and the lower-level clerical/sales workers will be employed according to subordinate primary labour market characteristics, whereas the skilled craft workers, the upper-level clerical/sales employees and the professional staff will be employed according to independent primary labour market characteristics.

The relevance of educational qualifications in each of these labour markets

Educational qualifications are irrelevant, above a very minimal level, for most secondary market jobs. These are all unskilled jobs, where the labour process is based primarily on the arbitrary power of the supervisor who directs the work process. There is no need for any educational or skill component in the organization of this work process.

Education and skills training become more important in subordinate primary market job categories, mainly because these semi-skilled production workers have acquired, through trade union organization, sufficient bargaining power to halt attempts at the dilution of their skills, and to demand the continued upgrading of these skills.

Furthermore, it is in capital's interests that these workers acquire higher levels of education and training, particularly so as to enable their further training and re-training in a rapidly changing technological environment.

The educational and skill requirements of these machine operatives were clearly spelled out by the vice-president of the Yamazaki Machining Works on a visit to South Africa in the late 1970's. He argued that it was important not to confuse this operative labourer with the traditional unskilled worker. The machine operator needed to be literate, numerate (particularly with an ability to handle mathematical calculations and changes in a shifting production run), and 'responsible', due to the millions invested in the machinery which he/she was responsible for. (17)

Educational credentials become very important in independent primary market jobs, particularly because they serve to legitimate and consolidate the stratification of work categories linked with this labour market. Furthermore, educational credentials function as a useful selection criteria and distribution mechanism in allocating agents to the many and varied 'new petty-bourgeois' jobs prevalent in this labour market (18). The acquisition of appropriate educational credentials, such as diploma's in Business Management, Personnel Relations, Industrial Psychology, Secretarial and Computer services, serve as important positive incentives for greater worker identification with the company, and for occupational mobility for which they receive adequate financial rewards. Educational advancement in this independent primary labour market environment yields definite financial returns.

The relevance of education to a particular vocation, and the financial return which increased amounts of education will yield, will be determined by the segmented labour market which is associated with that type of work. An unskilled worker who acquires, for instance, three years of additional education, is unlikely to benefit from any occupational mobility or wage increase within secondary market jobs. However, an employee in an independent primary market job is likely to benifit substantially over time if he/she were to add three years of education to their credentials.

An important outcome of this labour market segmentation is the way in which it has generated vastly differing educational and job-search behaviour amongst the social classes within capitalist society. Members of the bourgeoisie will seek further education and will seek independent primary occupations. This is a product of the way in which they have been nurtured, both culturally and educationally, to understand their social horizons and aspirations. Members of the working class, on the other hand, through the development of their own 'popular knowledge', have a clear grasp of the structural constraints imposed by segmented labour markets which make further education irrelevant for them. It is a sensible assessment of the low value of formal education in most secondary market jobs. Workers reject the 'offers of advancement' made by schooling. Workers are free to attend more schooling, but after a certain basic level of educational acquisition there exists no strong need/pressure to progress further. This is so, particularly because there is no major additional financial return for extra schooling in the secondary market jobs that they perform. (19)

Mobility between segmented labour markets

Worker mobility between markets is highly constrained, primarily because market segmentation is defined on the basis of class, racist and sexist criteria. The class-biased processes of schooling, which for example place middle class children in advantaged positions in terms of access to independent primary jobs, and disadvantage working class children, have already been discussed. Racist and sexist constraints on occupational mobility require additional commentary. Black workers, not only in South Africa, generally occupy unskilled secondary jobs. Women workers generally perform unskilled secondary and subordinate primary clerical and secretarial work (20). Of course, none of this means that individual workers cannot successfully transcend the structural constraints on their occupational mobility. However, as regards the working class as a single collective class category, labour market mobility remains virtually impossible. Conditions for such mobility can only become possible when the dictates of accumulation require the restructuring of the form of labour market segmentation in the economy. This occurred in South

Africa in the 1970's when racial barriers to subordinate primary jobs were abolished in the interests of improved profitability. Large numbers of African secondary workers moved into subordinate primary jobs.

EDUCATION AND SEGMENTED LABOUR MARKETS IN SOUTH AFRICA

Race has played a central role in the development of South African capitalism. It has provided the crucial mechanism for systematically segmenting the South African workforce into three distinct labour markets. The nature of these labour markets have not been determined only by the labour control requirements within the factory. Rather, labour control requirements outside of the factory have been equally determining. The racial state, both before and after the Nationalist victory of 1948, has intervened directly in the ordering of capitalist society in South Africa. This has been achieved primarily through the mechanisms of apartheid, particularly influx control, a device that has attempted to control the size of the urbanized African workforce whilst restricting the surplus African labour population to the impoverished reserves. Hindson suggests that the impact of influx control during the late 1940's, 1950's and 1960's was to 'stabilize one section of the workforce and migrantize another, thereby producing differentiated (or segmented) African labour power' (21). The period of the 1940's/ 1950's was a crucially formative phase in the development of segmented labour markets in South Africa. It was a time when white workers were organizing themselves politically and were demanding the strict application of racial job reservation, particularly at the semi-skilled and skilled occupational levels. Furthermore, industrial expansion had created a demand for a larger and qualitatively different African labour force. Manufacturing capitalists articulated the belief that a stabilized semi-skilled African workforce would maximize productivity in the context of modernizing mechanized production. They therefore sought to 'secure the conditions of reproduction of semi-skilled African workers in the form of a settled urban workforce', whilst nevertheless still encouraging the expansion of the migrant workforce intended specifically for unskilled labour (22).

The 1940's witnessed the rapid expansion of African urbanization which occurred simultaneously with a substantial growth in the industrial employment of African labour. These urban growth phenomena acted to severely threaten the supply of African workers to the agricultural sector, leading to formidable tensions between urban and agricultural employers. It was as a result of this upheaval in labour control mechanisms during the late 1940's, that the policy of apartheid labour control was formulated. Based on the Sauer Report of 1947, the Nationalist Government implemented a labour policy which sought to strictly control African urbanization, maintain temporary migrant labour and pursue effectively the policies of territorial segregation. Hindson lists methodically the endless measures instituted after 1952 - the pass law controls, the labour bureaux, 'section ten' rights, the African worker treated as 'temporary sojourner in the white urban areas'. Hindson suggests that the 'section ten' laws were designed to reinforce the segmentation between permanent and temporary sections of the African workforce. Section Ten rights acted to exclude rural workers from urban employment whenever possible, and in so doing, protect the urban African worker from competition by these rural migrants (23).

These influx control mechanisms have since 1948 been augmented by a wealth of other racially restrictive legislation: urban areas residential restrictions, job reservation, racially discriminatory industrial training, inferior 'Bantu Education', unequal access to industrial bargaining machinery, the granting of homeland self government, and lastly, industrial decentralization and the creation of 'commuter migrants'. Hindson considers the implementation of the 'commuter migrant' system in the late 1960's as particularly significant. Its effect was:

> ...not to retard urbanization but to displace it to bantustans on the peripheries of urban industrial centres. It did not convert settled township dwellers into temporary migrants, but created a new form of stabilized urban labour....Migrant labour continued to be numerically important, but its character was changing. It was becoming a workforce solely dependent on wages, whose families were increasingly concentrated in quasi-urban settlements in the countryside. (24)

The impact of all of these mechanisms was the formation of a racially determined capitalist economy with racially segmented labour markets, which by the early-1970's had the following clearly defined characteristics. Most African workers were restricted to secondary market jobs, mainly as migrant labourers. These migrants formed a large reserve army of highly controlled, cheap and vulnerable workers. Most independent primary market jobs were reserved for whites only. Access to certain subordinate primary market jobs was racially differentiated, allowing some Coloured and Indian workers to occupy positions as semi-skilled production workers, lower-middle level clerical and sales personnel. A slow trickle of African workers had begun to flow into these semi-skilled occupations during the 1950's and 1960's, primarily as a result of changes initiated by mechanized production. However, racial impediments such as job reservation and white trade union closed shop agreements (which applied to all Africans) were extremely powerful, restricting any substantial movement from secondary market employment to the primary market sector. Occupational mobility in the early 1970's rarely existed for the majority of African workers.

The existence of these three distinct labour markets in South Africa can be represented graphically as in Table 1.1 below:

TABLE 1.1: SEGMENTED LABOUR MARKETS IN SOUTH AFRICA IN THE EARLY 1970'S (25)

LABOUR MARKET:	SYSTEM OF CONTROL: SIMPLE	TECHNICAL	BUREAUCRATIC
INDEPENDENT PRIMARY			Mostly White, but also Coloured, Indian - Professionals, Managers, admin.staff; Upper layers - sales, clerical, supervisory staff; Artisans and Technicians.
SUBORDINATE		Coloured, Indian	

PRIMARY	and white semi-skilled production workers; Lower layers of sales, clerical and supervisory staff. A small number of African 'Section-Tenners' have moved into these jobs.
SECONDARY	Unskilled African migrants and 'Section-Tenners'

By the late 1970's, however, there had been significant changes in the nature of work in the South African industrial sector. Thousands of African workers had by then shifted into semi-skilled occupational categories. This occurred as a result of working class struggles as well as capital's continuous attempts to destroy the strength of costly white skilled and semi-skilled labour, and to cheapen the relative cost of labour inputs in production. This was achieved through the increased application of machine technology, as well as through the gradual dismantling of job reservation and other occupational impediments to African worker advancement. This upgrading of the skills of African workers, and the increasingly significant role they were beginning to play in the production process, lead to conditions which favoured African trade union organization. A resurgence of militant worker resistance occurred during the 1970's. Capital and the state were forced to recognise the increased strength of African workers in industry, and in 1979 ceded them the right to participate legally in trade union activities.

So far as this thesis is concerned, the implications of these changes were that a different form of labour control was being implemented. African workers, through their trade union organization and newly acquired strategic position within the labour process, were now able

to negotiate wages, better working conditions, improved job security, occupational upgrading and improved training. Thus, beginning in the late 1960's and continuing throughout the 1970's, a significant shift of labour control mechanisms had occurred: from simple control to technical control. Similarly, there had been a labour market shift for many of these African production workers, from secondary market jobs, to subordinate primary jobs.

The state was not content, however, to allow the previously defined racial mechanisms of control to collapse completely. The reality of large numbers of urbanized and semi-skilled African workers had to be accepted, but influx control needed to be adjusted so as to exclude all other (non-employable surplus unskilled) labour from the urban centres. The Riekert Commission was set up to provide a solution to this problem. Its solution was an acceptance of the permanency of these semi-skilled African workers in the urban centres of South Africa. In fact, the commission went further and advanced a reformist strategy of winning over this grouping of workers by providing them with significant urban privileges: improved education and training, urban residence rights, freehold tenure, entrepreneurial opportunities and forms of local political participation. (26)

However, these subordinate primary market benefits would accrue only to urban African dwellers. Other African workers would be more tightly relocated and controlled in the reserves. Unskilled workers would be recruited from the ranks of migrants to fill the secondary market jobs in the urban employment centres. Hence, the Riekert strategy adopted by the state in 1979, was aimed at dividing the African working class into subordinate primary market 'urban insiders', and secondary market 'outsiders'.

The Riekert Commission was also important in a more directly political form. Its incorporation of the homelands within its overall strategy gave to the 'Bantustan' system a continued recognition and validity. The South African state could not allow the 'independent' homelands system to dissolve, for that would inevitably contribute to the intensification of the struggles for African participation in, and control of, the central structures of government.

The shift being described here can be graphically represented as in Table 1.2 below:

TABLE 1.2: SHIFTS OF AFRICAN WORKERS BETWEEN SEGMENTED LABOUR MARKETS DURING THE 1970'S AND 1980'S: (27)

LABOUR MARKET:	SYSTEM OF CONTROL: SIMPLE	TECHNICAL	BUREAUCRATIC
INDEPENDENT PRIMARY			Small numbers of African 'Section Tenners' performing upper layers - admin., clerical, sales & supervisory work.
SUBORDINATE PRIMARY		African 'Section Tenners' doing semi-skilled production work; lower layers - admin., clerical sales & supervisory work	
SECONDARY	Unskilled African migrants		

This restructuring of the division of labour, of the systems of labour control, and of the racially defined segmented labour markets in South Africa, have crucial implications for the nature and provisioning of education and training for black South Africans. These implications will now be examined.

<u>The relevance of educational qualifications for black workers in the South African economy</u>

Educational qualifications assume a different relevance for workers in each of the three segmented labour markets which together constitute the South African employment arena. Education is virtually irrelevant for those workers doing unskilled labour. A training manager on the East Rand confirmed this observation when speaking of the educational requirements of unskilled labour:

> Once you have visited the factory floor, and you have seen what kind of job is involved, then you will realize that schooling in this case wouldn't really change the situation. Give a guy a shovel, and his task is to fill a loading box. There is no need for him to use much common sense and discretion. And this becomes his job for years. (28)

Similarly, for operative and artisanal labour, educational qualifications are not the primary job entrance requirement:

> We do not look at educational qualifications as prime selection criteria. We look at abilities and aptitudes. These are our prime criteria. (29)

> Schooling contributes very little as far as technical know-how and skills are concerned. The subjects that are taught are taught in a very abstract way, non-related to industry. (30)

Employers seek other qualities which are identified through aptitude tests, interviews and practical testing (31). Steinmuller (Africa) Limited, for instance, used the following battery of selection procedures for both their operators and apprentices: initial attitude indicators were obtained in letters of application; educational qualifications were examined; personal interviews were undertaken, as well as psychometric, NIPR Mental Alertness and 3-D perception testing. Clearly, formal educational qualifications are only one of many selection criteria. In fact, formal educational credentials are in many cases not intrinsically crucial to the job itself. Prescibing minimum educational qualifications to certain occupations has much to do with the requirements of the segmented labour market associated with the job. For instance, apprenticeship requires a minimum of Standard Eight, and most operative workers have a primary school qualification of Standard Five, or possibly a Standard Six. But these educational requirements are very arbitrarily determined as Mr Van der Watt, Training Officer for Dorbyl-Vecor, illustrated with the following statement:

> After receiving varied students here for training, I personally do not find much difference between a pupil with a Standard Ten from an academic school, or a Standard Ten from a technical school, or even a Standard Seven or Eight from any high school. Their technical training results are the same. I get no more that a 3% variation in their marks. (32)

These differentiated educational requirements for entry into either operative or artisanal fields have to do with capital's need to construct a selection mechanism for recruiting differing strata of workers to these jobs, and to hierarchically rank them one against the other. By so doing, the artisan becomes hierarchically more senior than the operator, which is an essential requirement of effective labour control.

Having said this, it must be stressed that educational credentials are more relevant to subordinate primary market (semi-skilled) jobs, than in the case of secondary (unskilled) market employment. The reason for this is primarily that definite skills are required to do machine operative labour. Capital requires operative labour that has a certain basic level of education in order that it be easily retrainable and upgradable. As van der Watt of Dorbyl explained:

> You can't expect labour, especially in the low level jobs, to function happily in the same job for 15, 20 or 30 years. The mechanism has to be there to be able to move...the operator must be able to be upgraded. Those who don't move, stagnate, and this is unproductive. (33)

The Chief Training Officer for Scaw Metals elaborated on these views:

> The operator must have the skills to enable us to build onto, something to advance on. Schooling is important in building this potential for advancement. (34)

Capital requires retrainable and upgradable operative labour so that as mechanization proceeds, they are able to reskill these workers to adapt to new and ever-changing technologies.

> Black operator advancement is only possible if he has got the basic educational foundation, and that is why I believe we shouldn't take on anybody who has less than Standard Six. (35)

Scaw metals employ only workers with Standard Six certificates for semi-skilled work because it is only at this educational level that sufficient literacy, numeracy and technical competency skills have been developed to allow for effective retrainability. This is the case with most of the other companies interviewed.

Racially differentiating the value of educational credentials

During the last 15 years, a phenomenal growth rate has been experienced in the number of African candidates writing matric. The figures contained in Table 1.3 reflect this increase:

TABLE 1.3: THE GROWTH IN THE NUMBER OF BLACK MATRICULANTS (36)

YEAR	NUMBER
1970	2 274
1975	8 287
1978	15 275
1980	39 177
1981	48 571
1982	62 397
1983	72 168
1984	83 075

In general, the educational level of the economically active black population has increased substantially since 1970, as the Table 1.4 clearly illustrates:

TABLE 1.4: THE EDUCATIONAL LEVEL OF THE ECONOMICALLY ACTIVE BLACK POPULATION, 1970-1985. (37)

EDUCATIONAL LEVEL	TOTAL NUMBER OF BLACK WORKERS	% DISTRIBUTION
YEAR: 1970		
None-Std 7	5 482 831	96.1
Std 8-9	165 768	2.9
Std 10	22 264	0.4

Diploma	34 733	0.6
Degree	1 243	0.0

YEAR: 1985

None-Std 7	4 561 737	86.0
Std 8-9	473 704	8.9
Std 10	186 096	3.5
Diploma	75 009	1.4
Degree	8 372	0.2

What is particularly significant about this shift in the general level of education amongst working black South Africans between 1970 and 1985 is the fact that as this general level of education rises, so the relative value of particular quantities of black education has fallen in each of the segmented labour markets. Carnoy writes:

> Just as the poor begin to get higher levels of schooling, the relative value in the labour market of those levels falls. Even when the society invests more in schooling for the poor, therefore, the labour market values that schooling less than before the poor were getting it. (38)

Blakemore and Cooksey make a similar point in describing the expansion of educational opportunities in post-independent Africa:

> As long as educational facilities expand more rapidly than job openings for school-leavers...the net effect of expansion will be to devalue qualifications received from schooling....Thus the growth of schooling has the effect of raising the level at which selection takes place ...but does not eliminate selection. (39)

In South Africa, the relevance and value of educational credentials takes on a racially differentiated character. For example, white apprentices require only Std. 8, and sometimes a Std. 9 to be indentured. However, black recruits generally will only be accepted with a minimum of Std. 10. Mr Naude', Chairman of the NTB confirmed this trend:

> It is not only because it is hoped that black matriculants will have a better technical foundation for apprenticeship. It is also because the number of black matriculants has climbed

> so high in recent years. Employers can now take the cream of the crop. (40)

What this implies is that higher levels of Black education, such as a Standard Ten, are being downgraded via labour market adaptations, to serve as an entrance requirement for occupations such as apprenticeship. White educational qualifications have maintained a relatively higher labour market value. Similarly, black operative labour is increasingly being recruited from the ranks of workers with Standard Six to Standard Eight educational qualifications. Haggie-Rand recruits only workers with a minimum of Standard Six for its operative positions:

> We've had to look at the entrance level of people whom we choose as operatives. There is a minimum requirement now of Standard Six. (41).

The other employers interviewed confirmed this trend. Whereas whites with minimal educational qualifications have been accepted for these same operative positions, blacks are now being expected to have secondary school qualifications.

With respect to HLM jobs, educational qualifications amongst present employees (mostly white) are extremely low, as Table 1.5 below indicates:

TABLE 1.5: EDUCATIONAL QUALIFICATIONS OF HIGH LEVEL MANPOWER, 1981. (42)

POP. GROUP	EDUCATIONAL LEVEL:							
	NONE	PRIMARY	STD 6-7	STD 8-9	STD 10	STD 10 &DIPLOMA	DEGREE	TOTAL
WHITE	239	1346	19973	80348	158949	154327	115989	531271
%	0.04	0.3	3.7	15.1	29.9	29.0	21.8	100
BLACKS	13047	53411	50528	108089	29270	12833	1951	269129
%	4.8	19.8	18.8	40.2	10.9	4.8	0.7	100
ALL POP. GROUPS	13376	68142	113697	287730	226035	187863	124750	1021593
%	1.3	6.7	11.1	28.2	22.1	18.4	12.2	100

As the figures indicate, 49.2% of whites and 94.5% of blacks in HLM occupations have only a Std. 10, or less. The investigation into HLM in South Africa, initiated by the NMC in 1981, defined Standard Ten plus two years post-secondary education as the minimum required educational qualification that should serve as an entry pre-requisite for many of these jobs. Furthermore, the shortage of skilled personnel experienced in these HLM occupational categories has made this educational deficiency more acute. The HLM report noted that:

> South Africa will not be able to realize its development potential and offer all its people an acceptable standard of living if the country persists in trying to recruit its HLM mainly from the white population (43)....Overall productivity of such a workforce cannot be very high, nor is it to be expected that the country will be able to realize its economic potential with such a workforce. (44)

Since the early 1970's, however, there has been a steady increase of educated African workers into many Middle Level Manpower (MLM) and HLM occupations, specifically into clerical, sales and service-sector jobs. The growth of African participation in these particular occupations has been phenomenal:

TABLE 1.6: THE SHIFT OF AFRICAN LABOUR INTO VARIOUS OCCUPATIONS (45)

OCCUPATION	YEAR	NUMBER OF AFRICANS	% OF TOTAL EMPLOYEES IN OCCUP.
Clerical	1960	19 276	6.2
	1970	95 359	17.0
	1980	828 800	24.2
Sales	1960	28 894	18.0
	1970	78 939	27.3
	1980	166 200	38.0
Service-sector workers	1960	711 156	78.8
	1970	1 015 726	80.4

1980	1 102 840	77.2

It is interesting to note that only since this phenomenal increase in black partication in MLM and HLM jobs, have there been strong calls for increased educational requirements for HLM jobs. For example, the 1981 HLM Report of the NMC laid strong emphasis on the attaining of higher educational qualifications for all HLM jobs (46). Previously, the underqualifation of 49.2% of whites working in these positions was not considered a 'crisis' issue. Presumably, it has now become a critical issue because blacks are the major group moving into these vacancies. However, the reasons for the greater stress on increased educational requirements are far more complex. The consequences of these African worker shifts (a result of both increased mechanization and the dilution of racial barriers allowing for certain forms of black occupational mobility) has been that educational qualifications have become increasingly more important as a differentiating agency for access to higher level jobs. As formal statutory barriers to access to the more skilled/ managerial/ administrative jobs have been abolished, so the more 'personalized' and 'achievement-oriented' educational criteria are becoming more significant. These changes are part of the broader ideological restructuring which is currently occurring, changes which stress free enterprise values such as 'promotion on the basis of merit' and the encouragement of 'individualism and the achievement ethic' (47). The pursuit of educational credentials has become an important tool in this ideological reworking.

Furthermore, as was suggested earlier, higher educational credentials are particularly important in the allocation of trained petty bourgeois agents to primary market jobs. Whilst the working class and the bourgeoisie are directly connected to occupational status as a consequence of the fundamental ownership relations that define capitalist society, for the petty-bourgeoisie (and in South Africa, specifically the emergent black petty-bourgeoisie), increased educational credentials are crucial in assigning these agents to jobs amongst the varied positions in the hierarchically-ranked primary labour market. It is because of these labour process phenomena that

capital and the state have been so determined to expand the educational opportunities for an emergent black middle class in South Africa, and have also continually stressed the importance of job advancement programmes which would open up primary market (MLM and HLM) job opportunities for educated black petty-bourgeois agents.

Maintaining cheap African labour-power in semi-skilled and skilled form

The racial dimension, for so long associated with the South African labour process, has not diminished as a result of either the shift of large numbers of African workers into primary market jobs, or as a result of the increasing prominence of education as a class-based differentiating mechanism. Rather, it has resurfaced in a restructured form. As these shifts have been occurring, so the racist functioning of the South African segmented labour markets has resulted in a relative decline in the labour market values of increased educational qualifications amongst blacks. Devalued educational credentials will naturally receive lower remuneration than what would have been owing prior to devaluation. The augmentation of labour market segmentation by a further process of racial differentiation has always been highly functional to capital in that it has continuously provided a flow of cheap black labour for the South African economy. Whereas in the past this applied primarily to unskilled African labour, today as a result of labour market segmentation and racial differentiation, this applies to African labour in the semi-skilled and skilled work categories too.

The raising of educational entry requirements for blacks into these semi-skilled and skilled occupations also serves the important task of placing certain non-statutory restrictions on the mass inflow of African workers into these occupations, a phenomenon that would constitute a major threat to the employment security of white personnel. This differentiation process serves as a more subtle exclusion mechanism than the previously racist mechanism of job reservation. Artisanal trades will still remain predominantly white: blacks require a Standard Ten whilst whites continue to be indentured with a Standard Eight (the legally prescribed minimum entrance level).

Thus, the acquisition of greater levels of education amongst urban black workers, and the shift of these workers into more skilled and semi-skilled work, does not automatically yield a substantially higher income or result in an increased relevance for these educational credentials in the workplace. Rather, the racially constructed labour markets act to decrease the relative value of these increased educational credentials, thereby maintaining the continuation of cheaper black labour in a semi-skilled and skilled form, as well as preserving certain categories of work for white preferential employment.

FOOTNOTES

(1) The concept of 'skill' is dealt with in varying degrees of rigour in the following key labour process texts: Braverman (1974); A Gorz (ed), The Division of Labour: The Labour Process and Class Struggle in Modern Capitalism (London, 1976); Thompson (1983); Gordon et al (1982); Edwards (1979); More (1982); Baron et al (1981); Webster (1985); Sitas (1983); Meth (1981); Chisholm (1983); R Davies (1978); Loots (1984). Useful compilations of articles reflecting management's interpretation of the meaning of industrial skill are contained in the following texts: International Foundry and Heat Treatment Conference, Manpower, Productivity and Training, Part V, Johannesburg, 1982; National Institute for Personnel Research Symposium, The Development and Training of Black Employees in Industry, Rand Afrikaans University, 1980; National Productivity Institute, The 6 M Simulation Training Course Manual, Pretoria, 1981; School of Business Leadership, Economic Participation in South Africa: Strategy for Survival and Growth: Final Report of Project Free Enterprise, University of South Africa, 1986.

(2) Department of Manpower Utilization, Report of the National Manpower Commission for the period 1 January 1980 - 31 December 1980, Government Printer, Pretoria, p 49.

(3) B J Cave,'Evolving a training strategy for the foundry in industry', in International Foundry and Heat Treatment Conference, Manpower,Productivity and Training, Part V, 1982.

(4) The acquisition of supervisory skills are not unique to the capitalist labour process, as supervisory tasks exist in socialist economies too. However, what is unique to the

capitalist labour process is the linking of supervisory work with efforts to dispose workers more favourably towards capitalism. This is the ideological training component of supervisors in capitalist economies.

(5)Baron (1981) p 151.

(6)More (1982) p 109.

(7)Webster (1983) p 33.

(8)Hussain (1976) p 419.

(9)See N Poulantzas, Classes in Contemporary Capitalism (London, 1974) pp 30-31.

(10)Ibid, p 260.

(11)Ibid, p 269.

(12)Edwards (1979) p 163.

(13)Ibid, p 178.

(14)Ibid, p 170-173.

(15)Ibid, p 131.

(16)Ibid, See p 130-162.

(17)See Sitas (1983) p 120-121.

(18)Poulantzas (1974) p 251-270.

(19)CCCS, Unpopular Education (1981) p 156.

(20)For a comparative study of South Africa and the United States, see Greenberg (1980); For discussion of education and gender, see Barrett (1980).

(21)D Hindson, Pass Controls and the Urban African Proletariat (Johannesburg, 1987) p52.

(22)Ibid, p 58.

(23)Ibid, p 63.

(24)Ibid, p 72. For detailed discussions of racial mechanisms legislated by the state, see Hindson (1987) pp 52-96; Sitas (1983) pp 213-215; Surplus Peoples Project, The Surplus People (Johannesburg, 1985).

(25)Adapted from Webster (1985) p 201 and Edwards (1979) p 179.

(26)Republic of South Africa, Report of the Commission of Inquiry into Legislation Affecting the Utilization of Manpower (Excluding the Legislation Administered by the Department of Labour and Mines), (Chair: P J Riekert), RP 32/1979, Government Printer, Pretoria. For a critique of Riekert, See Hindson (1987) pp 83-94; Saul and Gelb (1981) pp 63-71.

(27)Adapted from Webster (1983) p 328.

(28)Interview, Mr G Jordaan, Training Officer, Basaan Du Plessis, Pretoria West, 24/2/86.

(29) Interview, Mr van der Watt, Training Officer, Dorbyl-Vecor, Vereeniging, 17/2/86.

(30) Interview, Mr P Kuhl, Training Officer, Steinmullers (Africa) Limited, Chamdor (Soweto), 21/2/86.

(31) See the Human Sciences Research Council/National Training Board, HSRC/NTB Investigation into the Training of Artisans in South Africa, Pretoria, 1985, p 156, Table 7/3. The report identifies the order of selection criteria employed by management as follows: practical testing, minimum educational qualifications, interviews and psychological testing.

(32) Interview, Mr Van der Watt, 17/2/86.

(33) Ibid.

(34) Interview, Mr T Burkes, Training Officer, Scaw Metals, Germiston, 11/2/86.

(35) Ibid.

(36) Department of Education and Training, Annual Report, 1984, RP 91/1984, Government Printer, Pretoria, 1984, p 106.

(37) Department of Manpower (National Manpower Commission), High Level and Middle Level Manpower in South Africa: Recent Developments, RP 98/1987, Government Printer, Pretoria, p 17.

(38) M Carnoy, Education as Cultural Imperialism (New York, 1974) p 363-364. See also B Nasson, 'Ambiguous hope: education and poverty', Social Dynamics, 10 (2) 1984 p 13.

(39) K Blakemore and B Cooksey, A Sociology of Education for Africa (London, 1980) p 66.

(40) Interview, Mr Naude', Chairman, National Training Board, Pretoria, 25/6/85. An interview with Mz. D Peveritt, Education and Training Officer, SEIFSA Education and Training Board, Johannesburg, 3/3/86, confirmed this recruiting trend as being the policy of SEIFSA members.

(41) Interview, Mr R Edwards, Training Officer, Haggie-Rand, Germiston, 19/2/86.

(42) HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985, Table 9, p 16; HLM occupational categories include professionals and allied workers, managers, administrative staff, clerical workers and skilled technical workers.

(43) Department of Manpower, Report of the NMC...1981, p 188.

(44) Department of Manpower (National Manpower Commission), High Level Manpower in South Africa, RP 113/1980,

Government Printer, Pretoria, p 21.

(45) Department of Statistics, 1970 Population Census, Report Number 02-05-04, 1975; 1980 Population Census, Report Number 02-80-03, 1985, Government Printer, Pretoria.

(46) NMC, High Level Manpower in South Africa, 1980.

(47) The broader ideological restructuring referred to - a stress on 'personalized' and 'achievement-oriented' selection criteria, as well as other free enterprise values - will be discussed in more detail in Chapter Six of this thesis.

CHAPTER TWO PROBLEMS FACING SOUTH AFRICA'S MANUFACTURING SECTOR

Of particular concern to the case study developed in the following three chapters of this thesis is an examination of the problems surrounding the skills and educational qualifications required of the black workforce in the metal sub-sector of the South African manufacturing industry since the early 1970's. However, to come to terms with these specific skill and educational problems faced by one sub-sector of manufacturing, a prior examination of the broader economic problems facing the whole of the manufacturing sector is required. This is the task of the present chapter.

South Africa's manufacturing sector

In 1943 the South African manufacturing sector overtook mining as the major contributor to national income. Previously, both mining and agriculture had been the dominant economic sectors. The rise of manufacturing as the key 'dynamizing' force within the national economy is reflected in the statistics contained in the following table:

TABLE 2.1: CONTRIBUTIONS OF MAJOR ECONOMIC SECTORS TO NATIONAL INCOME (1)

	(In millions of Pounds)		
YEAR	AGRICULTURE	MINING	MANUFACTURING
1940	50.7	98.3	75.6
1941	53.3	99.7	86.6
1942	61.9	101.1	98.2
1943	83.1	94.2	107.1
1944	84.1	93.2	120.6
1950	133.8	138.3	225.3
1959	236.4	270.2	498.6

By 1979 the manufacturing sector consisted of over 17 000 firms, employing in the region of 1,3 million workers. The phenomenal growth of this sector during the boom period of the 1960's/1970's can be witnessed in Table 2.2:

TABLE 2.2: PRINCIPAL STATISTICS FOR MANUFACTURING SECTOR, 1979. (2)

YEAR	NUMBER OF ESTABLISHMENTS	TOTAL EMPLOYMENT
1966	12 727	941 848
1968	13 142	993 738
1970	13 121	1 091 570
1970*	11 833	1 073 689
1972	12 671	1 131 061
1976	15 461	1 359 939
1979	17 124	1 324 869

However, the impressive growth of the manufacturing sector during the 1960's/ early 1970's was to be severely handicapped in the late 1970's and 1980's by factors deeply embedded within manufacturing itself. Whilst still contributing the dominant share of the Gross Domestic Product (3), by the early 1980's the manufacturing sector was faced with rapidly declining growth rates. Table 2.3 indicates the severity of this decline:

TABLE 2.3: GROSS DOMESTIC PRODUCT AND MANUFACTURING GROWTH (4)

	AVERAGE RATE OF GROWTH PER ANNUM:		
	MANUF. OUTPUT (%)	MANUF. EMPLOY (%)	TOTAL OF GDP (%)
1946-1950	9.1	6.6	4.7
1950-1955	7.5	3.0	4.8
1955-1960	4.5	0.9	4.0
1960-1965	9.9	6.8	6.0
1965-1970	7.4	3.2	5.4
1970-1975	6.0	4.1	4.0
1975-1980	4.1	1.5	3.4
1980-1985	-1.2	-1.0	1.1

As is clearly evident in the above figures, the leading contribution made by manufacturing to the GDP has been steadily decreasing. Black and Stanwix, in a recent paper on the crisis in manufacturing, argue that there are several interrelated dimensions to this crisis:

> It has an international dimension since South Africa is firmly integrated into the world economy and profoundly influenced by the fortunes of its major economies. There is also a political dimension associated with the struggle against white minority rule in South Africa and interwoven with the process of class struggle. The increasingly violent nature of this conflict has compounded the problem of revitalizing the economy. Finally, there is a dimension to the crisis which is rooted in the process of accumulation...itself. (5)

This Chapter will focus on some of these international and structural dimensions to the crisis in South African manufacturing.

The failure to create an export-oriented manufacturing sector

Black and Stanwix argue that one of the most constraining factors affecting manufacturing growth in South Africa has been its tendency towards highly import-intensive forms of production:

> ...whilst the importation of consumer goods has been substantially reduced (during the 1960's and 1970's), this has been achieved at the expense of increased imports of equipment and materials. The implications of this strong dependence on imported technology and capital goods is that further expansion into new branches of industry will carry with it a very high import component... (6)

Furthermore, whilst the real value of fully manufactured exports has increased at 9.5% per annum between 1970 and 1982, this has only accounted for 10% of total exports, with primary exports (especially gold) dominating the field. These figures have led Black and Stanwix to conclude that:

> Given the import intensity of South African manufacturing and the failure of production for the export market, it is not surprising that the (manufacturing) sector is a net importer and that by the early 1970's a persistent and fundamental structural imbalance on the current account had become apparent. (7)

Table 2.4 presents figures which highlight the negative impact this import-intensive manufacturing sector has incurred on the current account of the South African balance of payments over the last number of years:

TABLE 2.4: BALANCE ON CURRENT ACCOUNT,1960-1985 (Rm): (8)

YEAR	AMOUNT
1960	37
1965	- 296
1970	- 843
1975	-1 813
1980	2 818
1981	-3 974
1982	-3 210
1983	305
1984	-1 410
1985	7 112

The Reynders Commission investigation of 1972 into the South African export trade recommended that the solution to these balance of payments problems lay in the successful formulation of an export-oriented manufacturing capacity:

> Export expansion will have to fulfill the twin roles of stimulating economic growth directly through the creation of expanding markets, and indirectly through the provision of foreign exchange to pay for the sustained growth of investment. (9)

But this has not happened. The failure since the early 1970's of an export-orientated and expanding manufacturing sector needs to be more closely examined. What were the specific constraints on South Africa's industrial expansion in the 1970's? Much of the following discussion will seek to identify some of these constraints.

The dependency on overseas technology: The need to develop an appropriate South African technology

The Reynders Report of 1972 was the first major study of technologies in use in South Africa, and it highlighted the extreme technological dependency of South Africa on the advanced economies of the West. For instance, in the 1972-1978 period, only 20% of all technological patents registered with the Board of Industry and Trade were local. The other 80% represented the importation of foreign technology and know-how (10). The Reynders Commission defined this foreign 'know-how' as:

> ...an asset which must furnish growth and income (to the foreign supplier)....Normally performance guarantees rather than active assistance (research, training,etc) were given and the payment for use was usually coupled to the sales/ production/ profit performance of the user (the growth aspect)....The supplier was a sustained source of knowledge in that the user obtained the benefit of research from all over the world where the supplier had similar affiliations. (11)

It has already been suggested that the importation of capital goods has constituted a growing proportion of total imports to South Africa (12). However, the problem is not only this substantial dependence on overseas technology, but also the fact that these technologies are provided with considerable strings attached. The Reynders Commission reported that many foreign technology contracts limited local application of the technology and local production of the commodity in the following ways:

> The agreement usually limits the sale of the resultant product to the domestic market of the user, with exceptions only after the consent of the supplier; the agreement provides that any improvements to the product or process made by the user, automatically and without charge become the property of the supplier; and at times, the user is also limited in his sources of supply of the required raw materials or components (the supplier being designated as the source). (13)

In a survey of South African companies which had technology agreements registered with the Board of Industry and Trade, the Reynders report found that the following restrictions applied to these companies' sales outlets:

TABLE 2.5: TECHNOLOGY AGREEMENT RESTRICTIONS ON MARKET OUTLETS, 1972. (14)

% OF COMPANIES	TYPE OF SALES RESTRICTION:
30%	Restricted to South Africa
5%	Restricted to South Africa and Namibia
56%	Restricted to South Africa, Botswana,Lesotho,Swaziland, Zimbabwe,Angola,Mozambique
4%	Restricted to South Africa and all countries south of the Sahara
8%	Restricted to the whole of Africa

Thus most technology agreements severely limited market outlets, particularly restricting South Africa's ability to exploit economies of scale by exporting manufactured commodities onto the world market. The South African user of foreign technology, in the words of the Reynders report, was "prevented from dealing outside South Africa, prevented from getting ahead, and had to pass on all local innovations free of charge to the supplier" (15). According to the Kleu Report of 1983, South African industries which have been heavily reliant on the importation of foreign technologies are the Chemicals Industry, the Electrical Machinery Industry and the Motor Vehicles and Parts Industry. (16)

Bloch, in his study of the manufacturing industry, argues that actual foreign ownership was not nearly as important a determining factor as the control over technology in laying the foundations for the internationalization of capital and the shaping of South Africa's particular dependent location in the world capitalist economy. Using the chemical industry as a case study, he argues that:

> ...in 1968, 41% of production and 42% of investment was in the hands of firms with 10% or more foreign holding of voting shares. ...On the other hand, direct ownership was hardly important where control of technology was so extensive. If local production was

> to occur, it had to (i) be capital-intensive and thus concentrated; (ii) reproduce the relations of production pertaining in the advanced capitalist centres, or face annihilation due to inability to match the vastly superior productivity of producers in the centre; and (iii) rely on these producers for technological development, and thus encourage foreign interpenetration to reinforce the above processes. The distinction between overseas and local producers, while not without contradictions, became increasingly blurred in an interpenetration of ownership, techniques, processes, supplies, markets, and a similarity of production relations that was the hallmark of internationalization in the present phase of imperialism. (17)

Bloch notes that in 1968, plant and machinery made up the most important part of costs for the chemical industry, with fixed assets being 70% of total assets. Plant and machinery accounted for 54% of total investment (18). This heavy reliance on imported technology was a source of super-profits for the multi-national corporations (MNC's), which also had a monopoly over supplies of spare parts, control over world markets, and which supplied specialist technicians and engineers for repair work. All of these mechanisms ensured South Africa's dependent location within the world capitalist economy. Bloch elaborates:

> Indeed, the subordinate position of South Africa in the imperialist chain compounded by the partricular direct and indirect forms of control of the MNC's, ensured that the growth of the chemical industry involved an incessant chase to attain efficient production under circumstances that only locked the industry further in a chain of dependence and subordination. (19)

The Reynders report, in its analysis of these problems, noted that there was very little South Africa could do about this dependency relation, and that it should perhaps:

> ... be regarded as the price the country has to pay to gain access to this knowledge....Without these arrangements, a great deal of development would not have been possible in South Africa. (20)

Improving local Research and Development (R&D) skills

Many state and private sector organizations have increasingly been calling for the development of an appropriate local technology as a means of resolving South Africa's acute dependency on overseas technology. For instance, the Reynders Commission of 1972 argued that the problem in South Africa was that the "available best practices" in production and management technologies were often very different from the "average actually in use". Most firms in South Africa inefficiently used techniques well below the level of best available on the market. The report thus proposed that:

> More attention must be devoted to the assistance which could be granted to industries with an export potential to induce them to undertake more research and development and to translate the results of the research into commercial use.:..The development of an independent technological and management capacity should, therefore, be accelerated.(21)

The Commission reported that expenditure on local R&D was extremely limited. In 1968/69, some R45,2m was spent by the public and private sector as against R35m on overseas payments for visible technological transfer. Only about 23% of research expenditure was on manufacturing industry. Of this amount, 55% was spent on applied research and 26% in product/ process development, as opposed to only 19% on basic research (the general expansion of 'scientific knowledge'). More alarmingly, the South African Inventions Development Corporation spent only R700 000 in the busy period between 1963 and 1971. It was simply cheaper and easier to import the results of overseas R&D. (22)

In a survey done by Nattrass and Brown in 1977 to investigate the extent of R&D activities in manufacturing industries, they discovered that only 27% of firms invested in R&D. Even in the large firms, only 43% of firms invested. Much of this research was product rather than process oriented. Furthermore, the survey discovered that 60% of firms were using techniques that embodied 100% foreign technology, and 71% of firms used techniques embodying over 90% foreign technology. Only 10% of firms were using less than 50% of foreign technology. What all this indicated was that local R&D skills did not go very far in freeing South African firms from the constraints of overseas technological dominance. (23)

The 1983 Kleu Study Group also emphasized the low levels of expenditure on R&D, and the acute shortages of personnel equipped with these skills:

> Expenditure on Research and Development of technology (in South Africa) is small by comparison with other countries...There is a shortage of experts for the development, adaption and use of the most suitable technology...To achieve the object of developing domestic production through import replacement (and export promotion), technology should then be directed to developing and improving competitive techniques in the following fields of intermediate and capital goods - technology which will take account of the requirements imposed by short production runs in a limited market....A well trained corp of scientists, executives, technologists and technicians is required to develop, to absorb and to apply technology. Unless special steps are taken to remedy the shortages of such people, South Africa will certainly not be able to carry out any purposeful technological policy. (24)

The state in its 1985 White Paper response to the Kleu report, acknowledged the urgency of developing R&D skills and suggested that state-linked bodies such as the Council for Scientific and Industrial Research, the National Productivity Institute and the State President's Scientific Advisory Council, amongst others, needed to prioritize and assist in resolving these problems. It recognised that appropriate technologies had a major influence in improving productivity and product competitiveness. A locally developed appropriate technology was recognised as a central factor in promoting the development of the manufacturing sector, stimulating internal economic growth, and improving South Africa's economic position in relation to the world economy. (25)

Expert personnel in R&D skills, although only a small but nevertheless central component of the skilled workforce, were the key to this process of economic revitalization. Hence, the resolution of the substantial shortage of these skilled R&D personnel became a major priority in the restructuring of education and training which began in the late-1970's and early 1980's.

A small local consumer market

The small size of the local consumer market has acted as another major constraint on manufacturing expansion. Bloch suggests that this is a direct consequence of the low wages paid to black workers:

> The low level of income of the black proletariat has acted as a brake and outer limit on the size of the internal market, particularly with respect to commodities that were not 'necessities of life'. The skewed income distribution in favour of white property-owning and supportive classes might offset this to an extent. However, the high levels of investment called for by competitive pressures in the present phase of imperialism and made possible by a raised rate of surplus-value, in turn generated the increasing production of large unit outputs if the costs of machinery were to be justified. This ever-increasing scale of production came up against the limits of a small and relatively fixed market. (26)

Because of the nature of racial capitalism, the majority of African employees are members of the South African working class, constituting by far the largest grouping within that class. The state and most sectors of the capitalist class in South Africa have never been consistently committed to an incorporationist strategy which would extend to the African working class some of the benefits accruing to the relatively well-off white consumerist society. There have been few effective attempts at incorporating the African working class with co-optive policies such as increased wages, an increased standard of living, and the encouragement of greater consumerist needs. Bozzoli, in a very interesting study of the emergence of ruling class ideology in South Africa during the years 1890 to 1933, argues that there were elements of incorporationism within this evolving dominant class ideology (27). Bozzoli examines the construction of the ideological elements that together constituted the dominant class discourse of the period. Of particular significance was the contributions made by capitalist ideologists alligned to manufacturing capital. This was the birth of the complex and broadly based ideology of South African Liberalism (28), which argued that the improvement of the conditions of the black working class would act to prevent it from confronting capital in a militant way. The industrial wage was seen as one

effective channel for incorporationism. For example, the journal Industrial South Africa, which had strong links with South African manufacturers, published the following extract in its edition of December 1920:

> Too little attention seems to be devoted to the needs and aspirations of the Native peoples of the country...it is surely better to settle grievances and remove the causes of discontent, than to allow matters to take a course which can only lead to disaster. (29)

Bozzoli argues that manufacturing capital was articulating a policy of incorporationism for the black industrial workforce, a policy significantly different from the ideas of both mining capital and the white working class, whose policy of 'civilized labour' constituted a rejection of blacks as workers altogether. Alternatively, the ideologues of manufacturing believed that if a small number of blacks could move 'upwards' via increased skills and wages, the vast majority could be maintained at the lowest wages possible, without provoking them into dissatisfied rebellion. (30)

The issue of higher wages was seen as particularly significant not only as a counter to militancy, but also as a means to enlarge the internal consumer market. Manufacturers had long recognised that South Africa's consuming population was too small. Bozzoli suggests that manufacturers were constrained by the contradictory tension of African workers on the one hand being seen primarily as producers whose price should be low and productivity high, and on the other, as consumers whose wages should allow them to purchase commodities in increasing quantities (31).

Bozzoli, whilst arguing that these notions of incorporationism were an integral part of the ruling class ideological discourse, acknowledges that the manufacturing's incorporationist intentions were not actually put into practice. This was because:

> ...the black market, like the export market, was incapable of providing the key to the unlocking of the nexus of capitalist interests at this early stage. Blacks were not yet able to provide an expanding and accumulating consumer population, for the limits to their wage levels were set by the profitability demands of capital. (32)

In more contemporary studies of manufacturing's development, both Sitas and Greenberg have pointed out that some sectors of manufacturing have made 'noises about stability and incorporation' specifically during periods of intense social conflict, but have always returned to customary (non-incorporationist) practices when the repression of dissent has succeeded in removing the immediacy of crisis (33). Similarly, the state, for all of its reformist initiatives post-Riekert, has undertaken few concrete steps towards creating a sizeable black middle class and increasing the purchasing power of a stabilized and permanent urban African workforce. Rather, conditions of abject poverty have tended to prevail. The soaring inflation rate, having consistently exceeded ten per cent since 1974, but reaching twenty per cent per annum by early 1986, has accentuated these poor conditions (34). As a result, black producers in this country have not constituted a sufficiently large enough consumption market for manufactured products. As Sitas suggests, "mass production in industry had not created a 'social consumption norm' amongst its black working class. The transition to mass production, in short, did not imply mass consumption" (35). This reality of the capitalist way of life in South Africa has meant that the size of the local consumer market, particularly for manufactured durable products (such as cars, electrical appliances and household goods) is very limited, restricted to what inevitably becomes a saturated demand for these products stemming from the white (and to a lesser extent Coloured, Indian and African middle class) communities.

The consequences of such restricted local demand is that manufacturing industries are constrained in their ability to establish production on a large scale. The Reynders Commission of 1972 noted the following:

> South Africa is at a disadvantage compared to foreign countries such as The United States of America, the United Kingdom and Japan, who have large home markets which allow them to introduce large production units in the knowledge that any relatively small excess capacity can be exported to maintain a high level of utilization of capacity and to ensure a profitable operation.(36)

This is not so in South Africa, which is heavily burdened by a small consumer market and a weak competitive position on the world market.

In recent years, those industries that have attempted to benefit from economies of scale and who supply durable consumer goods to the local market, have been actively lobbying the state for the stabilizing of an urban black industrial workforce. These industrialists have also articulated the need for an increase in productivity (which would enable them to pay higher wages), the electrification of the black townships, the generating of new consumer needs, which taken together would ultimately restructure consumptions norms in South Africa and provide the conditions for a new phase of accumulation (37). The Kleu commission of 1983 elaborated on these needs, and suggested that black education and training should be seen as an integral part of achieving these ends:

> Since a large portion of the rapidly growing population of South Africa still has a relatively low income, every effort should be made to raise their productivity and accordingly their income and buying power. This applies not only to guidance on the improvement of management practises in order to improve workers' performance but also to the provision of adequate housing, health services, transport, education and training. (38)

Low worker productivity and the need to obtain worker consent on the factory floor

The Reynders Commission of 1972 identified low worker productivity as one of the major factors restricting the South African manufacturing sector's local growth potential and competitiveness on the world market. It reported that increases in labour costs of 24% per unit of output occurred throughout the 1960's (39). The Commission added:

> South Africa has achieved the goal in the 1960's of a high growth rate, but in doing so, has concealed the basic inefficiency with which resources are employed - growth was achieved by employing more labour, land and capital but without adequately improving their efficiency. (40)

Table 2.6 below highlights the uncompetitiveness of South African productivity levels in relation to other world economies:

TABLE 2.6: LABOUR PRODUCTIVITY GROWTH RATES OF THE MANUFACTURING SECTORS OF CERTAIN COUNTRIES AS COMPARED WITH SOUTH AFRICA. (41)

COUNTRY	GROWTH RATES OF PRODUCTIVITY PERCENTAGES PER ANNUM 1963-1971
Australia	2.1
Canada	3.8
France	6.3
Germany	5.2
Japan	10.9
Switzerland	5.8
United States	3.0
United Kingdom	3.4
South Africa	1.3

The Reynders report recommended that productivity could be increased not only by freeing "non-white labour from restrictions on their employment in certain job categories, and providing improved training facilities for them" (42), but also by involving all the factors of production: management, labour and the state. Better management was needed which provided the optimum combination of all factors of production. The state itself needed to create an industrial relations environment favourable to higher productivity. The report specifically identified the manufacturing of consent on the factory floor as a crucual ingredient for improving worker productivity:

> The Commission would also point out that labour productivity is closely tied-up with employer-employee relations in the broader as well as the narrower sense. This involves the whole question of a satisfied and well motivated labour corps .... With particular reference to the Bantu, much can still be accomplished in this area. (43)

After the 1973 strikes and the 1976 Soweto uprising, this need for establishing a 'well-motivated' labour force became much more urgent, although far more difficult. The task of improving productivity in industry had by then become a key aspect of the restructuring process in education and training initiated by capital and the state in the period 1976 to the present.

In a more recent report, the 1985 Project Free Enterprise investigation into the perceptions of black workers in South Africa noted that improved technical education and training was crucial for higher worker productivity. The report emphasized, however, that efforts by management aimed at incorporating the worker more effectively into the benefits of the free-enterprise system, and supportive contributions by the state aimed at creating the right climate conducive to an improved work ethic, were more important than education and training:

> Quality and productivity improvement is effectively nullified by these (hostile) worker perceptions (of capitalism) - both are irrelevant to workers who feel that they do not participate in, or benefit from, the business system. (44)

The skilled labour shortage

The decade of the 1970's witnessed the emergence of significant shortages of skilled personnel in the South African economy. The occupational categories most severely hit were engineers, scientists and technicians followed closely by medical practitioners, nurses and other paramedics. The Public Service experienced substantial shortages over a wide range of occupations. But most significantly, artisans and apprentices were also in short supply. In many ways, this was probably the skill shortage that most seriously constrained the productive capacity of the economy, especially during the mini-boom phase of 1978-1981. (45)

These shortages were directly connected to the racial functioning of South Africa's education and training systems. They were also connected to the racially constructed segmented labour markets which restricted access to these occupations by population groups other than

the white community. These shortages were also as a result of technological advances in production and changes in the organization of the labour process which required new, adaptable and in many cases improved production skills. The existing white skilled labour force was unable to meet all of these new skill requirements.

But these shortages were not simply quantitative, nor technical. Skill deficiencies of a qualitative kind permeated the South African manufacturing industry. This was so, firstly because white workers had access to skilled jobs on the basis of colour and not necessarily on the basis of technical competence. Many artisans, for instance, were underqualified and had attained the status of artisan only through the effluxion of time. Similarly, many white High Level Manpower (HLM) workers occupied these positions not through the acquisition of adequate educational and training qualifications, but because of their racially exclusive access to these jobs. The Kleu Commission reporting in 1983 on 'An Industrial Development Strategy for South Africa', made the following observation about this underqualified HLM employee grouping:

> In consequence of the relatively low standard of education, only about 30% of workers in positions that are supposed to be at top manpower levels possess a qualification higher than matriculation. About half such positions are occupied by persons with qualifications of standard eight, nine and ten whilst the rest are less qualified. The very considerable shortage of top level manpower sets serious limits to economic development and to the creation of employment opportunities in general, because it is this category of workers that is an important source of entrepreneurship. (46)

Black workers were also lacking in the skills required of them in many of the production tasks performed by them in the late 1960's and 1970's. This became particularly acute in semi-skilled work, where previously unskilled and uneducated black workers were expected to be able to perform certain tasks that involved a definite degree of technical competence, literacy and numeracy.

However, these were not the only skill shortages that faced employers. In the context of a decade of heightened worker resistance, South African managements painfully began to realize the crucial link between higher productivity and a well-motivated and satisfied workforce - a workforce effectively incorporated within the capitalist work ethic and value system. It thus became imperative for management to seek ways of improving worker perceptions of capitalism, nurturing good worker values and behavioural practices. This ideological component of skill was in severe short supply throughout the 1970's and 1980's.

Mechanization and the constraints imposed by organised white labour

The Reynders Commission of 1972 recommended that the only way to remedy these skill shortages would be to relax government policy so as to allow for the increasing use of black workers across the occupational spectrum. This recommendation was directed specifically at the level of semi-skilled productive work. Furthermore, Reynders argued that education and training facilities for African workers would have to be improved to allow for these shifts:

> There is a clear tendency for whites to move away from secondary industry into white collar jobs. Coloureds and Asians follow in the wake of whites moving first into higher semi-skilled and skilled blue collar jobs, and then into white-collar occupations. If this movement is not to leave crippling gaps especially in the manufacturing industry, Bantu will have to fill these gaps. Consequently, provision will have to be made for a much greater degree of mobility than at present for Bantu to move up the occupational ladder, that is to say, the occupational mobility and training of Bantu will have to be adapted to these changing conditions, which in turn, however, pre-supposes an adaptation of statutory and traditional restrictions as well as the attitude of some trade unions and entrepreneurs in this regard. The realization of a satisfactory rate of general economic and export growth demands a better and fuller utilization of all manpower resources of the country, and calls for some relaxation of the limitations on Bantu labour. (47)

The increased education and training, and consequently the greater employment of large numbers of semi-skilled African labour in industry, would have the dual affect of reducing the reliance on costly and often inefficient white artisanal labour, as well as improving the productivity of labour in production. Capital was determined to establish these restructured conditions of production essential for a renewed phase of accumulation. As a consequence, it unleashed a major onslaught against the skilled white trade union movement throughout the late 1960s and 1970's. Webster, in a recent study, explains these restructuring processes with specific reference to the iron and steel foundries on the East Rand. He argues that the main leverage which employers used to persuade the craft unions to open up skilled work to African labour:

> ...was the threat of a skill shortage. However, this threat concealed an attempt to increase the productivity of labour.... The mechanism employers have used to pressurize the unions to open up restricted jobs is to challenge their capacity to find union members to fill the vacant positions. Unions responded to this challenge by giving employers exemptions in the Industrial Council to employ non-union labour. (48)

Webster portrays this deception as a psychological assault against craft workers. He quotes the leadership of the Iron Moulders Society who argued that:

> We believe that the argument of a shortage of skilled labour is the kind of psychological warfare waged by the employers against all workers to frighten them and make them work harder if they want their jobs. (49)

Occurring simultaneously with this psychological assault was also the radical restructuring of the labour process in the foundries to the point where only limited numbers of skilled workers were needed. The advances in foundry technology had eliminated much of the skill from moulding jobs. Webster provides a detailed account of the continuous downgrading of artisanal work during the 1970's, a process which obtained official sanction through the activities of the National Industrial Council for the moulding industry.

> In 1979 grade D work was opened to Africans in terms of a supplementary agreement. It was estimated that this opened up ten thousand jobs to Africans. In 1973 Grade C work was opened - an estimated 8000 jobs....In 1976 grade B and grade AB work was released from the closed shop....This strategy of dilution

> was to culminate in 1978 when the supplementary agreements were scrapped and all classes of work from A1 to D were opened to non-union members. (50)

The significance of this sequence of downgrading of work tasks was that it served to accelerate the rate of job fragmentation. Such a restructuring of work combined with the implementation of greater degrees of mechanized equipment, often in larger plants, was aimed at enabling production to attain larger runs, more competitive prices and bigger profits - conditions necessary for renewed profitability (51). Ultimately, the pressures were too great for the organised white working class. They "were not really in a position to halt the process even had they so desired. Insofar as a struggle was pursued over the re-organization of the labour process, it took place over the pace rather than the process itself" (52). These struggles saw the skilled white trade unions desperately defending their positions but ultimately giving in to management's requirements. In return for the downgrading of work tasks, and the opening up of semi-skilled positions to African workers, the trade unions negotiated higher wages and preferential treatment for their members in promotions to higher occupational positions - mainly supervisory and white collar work. This process of dismantling the power of skilled white workers was slow and costly. It dominated a large part of the industrial stage for the whole of the 1970's. The Wiehahn initiated reforms at the end of the 1970's abolished job reservation and other racially exclusive practices (excluding certain discriminatory labour practices in mining). This was certainly an advance for management, but it represented a major blow to the skilled white working class.

Hence, by the late 1970's, as an outcome of these struggles, large numbers of semi-skilled African workers were employed in production. Webster highlights this employment shift away from costly white labour towards African semi-skilled labour with the following statistics:

TABLE 2.7: PROPORTION OF RACIAL GROUPS IN THE OCCUPATION OF PRODUCTION MOULDER AND CORE-MAKER 1969, 1971, 1979 (53)

POPULATION GROUP:	1969	1971	1979

White	1 121	705	539
Coloured	175	437	974
Asian	0	18	-
African	162	380	1 202

Similarly, in 1974, SEIFSA (the Steel, Engineering and Iron Federation of South Africa) reported that "a substantial movement has taken place in the past six years of non-white employment upward into higher grade work and also into occupations previously filled by White employees" (54). SEIFSA provided figures to substantiate its claim for the years 1968 and 1974. Table 2.8 shows the sizeable reduction in the employment of white artisanal and semi-skilled labour, and the substantial increase in the employment of African semi-skilled labour. Significantly, the employment of unskilled African workers in the metal sector had also been reduced by these labour process changes:

TABLE 2.8: PERCENTAGE COMPOSITION OF THE HOURLY RATED LABOUR FORCE IN THE METAL INDUSTRY: 1968, 1974. (55)

OCCUPATION	1968	1974
Artisans	13	11,7
Operators(white)	14	11,9
Semi-skilled(non-white)	23	29,0
Unskilled non-whites	50	47,4

Occurring simultaneously with this process of labour re-organization in the late 1960's and 1970's, was a substantial rise in the employment of mechanized/ automated production techniques. This is reflected in the following capital-labour ratios, which may be used as a rough index of rising organic composition of capital:

TABLE 2.9: CAPITAL-LABOUR RATIOS IN MANUFACTURING INDUSTRY, 1957-1970. (56)

YEAR	CAPITAL STOCK (Rm)	LABOUR (1 000)	K/L	% CHANGE

1957	395	637	621	0,8
1958	414	650	637	2,6
1959	439	642	683	7,2
1960	450	658	684	0,1
1961	463	682	679	-0,7
1962	479	706	679	0,0
1963	523	761	687	1,2
1964	597	832	718	4,5
1965	680	922	738	2,8
1966	756	966	782	6,0
1967	-	1 006	812	3,2
1968	847	1 031	822	1,9
1969	880	1 095	804	-2,2
1970	939	1 164	806	0,2

Another development related to the rising composition of capital during this period, was the increasing centralization and concentration of capital. Bloch notes in his study of manufacturing that plant size was in fact closely correlated with capital intensity. Larger firms began to dominate the industry in the 1960's, and they tended to adopt capital intensive technology far more rapidly than smaller firms. The following table reflects the dominance by a few large firms of the output of manufacturing industry:

TABLE 2.10: DISTRIBUTION OF TURNOVER IN MANUFACTURING INDUSTRY, 1977. (57)

% OF FIRMS	NUMBER OF FIRMS	% OF TURNOVER
5	628	63,1
10	1 257	75,7
15	1 885	82,7
20	2 513	87,1
25	3 142	90,3
30	3 770	92,6
35	4 399	94,3
40	5 027	95,6
55	6 912	98,1
70	8 797	99,3

85	10 683	99,8
100	12 568	100,0

Tracing the actual chronology of the introduction of new technologies into manufacturing production in the 1960's and 1970's is a highly complex task, primarily because the information is not readily available. In a survey of manufacturing companies undertaken by the Reynders Commission in 1972, it was found that 21% of firms had installed some forms of automation, 15% had installed advanced mechanization, 8% had electronic data processing, and 7% had process control equipment (58). However, the growth of microprocessor technology, particularly computer-aided numerically controlled (CNC) manufacturing and robotics, has been quite limited in South Africa as compared with the advanced capitalist economies of the world. This is clearly indicated in the figures contained in Tables 2.11 and 2.12:

TABLE 2.11: DIFFUSION OF NUMERICALLY CONTROLLED COMPUTERIZED MANUFACTURING SYSTEMS, BY REGION, 1981 (59)

COUNTRY/ REGION	NO. OF SYSTEMS INSTALLED	% OF WORLD TOTAL (number)	VALUE (mill. dollars)	% OF WORLD TOTAL (value)
United States	56 515	34.3	58 165	42.6
Western Europe	45 976	27.9	38 676	28.3
Japan	23 311	14.7	15 365	11.2
Asia-Oceania	2 675	1.6	1 742	1.1
Latin America	5 453	3.3	3 108	2.3
Africa	505	0.3	275	0.2
South Africa	1 129	0.7	894	0.7
Middle East	765	0.5	596	0.4
USSR and other East European countries	21 616	13.1	11 884	8.7
Others	5 945	3.6	5 975	4.4
TOTAL: WORLD	164 890	100.0	136 680	100.0
TOTAL: DEVELOPING COUNTRIES	9 398	5.7	5 721	4.1

TABLE 2.12: NUMBER OF INDUSTRIAL ROBOTS IN USE INTERNATIONALLY (60)

COUNTRY	YEAR: 1982	1985	1990 (est.)
Japan	14 246	16 000	29 000
United States	4 700	7 700	31 000
West Germany	1 420	5 000	12 000
Switzerland	50	600	5 000
Sweden	700	2 300	5 000
Norway	210	1 000	2 000
United Kingdom	713	3 000	21 000
Poland	240	300	1 400
Denmark	-	110	250
Finland	116	950	3 000
Belgium	42	200	-
Yugoslavia	10	150	300
South Africa	5	50	-

The significance of these figures is that even though the extent of computer aided manufacturing (CAM) in South Africa has been limited, it must be noted that the explosion in the use of CAM techniques has been a recent worldwide phenomenon. As a result of pioneering research and development breakthroughs in the 1970's and 1980's, specifically in the field of silicon chip applications, there has been a rapid decline in the costs of microprocessor technology. This has resulted in a substantial adoption of computerized manufacturing systems worldwide. Shaiken observes:

> Perhaps the most remarkable development is the microprocessor, which puts the heart of the entire computer onto a sliver of silicon the size of a fingernail. Today five dollars purchases a micro processor with more computing power than the largest computer available in 1946. (61)

The impressive growth in the use of microprocessor techniques of production is given in the figures provided in Table 2.12, which highlight the substantial growth in the use of robotics between 1982 and 1985, and the projected increases by 1990. General predictions are that CAM will be adopted on a far greater scale in the future, particularly as cost and finance constraints are eliminated by the cheapness of silicon chips (62). However, the increased use of micro processor technology is predicted not purely because of technical reasons. Microprocessor technology also provides management with an unsurpassed opportunity to control the production process. Shaikan, writing on the impact of computer technology on the relations of power in the workplace, argues that computer technology greatly empowers capital in its battle against the working class. Instead of capturing skill in labour and steel, the knowledge to produce a part is stored in small computer memories. This makes possible a thorough re-organization of the workplace in which it is applied (63). Shaiken quotes a respected text written to introduce engineers and managers to the benefits of CNC technology, Management Standards for Computer and Numerical Control. This text describes how CNC technology was designed to compensate for the 'limits' of skilled machinists:

> To a great extent, computer and numerical controls were designed to minimize the number of processing decisions made on the shop floor. Such decisions, whether they are good or bad, are nearly always suboptimal. Since the machine operator is largely outside of the machine control loop, manufacturing by automatic control makes tighter management control both possible and imperative. (64)

South Africa is expected to increase its use of microprocessor technology substantially during the next decade, both as cost constraints are minimized, and as increased and more effective labour control techniques are required in production. However, this automation process will be limited by South Africa's acute dependency on international capital's control over advanced technology.

Thus by the late 1970's/early 1980's certain advances, although limited, had been made towards greater mechanization and automation in some sectors of South African manufacturing. The industrial

environment had been substantially transformed. All of these changes went against the interests of the white working class. Nonetheless, skilled white workers still wielded significant power, particularly through the Industrial Councils. They could still hinder the movement towards greater mechanization, and they could effectively constrain the reclassification of certain artisanal work tasks, which had become deskilled as a result of mechanization, as operative work. In other words, white workers were still capable of limiting the extent to which management was able to increase its employment of cheaper African operative labour. These problems constituted real impediments to the process of restructuring production, which was essential for the facilitating of a renewed phase of accumulation.

In conclusion: Constraints on further mechanization and automation

The collective impact of all of these constraints on manufacturing's growth has been to militate against the implementation of mechanized production and automation on a substantial scale. Certainly, some of these constraints have been eased and advances have been made as a result of the widespread process of centralization and concentration of capitals which occurred in the boom period of the 1960's, peaking in the downturn of the mid-1970's (65). The most important consequence of this consolidation process was that larger companies had a bigger share of the local market which allowed for rationalization of products, increased mechanization, the employment of larger numbers of operative labour, and consequently the implementation of mass production schemes. Nonetheless, many of the problems described in this chapter remain, and they still represent serious constraints on continuing mechanization and automation. These problems still constitute a severe constraint on improved export competitiveness and increased economic growth.

Solutions to these problems are not easily obtained, for in attempting to resolve some of these production constraints, contradictory processes are set in motion, accentuating other problems. For instance, if capitalist enterprises which are keen to take advantages of economies of scale allow wages of the urban black workforce to rise, thereby increasing local consumer demand, this will have the

effect of raising the price of labour inputs in production. Thus, these industries can only remain competitive and profitable if they are able to raise labour productivity to a level greater than the general increase in the cost of labour: that is, if they are able to increase the rate of exploitation, a task made difficult by a decade of heightened worker struggles.

However, as wage costs increase, so managements are encouraged to deepen their technology, thereby reducing their reliance on large numbers of workers, and in so doing, increasing the productivity of their remaining workforce. But increased capital intensity will imply rising import bills (for the required new technologies) which generates another cycle of rising costs. Also, deepening technology creates an even larger socio-political problem of increased structural unemployment.

Raising labour productivity can also be attempted by education and training programmes which are geared to improving the production contributions of the total workforce. These education and training programmes, alongside appropriate management techniques, need to incorporate workers into the values, functions and benefits of the capitalist system. Workers will only become motivated to improve productivity once their perceptions of free enterprise are positive, and once the benefits which they perceive will accrue to them are real.

FOOTNOTES

(1) Bureau of Census and Statistics, Union Statistics for 50 Years, Pretoria, 1960, Table S-3.

(2) Central Statistical Services, Census of Manufacturing, 1979: Statistical News Release, Report Number P 10, 21/10/83, p 5, Table 1. For an explanation of te asterisk in Table 2.2 of this chapter, refer to the above Report, p 5. Manufacturing statistics more recent than these 1979 figures are not easily obtainable, because the Census of Manufacturing, 1979 is still the latest statistical report to date. The 1985 Census is expected towards the end of 1988.

(3) A Black and J Stanwix, 'Crisis and restructuring in the

South African manufacturing sector', University of Cape Town, Second Carnegie Inquiry into Poverty and Development in Southern Africa, Post Conference Series Paper Number 19, 1987. The authors provide the following figures:

TABLE: SECTORAL CONTRIBUTION TO GNP, % SHARE, 1985:

Manufacturing	22.8%
Mining	15.8%
Agriculture	5.3%

Source: Black and Stanwix (1987) p 2.

(4) Ibid, p 2.

(5) Ibid, p 3.

(6) Ibid, p 13-14.

(7) Ibid, p 14.

(8) Republic of South Africa, Report of the Commission of Inquiry into the Export Trade of the Republic of South Africa, Volumes I and II, (Chair: H J J Reynders), RP 69/1972, Government Printer, Pretoria, Table 2/7; See G Bloch (1980) p 247; Republic of South Africa, Statistical/ Economic Review in Connection with the Budget Speech, 1986/1987, WP B-86, Government Printer, Pretoria, 1986, p 13.

(9) The Reynders Report, 1972, p 18; Bloch (1980) p 250.

(10) Webster (1983) p 191.

(11) The Reynders Report, 1972, pp 607-608; In terms of 'technological rents', almost R17 million was spent in 1970 in respect of royalties, patents and machine hire, with a further R18 million on technical and professional services.

(12) See Bloch (1980) p 165. Bloch provides the following figures highlighting the growing proportion of capital goods as part of the total import bill:

TABLE: IMPORTS OF MACHINERY AND TRANSPORT EQUIPMENT BY GEOGRAPHICAL AREA, 1976.

COUNTRY	MACHINERY & EQUIPMENT (Rm)	AS A % OF TOTAL IMPORTS FROM AREA
UK	541,0	55,5
USA	744,0	63,4
GERMANY	690,3	69,5

JAPAN	333,0	59,1

These four countries supplied 77% of the machinery and transport equipment imported to South Africa in 1976. Machinery/ transport equipment accounted for 49,8% of total imports in the years 1973-1976, and 53,4% in 1976.

(13)The Reynders Report, 1972, p 608.

(14)Ibid, p 609.

(15)Ibid, p 610.

(16)Republic of South Africa, Report of the S.J. Kleu Study Group on Industrial Development Strategy, unnumbered, Government Printer, Pretoria, 1983, p 14.

(17)Bloch (1980) p 153.

(18)Ibid, p 153.

(19)Ibid, pp 154-155.

(20)The Reynders Report, 1972, p 612.

(21)Ibid, p 425.

(22)Ibid, pp 146-147; See also Bloch (1980) p 189.

(23)J Nattrass and R P C Brown, 'Capital intensity in South African manufacturing', University of Natal-Durban, unpublished research paper, 1977; As quoted in Bloch (1980) p 136.

(24)The Kleu Report, 1983, p 29.

(25)Republic of South Africa, White Paper on the Kleu Study Group on Industrial Development Strategy, WP G/1985, Government Printer, Pretoria, p 11.

(26)Bloch (1980) p 222.

(27)B Bozzoli, The Political Nature of a Ruling Class: Capital and Ideology in South Africa, 1890-1933 (London, 1981) p 19.

(28)Ibid, p 182.

(29)Ibid, p 185.

(30)Ibid, p 186.

(31)Ibid, P 193.

(32)Ibid, p 197.

(33)Sitas (1983) p 201; Greenberg (1980).

(34)Black and Stanwix (1987) p 1. This double-digit inflation rate has had a devastating impact on material conditions of life, even given the rise in real wages which occurred in the 1970's for the economically active black workforce.

(35)Sitas (1983) p 294.

(36)The Reynders Report, 1972, p 411.

(37)These restructured 'needs of capital' will be elaborated in

more depth in Chapters Five, Six and Seven.

(38)The Kleu Report, 1983, p 34.

(39)The Reynders Report, 1972, p 392; Bloch (1980) p 220.

(40)The Reynders Report, 1972, p 380.

(41)Webster (1983) p 190; See also The Reynders Report, 1972, p 393, Table 9/6.

(42)The Reynders Report, 1972, p 382.

(43)Ibid, p 396.

(44)Final Report of Project Free Enterprise, 1986, p 15.

(45)For a detailed statistical outline of skill shortages in the 1970's, see Chapter Four, Tables 4.1 to 4.4 of this thesis.

(46)The Kleu Report, 1983, pp 11-12. For a definition of HLM, see footnote (2) of Chapter Four.

(47)The Reynders Report, 1972, pp 394-395.

(48)Webster (1985) p 157.

(49)Ibid, p 163.

(50)Ibid, pp 164-165.

(51)For a more detailed coverage of these historical processes and struggles with regard to white labour and the increased employment of African semi-skilled labour, See Webster (1985) pp 94-123, 156-177; Bloch (1980) pp 241-246; Sitas (1983) pp 118-178.

(52)Bloch (1980) p 241.

(53)Webster (1983) pp 163, 209.

(54)SEIFSA as quoted in Sitas (1983) p 142.

(55)Ibid; The increased employment of semi-skilled African metalworkers will be dealt with in the case study on the metal industry which is presented in the next three chapters of this thesis.

(56)Bloch (1980) p 134; See also D Hindson, 'Economic dualism and labour re-allocation in South Africa 1917-70', Rhodes University, unpublished M.A. thesis, 1974, Table A2.

(57)Republic of South Africa, Report of the Commission of Inquiry into the Regulation of Monopolistic Conditions Act, 1955, (Chair: D J Mouton), RP 64/1977, Government Printer, Pretoria, Table 4; See Bloch (1980) p 116.

(58)The Reynders Report, 1972, p 417.

(59)International Labour Organisation, The Socio-economic Impact of New Technologies (Geneva, 1985) p 25.

(60)S Shall, 'The social implications of introducing robots into industry', University of the Witwatersrand, M.Sc. thesis,

1985, p 12.

(61)H Shaiken, 'Computer technology and the relations of power in the workplace', International Institute for Comparative Social Research, Berlin, discussion paper number 80-217, 1980.

(62)See H Schmitz, Microelectronics: Implications for Employment, Outwork, Skills and Wages (Institute for Development Studies, Sussex University, 1985); R Rumberger, High Technology and Job Loss (Institute for Research on Educational Finance and Governance, Stanford University, 1984); Shall (1985); Shaiken (1980).

(63)Shaiken (1980) p 3.

(64)Ibid, p 16.

(65)See Sitas (1983) pp 150-170 for a more detailed account of the process of capital concentration, centralization, company mergers and acquisitions in the 1960's and 1970's.

CHAPTER THREE

UNEVEN CAPITALIST DEVELOPMENT: A CASE STUDY OF DESKILLING AND RESKILLING IN SOUTH AFRICA'S METAL INDUSTRY.

This chapter identifies certain key features, processes and trends relating to industrial skills which have occurred within the South African metal industry between 1976 and 1986. These include the marked unevenness of capitalist development in the metal industry, and the consequent co-existence of varying labour processes within this economic sector; the occurrence of both deskilling and reskilling tendencies; the varying educational and skill requirements of workers in production; as well as the complex character of skills employed in production - constructed by a combination of technical, ideological as well as social factors.

The metal industry has been specifically chosen as a case study because it is the dominant sub-sector within manufacturing. The metal industry constitutes almost 30% of the manufacturing sector in terms of the number of establishments, total number of workers employed and gross output (1). Hence, trends within the metal sub-sector pertaining to skills and educational requirements will be of great significance to manufacturing itself.

Within the metal industry, six firms are closely examined (2). They are located within four of the six sub-sectors in the metal industry, these being the Iron and Steel Basic Metal sector, the Metal Products sector, the Machinery sector and the Electrical Machinery sector. Even though there are 8000 member organisations, these sub-sectors are almost totally dominated by a few large firms. This survey has specifically examined a number of these large firms, because they employ most of the workers in the metal industry, and have the greatest influence and impact in terms of education and training activities. For example, SEIFSA, the employer association in the industry, reports that of the few large corporations in the metal industry, 12 of them are responsible for recruiting almost 33% of the metal apprentices per annum. Only 60 firms, all mostly large or medium-sized companies, have their own training centres. Of the 8000

members, 1000 do full apprenticeship training, 5000 do minimal training, and 2000 small companies do no training whatsoever (3). Clearly, it is mainly the large companies, and particularly the giants within this grouping, that do most of the training. Dorbyl-Vecor Engineering (Vereeniging), Haggie-Rand (Germiston),and Scaw Metals (Germiston) are three of the twelve training giants mentioned earlier. They form part of this survey of six metal firms. Two medium sized firms were also visited - Basaan Du Plessis (Pretoria-West) and Atlas-Copco (Benoni). The sixth firm is a small metal engineering concern by the name of R H Harris (Jeppe).

A BRIEF HISTORY OF THE DEVELOPMENT OF THE SOUTH AFRICAN METAL INDUSTRY

Two prominent features stand out in the history of the South African metal industry during the years 1880-1928. Firstly, the local manufacturing sector, composed predominantly of small and highly competitive enterprises (4), was immersed within the wider and far more advanced world capitalist economy. It was largely unable to compete with, or produce commodities equivalent to those from the highly advanced and mass producing industrial corporations of Europe and America. This resulted in a heavy reliance on the importation of many metal commodities and capital goods, products too complex and too costly to produce in South Africa itself. This dependency has continued to be characteristic of the South African metal industry until the present period.

Secondly, the local metal companies functioned as service industries to the mining sector and the rapidly developing South African Railways (SAR) system. These metal firms would fabricate single products contracted by the mines or the SAR, products involving limited runs. Thus the metal industry, emerging on the periphery of the mines, developed a 'jobbing' character: small scale manufacture that involved a series of limited one-off production runs. They did not produce any one commodity, but involved themselves with short runs of a variety of commodities. Consequently, the massive expansion of the mining sector during this period did not serve as a catalytic influence on the metal industry. Rather, mining kept the manufacturing sector dependent on its specific product needs. This dependent development is what Sitas refers to as 'bonded accumulation'. (5)

As a result of this early form of capitalist development, South Africa's metal industry was to evolve in a particularly uneven manner. Dependency on the international capitalist economy, and the constraints imposed by the mining industry and jobbing production meant that sectors within metal manufacturing remained restricted in terms of growth and technological expansion. Bloch writes:

> The rhythm of international capitalist development...tended to lock the peripheral countries deeper into their inferior place in the imperialist chain. (6)

However, other sub-sectors within the metal industry were able to progress more rapidly along the path towards mass production techniques. The first major stimulus for local manufacturers along the route to mass production techniques came with the establishment of Iscor in 1928, and the subsequent production of good quality local iron and steel. This occurred as a result of the pressure exerted on the Pact government by local industrialists, who sought state intervention to resolve some of the constraints inhibiting local industrial development (7). The Pact government, the political representatives of a broad alliance of class interests including that of national capital, was also keen to divert through taxation some of the huge profits of the mining sector, which could then be used to finance state infrastructural support for agriculture and local industry.

The Second World War was another major impetus which provided unprecedented opportunities for the local metal industry. Specifically, it provided a massive expansion of the market for munitions production. South Africa had overnight become a crucial producer of manufactured war supplies for the Allied countries. To meet these demands required the introduction of mass production techniques and more advanced technology. The Emergency Agreement of 1939 gave local metal employers the right to hire more black semi-skilled labour. All of these changes greatly facilitated the transition to mass production. Mechanization, job fragmentation, the dilution of white skilled worker power, the increasing use of black semi-skilled labour - all became firmly rooted in the production processes of the metal industry (8). Thus as Lewis concludes in his study of manufacturing during this period:

> Engineering, before World War two, was organised to undertake repairs and 'jobbing ' work, largely for the mines and railways. Only the huge stimulus provided by the war enabled the industry

to establish itself on a mass production basis. (9)

The economic stimulus provided by the war should not be exaggerated. Many metal companies had not become mass production concerns. This transformation was only to take place in the 1960's, and as already suggested, in a highly uneven and dependent manner.

Monopolization from above: The boom years of the 1960's

The introduction of large-scale, mass production techniques signifies the transformation of capitalist society from small-scale competitive forms of production to monopoly capitalist relations of production. In South Africa in the 1950's, however, monopoly capitalist forms of production were not prevalent in the manufacturing sector (10). Sitas suggests that the transition to monopoly forms of production was only to occur much later:

> The reaching of the promised land was a struggle. It was a struggle to break traditional forms of production and create new ones in the midst of 'cut-throat' competition in a small market without export outlets; it was a struggle to habituate a mass producing working class, which, for structural reasons in its black component, could not become a mass consuming one; and it was finally a struggle to control and manage, that is, to take real possession of the labour process and beat the resistance of 'craft unions' that, however weak on any shopfloor, proved paradoxically strong vis-a-vis the apparatuses of the Industrial Council System. (11)

The most decisive factors in the transformation of the metal industry towards monopoly capitalist relations of production were, firstly, the effective curbing of militant black political and labour opposition. The ANC-SACTU Alliance, harassed and banned in 1960, was driven undeground. SACTU organisation in the metal industry came to a halt. This opened the way for a decade of industrial peace and major economic prosperity. Secondly, the boom in manufacturing in the 1960's, due in part to favourable world economic conditions, was nevertheless substantially influenced by direct state intervention in the economy. For example in 1960, the South African government

announced the 'Local Contents Programme' whereby the motor car industry was required to purchase 18% of motor vehicle components locally. This crucial 'dynamizing' role of the state saw an immediate expansion of auxiliary industries which benefited from this intervention. The metal industry became integrally involved in the production of motor car components.

Furthermore, the state invested vast amounts of financial resources and energies in developing the necessary production environment supportive of local industry, for example import controls, transport facilities, electrical power installations, and the encouragement of foreign investment (12). Bloch elaborates:

> State policies in a number of areas served to facilitate the transition to internationalized capitalist relations under the aegis of monopoly capital. The state encouraged rationalisation of production and the interpenetration of foreign capital.... State policies (were) oriented towards the inducement of dependent industrialization in South Africa, encouraging the expansion of productive forces in manufacturing in the only way possible for a capitalist state in the present phase of imperialism, viz. under the dominance of internationalized capitalist relations. (13)

To meet the need for the increased local demand for iron and steel, ISCOR doubled it's production capacity, investing almost R560 million in this operation (14). Also, two private industries - Dunswart Iron & Steel, and Scaw Metals - massively increased their production output. South African iron and steel was now being produced on a large scale and was competitive with overseas prices.

Another major feature of this period was the dramatic concentration and centralization of capital in the manufacturing sector. Unlike the European and American experiences of the late nineteenth century, where the emergence of large scale production preceded and was the catalyst for the emergence of monopoly corporations, in South Africa the opposite was the case. Monopolization was the pre-requisite for the transition to mass production (15). The 1960's was a decade of continuous mergers and amalgamations, as larger concerns took over

smaller ones. These developments occured right through into the 1970's to the extent that the top 15% of firms in the metal industry controlled approximately 90% of the assets (16). Most of these mergers and acquisitions of smaller firms occurred during the stagnation phase of 1968-1974, when smaller firms were unable to withstand the profit squeeze and were bought out by the larger concerns.

There were three main forces involved in these acquisitions: the state operating primarily through its Industrial Development Corporation, which provided finance capital for industrial concerns keen on launching new developments; the mining houses, who re-invested their profits in industrial expansion; and the MNC's, which invested additional foreign capital in their subsidiaries, and initiated new projects. The impact of these three giants was immense. According to Sitas:

> The big three have been the lever of change in South Africa's metalworks. The consolidation they brought about, created for them a larger share of the local market which allowed for rationalization and mass production schemes. Their financial might allowed instant modernization, new processes of production were created from above and without precedent. By the late 1970's South Africa's metalworks could boast a passage through the tollgate of the promised land. (17)

However, this dominance of a few large firms did not mean that small firms disappeared: they too proliferated in this boom. The growth of both large and small firms can be readily ascertained by observing Table 3.1:

TABLE 3.1: GROWTH IN NUMBER AND SIZE OF FIRMS IN THE METAL PRODUCTS SUB-SECTOR OF THE METAL INDUSTRY, 1961-1976. (18)

YEAR	NUMBER OF EMPLOYEES:					
	0-100	100-200	200-400	400-500	500-1000	1000+
METAL PRODUCTS						
61/2	1 071	78	39	9	19	0
67/8	1 596	110	62	6	22	15
1970	1 526	130	73	13	22	13
1972	1 674	149	70	12	24	9

1976	2 296	148	81	16	25	16

The following two tables highlight the dominance of large companies over total employment and gross output in the metal industry:

TABLE 3.2: NUMBER AND SIZE OF FIRMS IN THE METAL INDUSTRY, 1979 (19)

SIZE OF FIRM -BY NO OF EMPLOYEES	NO OF FIRMS	TOTAL EMPLOYMENT -ALL POP. GROUPS	GROSS OUTPUT (R-million)
IRON AND STEEL			
0-99 (small)	103	3 442	75 756
100-499 (medium)	58	12 891	302 880
500-999 (large)	11	6 748	237 885
1000- (X-large)	14	74 789	2 166 304
TOTAL	186	97 870	2 782 825
METAL PRODUCTS			
0-99	2 446	46 160	761 224
100-499	235	47 406	912 908
500-999	28	19 509	490 692
1000-	12	18 174	357 198
TOTAL	2 721	131 249	2 522 022
MACHINERY			
0-99	1 280	25 985	543 303
100-499	152	33 931	680 983
500-999	20	14 191	324 527
1000-	4	6 128	109 533
TOTAL	1 456	80 235	1 658 345
ELECTRICAL MACHINERY			
0-99	638	12 576	241 276
100-499	87	20 220	457 381
500-999	20	14 100	316 726
1000-	10	17 648	382 824
TOTAL	755	64 544	1 398 207

TABLE 3.3: PERCENTAGE SHARE OF EMPLOYEES AND TOTAL ASSETS BY SIZE OF FIRM, 1979. (20)

% OF TOTAL FIRMS	NO OF FIRMS	% OF TOTAL EMPLOYMENT	% OF TOTAL ASSETS
IRON AND STEEL			
5	8	74.7	88.2
50	83	97.1	99.6
75	125	99.5	99.9
METAL PRODUCTS			
5	132	49.3	64.8
50	1321	93.3	95.3
75	1982	98	98.6
MACHINERY			
5	71	46.7	50.8
50	710	92.8	95.1
75	1065	97.9	98.7
ELECTRICAL MACHINERY			
5	36	55.4	70.0
50	364	95.7	98.4
75	546	98.7	99.4

It is immediately observable from these tables that a small number of large firms control most of the economic activity in the metal industry, employing a large percentage of the labour force, and owning a dominant share of the total assets in the industry. Monopoly control is most present in the Iron & Steel and Electrical Machinery sub-sectors. However, significant numbers of smaller firms still proliferate in the Metal Products and Machinery sub-sectors, and have carved out some share of those markets.

In attempting to obtain more recent data on the number and size of firms, total employment figures and gross output in each of these metal sub-sectors, the problem of bureaucratic inefficiency immediately surfaced. As stated in Chapter Two, the Census of Manufacturing, 1979 is the most recent government publication

containing statistical data on the manufacturing sector. The 1985 Manufacturing Census will only be available towards the end of 1988. In the only other source available, the Census of Manufacturing: Statistical News Releases, data relating to size of establishment are not available. However, the following growth patterns within the metal industry was obtained:

TABLE 3.4: PRINCIPAL STATISTICS - METAL MANUFACTURING (21)

YEAR	NUMBER OF FIRMS	TOTAL EMPLOY (R-mill)	GROSS OUTPUT
IRON AND STEEL INDUSTRIES:			
1979	186	97 884	2 782
1982	244	101 542	4 623
1985	266	99 900	7 286
METAL PRODUCTS:			
1979	2 721	132 249	2 522
1982	3 032	160 097	5 009
1985	2 852	151 600	6 507
MACHINERY:			
1979	1 456	80 640	1 658
1982	1 807	100 009	3 744
1985	1 817	94 100	4 303
ELECTRICAL MACHINERY:			
1979	755	64 711	1 398
1982	857	77 168	2 776
1985	831	68 200	3 774

These figures are particularly interesting because they reflect both the impact of the mini-boom of 1978-1981, as well as the downturn in manufacturing after 1982. The number of metal firms expanded remarkably in the period 1979-1981. However, the economic downturn in the national economy after 1982 has had a significant impact on metal manufacturing, coinciding with a great degree of mechanization, job fragmentation, the elimination of smaller and less profitable

companies, as well as large-scale labour retrenchment. The figures in Table 3.4 reflect the drop in total employment levels, as well as the reductions in the number of establishments, particularly in the metal products and electrical machinery sub-sectors. The metal industry, and manufacturing more generally, are highly vulnerable to shifts in the South African business cycle.

The persistence of 'jobbing' production requires additional comment. Sitas reports that by 1982 there were 82 plants in the metal industry which employed more than 1000 employees. In a survey of production processes used by 40 of these large companies Sitas found the following pattern emerging:

TABLE 3.5: THE PERSISTENCE OF JOBBING PRODUCTION IN SOUTH AFRICA, 1982. (22)

% OF THE 40 FIRMS SURVEYED	JOBBING DISTRIBUTION
55	5 - 25%
17	25 - 50%
16	50 - 75%
12	75 - 100%

From the above figures it can be observed that for instance almost 17% of the large firms are severely constrained (some up to 50%) by jobbing techniques of production.

It is clear then that production in the metal industry has developed in a highly uneven manner. The sector is dominated by large monopoly corporations, although significant numbers of smaller and more competitive enterprises still exist. Mass production techniques have been firmly rooted within the industry, but jobbing production nonetheless still persists. No simple correlations can be made between large plant and mass production processes, precisely because jobbing has been preserved in the 'heart' of some of these large plants - an aspect of modern industrial capitalism not unique to South Africa. (23)

A CASE STUDY OF THE LABOUR PROCESSES OF SIX FIRMS IN THE SOUTH AFRICAN METAL INDUSTRY

Dorbyl-Vecor

Dorbyl-Vecor is one of South Africa's leading heavy fabrication companies, dominating the market in the production of heavy pressure vessels, items such as power generators, boilers and petrol tanks. Mr van der Watt, Chief Training Officer for the company said:

> We are the leaders in this field. But we are not on a production-line situation, not mass produced. We are typically what can be described as a jobbing shop. (24)

Dorbyl has very few unskilled and moderate numbers of semi-skilled workers, because most of the work is of a highly skilled nature. It is complex and sophisticated work, such as difficult and high-pressure welding, which can not be easily automated.

> This heavy engineering factory will never be automated. Our business is jobbing....We are not making 5000 small little pieces where we can have mechanized processes... We work with single job pieces, sometimes weighing up to 300 tons, producing one or two units only. They often take us months to produce.... The artisan is central to the work done here. (25)

The occupational breakdown at the company is as follows:

TABLE 3.6: THE OCCUPATIONAL STRUCTURE AT DORBYL-VECOR, FEBRUARY 1986.

WORKERS:	BLACK	WHITE	TOTAL
Artisans	8	241	
Semi-skilled	360	22	
Unskilled	20	-	
Non-productive staff			109
TOTAL			760

Dorbyl thus represents a perfect example of a large-scale jobbing concern, highly dependent on skilled artisanal labour.

Black workers have shifted into the semi-skilled occupational categories at Dorbyl. These are mainly crane-drivers, slingers who connect the crane-hooks to the metal pieces being worked on, and CO-2 gas cutters, whose task it is to guide machine cutters through standardized metal cutting procedures. All these jobs were done by white workers in the mid-1970's, but as Mr van der Watt explained:

> There is a constant process of upgrading throughout our factory. The white crane drivers were given the opportunity of becoming artisans. Their vacancies were filled by unskilled black workers, who were upgraded to become operators. They went through an organised training procedure to do the job. (26)

This process of skills-upgrading of the black workforce occurred largely as a result of a change in the racial composition of certain semi-skilled jobs, but also as a result of the increasing mechanization and subsequent deskilling of certain metal cutting and other production procedures.

Haggie-Rand

Haggie-Rand is quite the opposite of Dorbyl. Haggie-Rand is an Anglo-American company, the largest steel-rope producing company in South Africa. The production of this steel-rope is highly mechanized and on a mass scale. Most of the productive work is done by black operators. Artisans are required primarily for the maintenance and servicing of the plant equipment. Mr R Edwards, Head of Technical Training, elaborated:

> None of our processes are dependent on artisans. It is all semi-skilled work...There have been major changes in technology over the last ten years. New machinery has generally produced greater output, eliminating some of the operating steps. There has thus obviously been a decrease in skilled numbers, and a reliance on semi-skilled labour. (27)

As a result of the large numbers of semi-skilled black operators on the factory floor, Haggie-Rand has also needed to employ large numbers of supervisory labour to control, instruct and discipline this large labour pool. Many black workers have also moved into these supervisory positions. The occupational breakdown is as follows:

TABLE 3.7: THE OCCUPATIONAL STRUCTURE AT HAGGIE-RAND, FEBRUARY 1986.

WORKERS:	BLACK	WHITE	TOTAL
Operators	1200		
First-line supervisors	400		
Foreman	12	84	
Artisans	1	149	
Apprentices	6	52	
Non productive staff			596
TOTAL			2500

Haggie has been able to mechanize to the extent of establishing a continuous assembly-line production run. This is because the product is always the same - that is, steel-rope. The market absorbs large quantities of it. Through Anglo-American's organisational backing, Haggie-Rand has been able to capture most of this market.

An important feature of Haggie-Rand's labour process is that work has been fragmented into eight distinct production steps, each requiring differing operator skills: 'patenting' involves the strengthening of the iron rod used in the steel rope; 'acid cleaning' follows where the surface impurities are cleaned off; during 'wire-drawing', the steel rod's diameter is reduced to the required size; zinc-protection is then applied to the wire-drawn iron rod, a process called 'galvanizing'; 'testing' follows, to identify any processing imperfections; 'stranding' machines then thread together a number of wire rods to form a strand; a number of iron strands are pre-bent, and then threaded together to form the steel-rope, which is called 'closing'; And lastly, 'final testing' is undergone before the rope is actually dispatched. The steel rope is then tested for strength endurance.

Unlike the Dorbyl labour process, which cannot be easily fragmented, Haggie-Rand has developed the art of separating the production tasks to perfection. This has important implications for skill requirements. Haggie has started an Operators Training Centre alongside its Artisan Training Centre, where operator process skills are to be developed:

> It became necessary that each job in the factory be analysed

> and defined in detail, and courses specific to the job be compiled...There are 16 operator modules, amongst them wire-drawing skills, rope-manufacture skills, testing, butt-welding and so forth. (28)

> We've done a thorough analysis of jobs, from the operator process skills level right through to our managers. We've been able to identify very specifically, in terms of measurable standards, what the expectations of each job are. Having established these standards, we are now able to measure both on the job and off the job, a person's capabilities against those standards. And thus we are able to provide specific training inputs. This can vary from a bit of coaching on the job through to concentrated classroom experience. (29)

It would seem that as work becomes increasingly mechanized, deskilled and mass-produced, management is able to acquire greater possibilities of applying Scientific Management techniques of work control. This is the experience at Haggie Rand. Each work operation has been effectively fragmented. Precise job definitions have been drawn up which must be met by workers in production. At Dorbyl, because of the complexity and on-going variations in the production process, this can not be so easily achieved.

Scaw Metals

Scaw Metals is another giant Anglo-American corporation. It is an Iron and Steel foundry, which began its operations in 1939. In its 47 years of existence, it has undergone three phases of technological change, which have fundamentally transformed the labour process operative in the factory. An interesting feature, however, is that these three differing labour processes have continued to co-exist alongside each other in the same plant.

The Brightside Mill was installed in 1939. It involves a very labour intensive 'hands-on' production process. The process has remained unchanged since 1939. Workers manually stoke the furnaces with coal. The heat emanating from the molten ores is intense. Working conditions are incredibly oppressive.

The Morgan Mill was introduced in the mid-1960's. It has an electrical furnace, generating 6000 volts of heat. This has eliminated the need for large numbers of unskilled fire-stokers. This foundry is much more mechanized, with cranes, conveyor belts and machines facilitating the production process.

The Hille Mill foundry was established at Scaw Metals in the late 1970's. The molten ore is pumped in from the other furnaces. Here production is fully computerized and automated. There is little operative or unskilled labour. Most of the skilled employees are CNC machine programmers and CNC maintenance artisans.

Clearly the labour processes in each of these production departments at Scaw Metals vary greatly, with the Brightside Mill highly dependent on unskilled manual labour and a number of production-linked artisans, whilst the Hille Mill is dependent on the specialized skills of programmers and maintenance artisans. The total workforce at Scaw Metals is as follows:

TABLE 3.8: OCCUPATIONAL STRUCTURE AT SCAW METALS, FEBRUARY 1986.

WORKERS:	BLACK	WHITE	TOTAL
Artisans	50	432	
Apprentices	118	151	
Semi-skilled(Grade A1 - DDD)	949	15	
Unskilled(Grade E - I)	1 592		
Non-productive staff			531
TOTAL			3 838

The total number of artisans and apprentices employed at Scaw is 751. The number of semi-skilled operators is 964. As a result of this co-existence of differing technologies and differing labour processes, Scaw Metals requires both large numbers of artisans and operators. Mr Burkes explained these phenomena when he commented that:

> We operate on the basis of a 'crisis management' policy... sometimes jobbing production, sometimes long runs. It all depends on our contract at the time. (30)

Jobbing contracts often involve complex moulding which can only be done by skilled artisan patternmakers, moulders and machinists. However, long-run contracts involve repetitive and continuous moulding, and these moulds can be produced by the more mechanized Scaw foundries, with their semi-automatic and fully automatic moulding machinery. Hence Scaw's seemingly contradictory production need for both artisanal and operative labour.

Basaan du Plessis

Basaan du Plessis is a medium-sized foundry in Pretoria-West. It is an operative-dependent mass production foundry, producing small iron and steel commodities in high demand - for example, sanitation pipes, manhole covers, and cast-iron piping. Two big automatic CNC moulding machines have been employed since 1972, and require only 4 operators to run them. A conveyor belt transports the inputs and outputs to and from the machine. Much of the other moulding work in the factory is also operator initiated. In fact, Basaan Du Plessis employs only one white artisan moulder, but employs 20 semi-skilled African production moulders and 32 semi-skilled African core-makers. The occupational breakdown is as follows:

TABLE 3.9: OCCUPATIONAL STRUCTURE AT BASAAN DU PLESSIS, FEBRUARY 1986.

WORKERS:	BLACKS	WHITES	TOTAL
Artisans	1	27	
Apprentices		6	
Operators	85	10	
Unskilled labour	365		
Non-productive staff			55
TOTAL			547

The labour process has been significantly deskilled. The moulder artisan is no longer required in this factory. Similarly, much of the machine work that is done on the iron-castings once they have been removed from the sand moulds, has been deskilled by the introduction

of CNC automatic lathes, grinders and drills. Hence the turner artisan is not in demand at this factory. Most of the artisans employed at Basaan are in fact involved with the setting and maintenance of CNC machinery.

Basaan du Plessis has been able to mechanize and establish long production runs precisely because of the nature of its product. Small cast iron commodities, which are produced in their thousands over and over again, and for which there is a strong market demand, establish the conditions which allow for mass production, mechanization and the deskilling of the labour process. Alternatively, Scaw Metals, although a much larger foundry, often produces jobbing castings: complex and massive one-off products that require specialized skills. As a result, Scaw is restricted in the way in which it can mechanize and deskill.

Atlas Copco

Atlas Copco is the South African subsidiary of a Swedish multi-national company, which has forty branches throughout the world. It produces compressed air and hydraulic-pressured machinery. The South African subsidiary imports most of this sophisticated equipment from its branches overseas. A company representative explained:

> The South African market is restricted in volume. If you have volume, the product cost goes down....But there is great competition, and we are all feeding off this limited market in South Africa. It is more competitive for us to import our goods almost completely assembled. (31)

Atlas Copco has a very small production staff. Most of the product is imported from Europe. The remaining components are manufactured here, using highly sophisticated computer assisted CNC machinery designed by overseas research and development (R&D). The artisans employed are used primarily for maintenance of plant equipment and the continued servicing of the product once the customer has purchased it.

Most of Atlas Copco's energies go into marketing and sales, as a result of their endeavours to capture a larger slice of the South African compressed air/hydraulic machinery market. The occupational breakdown of Atlas Copco is as follows:

TABLE 3.10: THE OCCUPATIONAL STRUCTURE AT ATLAS COPCO, FEBRUARY, 1986.

WORKERS:	BLACKS	WHITES	TOTAL
Artisans		40	
Semi-skilled Operators	50	30(women workers)	
Unskilled labourers	20		
Non productive sales, marketing, clerical staff	100	270	
TOTAL			510

As a result of the direct link with sophisticated overseas technology and R&D, Atlas Copco's production section is very small, but highly capital intensive. Hence Atlas Copco cannot be described as either a mass production or jobbing concern, but rather, it takes on a distinctive character as a result of its international capitalist links.

R H Harris

The last company to be examined is R H Harris, a small metal company producing boilers, pressure vessels, huge metal tanks and similar items. It is a jobbing firm, heavily reliant on one-off contracts. It struggles to survive in a metal industry dominated by the giants such as Dorbyl. Its marketing strategy is based on quality: 40 years of reliable family service and experience.

The most distinctive aspect of this small firm is that the owner of the firm is a qualified boilermaker. Other than being involved with the tasks of business leadership, Mr G Harris is also involved with the productive tasks of occasional boilermaking and welding if production schedules require his contribution. He also functions as the on-site works manager, and he does the quality control and testing of R H Harris' manufactured products. In a larger firm these functions would be performed by four separate employees. Combining them all into one is a central part of making such a small vessel-producing firm competitive. This small firm is very reliant on artisans with all-round skills:

We employ artisan welders. We've done it so that we have fully

conversant welders: submerged arc, CO-2 and stick welding. A black worker off the floor could probably run any of these welding machines, but if something went wrong, I'd have to call in a skilled welder to gouge out and redo this mistake. Our artisan welders do the whole lot. Small companies need one guy who can do all the welding operations. We haven't got the production facilities to employ lots of semi-skilled welders. Also, pressure vessels require high-quality welding that need to follow government established welding code standards. We can't take on a semi-skilled welder and risk not fulfilling this sort of skill capability. (32)

R H Harris employs the following staff:

TABLE 3.11: WORK FORCE AT R H HARRIS, FEBRUARY 1986.

EMPLOYEES	BLACK	WHITE	TOTAL
Director		1	
Artisans		9	
Operators	6		
Unskilled	8		
Non-productive staff		7	
TOTAL			30

The small firm does not have the financial resources to instal advanced technology, nor is its output yield and share of the market large enough to allow for the introduction of mass-producing techniques. Rather, many small firms remain jobbing concerns, highly dependent on the contributions of artisanal labour.

KEY LABOUR PROCESS TRENDS IN THE METAL INDUSTRY OF SOUTH AFRICA: UNEVEN CAPITALIST DEVELOPMENT

There is no single labour process that characterizes production in all of the varied firms of the metal industry. As has been made abundantly clear in the six case studies, there are three differing labour

processes. Firstly, there is a labour process characterized by jobbing production, one-off contracts, short-runs, and a dependency on artisan labour. Production constraints exist which restrict the implementation of more mechanized production. Secondly, there is a labour process determined by mass production, advanced technology and a dependency on African operative labour. And thirdly, there is a labour process which represents a combination of the two forms mentioned above: both jobbing and mass production.

The labour processes in some of the large metal corporations are of the mass production type, such as Haggie-Rand. But many large companies continue to have labour processes of the jobbing type. This is because jobbing has been preserved in the 'heart' of the largest metal producing concerns themselves. Through centralization of capitals in the 1960's one jobbing concern was simply added onto other jobbing concerns, thereby creating huge jobbing conglomerates in South Africa. Several of South Africa's leading heavy engineering companies such as Dorbyl-Vecor and Barlow Heavy Engineering, are simply gigantic jobbing concerns.

Similarly, many small firms are not necessarily jobbing concerns, although most in fact are. However, there are a number of small metal firms in South Africa, particularly the subsidiaries of MNC's such as Atlas Copco, which are highly productive, highly capital intensive, and which specialize in only a small segment of the market. They have direct access to the mother company's R&D, are able to import its advanced machinery and benefit from the availability of the mother companies finances for instant modernization. They are able to be highly mechanized without needing to be large.

Sitas described the metal industry as it had developed by the early 1980's as:

> ...a complex articulation of sophistication and backwardness, ranging from semi-automated plants to little engineering workshops, varying from numerically controlled jobbing fabrication to artisanal shops, and finally from vast concentrations of workers in a small number of giants that controlled the lion's share of capital stocks and output, to a large number of small concerns that were locked in a symbiotic relationship of piecemeal growth with the giants. (33)

Clearly, the metal industry is still characterized by the persistence of jobbing, and has remained highly dependent on considerable amounts of artisanal labour. How does this survival of craftskill relate to the simultaneous deskilling of certain areas of skilled work? This key question will be addressed in the following section.

CNC technology and deskilling in the metalworks

Deskilling is undoubtedly a concrete reality present within the labour processes operative in the metal industry. Deskilling has been particularly noticeable in companies with products and market opportunities that allow for long runs and mass production. Most of these companies are medium and large corporations, with the financial resources available to acquire the necessary machinery. Haggie-Rand is a good representative of this type of company.

Also, deskilling has occurred amongst particular trades, where technological advances have been the greatest: moulding, welding and turning. Mrs P Vorster, Training Manager of ICAL, Alberton, made the following point concerning the welding trade:

> Welding is the main process here at ICAL, and mechanization has now become an option. We are considering mechanization because our labour is a problem. The skills level is a problem. It is extremely difficult to get qualified people to do the high pressure welding we do. And artisan wages have become astronomical. (34)

ICAL, a pipe manufacturer, was in 1986 in the process of overcoming these skill shortages and high-cost labour problems by mechanizing and deskilling. The technical requirements of their production process allow for it. Pipe manufacturing and bending is a relatively repetitive and continuous process and can be easily mechanized. ICAL was specifically considering the introduction of CNC welding machinery.

Other examples of deskilling are, for instance, the use of only one artisan moulder and 52 semi-skilled production moulders at Basaan du Plessis. Moulding is the craft trade which has been most severely deskilled, primarily as a result of CNC technology. Mr Burkes, of Scaw Metals, predicted:

> It is on the cards that there will no longer be a qualified

> artisan moulder, because they have deskilled the job by bringing in machine equipment, where there is now very little hand moulding left. Within a year or so, I am prepared to say that there will not be a skilled moulding trade left. (35)

Turning has also been severely deskilled as a result of the introduction of computer technology. These machines, be they CNC lathes, drills or mills, require minimal skill. Only one programmer and one artisan are required to set and service these machines. Operators can do the rest.

> You will have one artisan who will go round, he will set the machines up, he will check them initially, and then he will hand them over to semi-skilled operatives. (36)

It is clear, therefore, that CNC technology has taken root in the South African metal industry. Chapter Two has indicated that although the extent of its application is still limited, the potential for CNC technology's future adoption is vast. This potential is encouraged both by the reductions in price of micro-chip technology, as well as by the opportunity for more effective labour control which the new technology promises. It is for this reason that it becomes necessary to examine briefly the impact of computer technology in those economies where it has progressed the most: Japan, America and Europe. This examination will focus specifically on the impact of computer technology on the organization of work, skills required in production, and the social relations in the work place. With this comparative insight, a far greater understanding will be obtained of the implications of computer technology for the South African metal industry's future development.

Computer aided manufacturing makes possible a form of automation that is incredibly far-reaching, and which lays the basis for unprecedented restructuring of the production process. Shaiken, writing about the American economy in the 1980's, argues that:

> ...virtually every paid productive activity in society will be affected - from offices to assembly lines, from design staffs to machine shops, from hospitals to newsrooms. These changes promise to transform not only the content of jobs but the way the workplace is organized, and the structure of the corporation itself. (37)

Shall, in a study of the implications of robotics for the South African manufacturing sector, notes that robots have four main applications. One such application is materials handling. The author provides an example of die casting in a metal industry:

> In a die casting machine a closed metal mould is filled with molten metal which is then cooled and ejected from the machine tool. Once the mould is removed from the machine, it is dipped in a cold water bath and placed in a trim die, which removes spurs, runners and unwashed flash. A robot proves ideal in this situation as it can withstand high temparatures, can work in dangerous environments and is very fast. The time taken for the operator to remove the parts from the machine, accounts for 50% to 70% of operating time. Using robots to remove parts increases the productive capabilities of die casting machines by 200% to 300%. (38)

The other three applications are automatic welding, spray-painting and product assembly. In all of these applications, the robots have increased productivity, improved quality, and in a typical robot installation, one robot can involve the displacement of 1 to 3 skilled workers (39). In South Africa, the 50 robots in use by 1985 were employed primarily in welding operations. (40)

Computer technology has attained its most sophisticated form in the computer-aided design/ computer-aided manufacturing (CAD-CAM) integrated system. Many skills which have been vital to the design process, for example the draftsman, are threatened with elimination by this integrated system. Even though certain new skills are created by this CAD-CAM technology, such as the design engineer who will need to be trained to programme the design computer, and the machine programmer, who will monitor the machine, many more jobs are either eliminated entirely or are made to require fewer skills. The advantages of the integrated network for management is that via the mainframe computer it can now control work activity in the design room, on the shop floor, and in the information/ administrative sections of the company. This total system qualitatively increases managerial control over the production process:

> At the heart of a typical network is a large computer that manages armies of smaller computers, which in turn direct and monitor what's happening on the shop floor. The system routes parts through the shop, controls machine tools directly, keeps track of inventories, and reports what workers are doing. The

information is available to management as it's happening. (41)

Computer technology, and particularly the information gathering activities described above, has also provided management with a powerful tool in its fight against worker 'soldiering': the deliberate go-slows, longer tea breaks and other forms of economic sabotage that are endemic to capitalism. These Management Reporting Systems (MRS) complete the 'total management' that computers make possible. Shaiken writes:

> In one management reporting system, a central computer is linked directly to a mini-computer on the machine. Every time the machine makes a part...it registers in the computer. When a machine doesn't produce a part within the allotted time, that is immediately obvious; it is both displayed on a video screen in the foreman's office and recorded on a computer printout. The foreman is instructed to go to the machine and investigate the problem. The printout is forwarded to higher management for analysis. The record states how many minutes the machine was down without explanation, and how many breakdown minutes were recorded. (42)

What has been the impact of this CNC technology on the quantity of jobs? Rumberger provides data on the occupations in the American economy that are seriously threatened by the advance of computer technology. His findings are presented in Table 3.12:

TABLE 3.12: POTENTIAL JOB DISPLACEMENT BY NEW TECHNOLOGIES (43)

MICROPROCESSOR TECHNOLOGY	OCCUPATIONS AFFECTED
Robots	Welders
	Painters
	Assemblers
	Other operatives
	Packers
	Labourers
Automatic teller machines	Bank tellers
CAD/CAM systems	Drafters
	Skilled machinists
Debit cards	Cashiers

Teleshopping	Sales clerks
Computer diagnostic repair equipment	Mechanics
Office automation	Secretaries
	Stenographers
	Typists
	Bookkeepers

Precise figures on the extent of job displacement and unemployment are hard to obtain. The ability of the national economy to generate new jobs to replace those lost will certainly be a key factor determining the final affect on employment, an outcome which seems increasingly unlikely given the continuing downturn in the world economy (44). There are certain groups of workers who are particularly vulnerable to the job displacement threats posed by microprocessor technology. These are the workers employed in the occupations listed in Table 3.12. However, women workers in clerical, sales and administrative occupations, skilled blue collar workers and older workers (less adaptable to new technologies) are the most vulnerable within those occupational categories. (45)

With respect to the qualitative aspects of work, microprocessor technology has made a substantial impact in two specific ways. Firstly, the new technology has deskilled the productive activities of skilled workers to such an extent that they have become mere monitors, checking for any malfunctions. Shaiken elaborates:

> With CNC, automatic systems responding to electronic pulses replace the wheels and cranks that the machinist formerly turned by hand. The machinist is reduced to making adjustments if something unexpected happens or stopping the machine if an accident occurs. He becomes a monitor rather than an active participant. (46)

A metal worker in a USA factory complained about the introduction of CNC machinery in the followng way:

> Pride of craftsmanship has been destroyed for the man who operates a numerical control machine tool. The machinist can no longer identify with the product. He used to make a part from start to finish and received a lot of satisfaction from it. The job has been routinized and bureaucratized and has

become less and less interesting. (47)

Another aspect of this increased degradation of work is the growing worker alienation on the job. Workers are now located further apart, separated by the mechanical arms of robots and the physical placing of CNC machinery. This has led to boredom and loneliness. Noise levels have increased, and the vastly superior efficiency and speed of CNC production has resulted in the greater pacing of workers. Life on the factory floor has become increasingly intolerable. (48)

However, the second feature of this reorganization of work made possible by microprocessor technology is far more significant in its ramifications. This has been the attainment of greater social control over the workforce. As already explained, this new technology has provided management with an unsurpassed opportunity to control the production process. It is in this light that the new technology should be viewed: as a response not only to purely technical considerations, but also as a response to these social control needs. Shaiken suggests that computer technology is a highly effective form of labour control precisely because of the 'hidden' nature of this control function:

> Had a system that time studies skilled work been introduced as 'new work rules', there might have been a total uproar, but embedding it in 'technology' mystifies the social content and makes it appear inevitable. (49)

Even though the South African metal industry to date has had only a limited experience of this computer technology, the indications are that this will increase in the near future. Hence, the impact of computer technology as outlined above, particularly the reorganisation and deskilling of work, are of great relevance to this case study of deskilling/reskilling tendencies in the South African metal industry. A greater use of CNC machinery will certainly intensify the tendency towards deskilling.

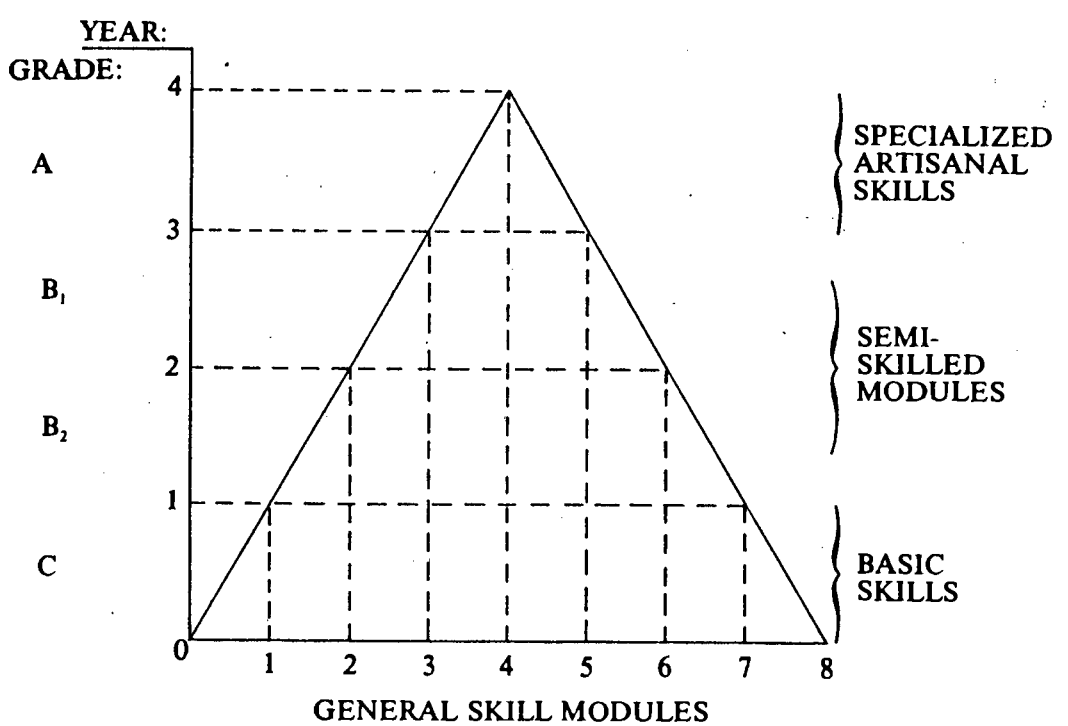
Deskilling of artisanal training schedules

Skilled labour training schedules have not escaped the pressure towards deskilling in the South African metal industry. For example, Mr Burkes, the Training Officer for Scaw Metals, indicated that production at Scaw Metals was severely constrained: caught up in a combination of both jobbing and mass production. This was by no means an ideal production set up. Restructuring, which would imply increased deskilling and mechanization, was necessary.

> This country needs what I call a 'division of labour' policy. Take the training of the artisan. In his first year, he learns a broad range of basic skills. Of this he will forget most of it, using only 10% of it on his eventual job. In his second and third years, he does more on-the-job training, but of a semi-skilled nature. It is only in his fourth year that he is really exposed to the actual specialized job skills he will need. Now that 90% of earlier learning is totally wasted - he doesn't need it, doesn't practice it on his job. That 90% should be graded as semi-skilled work. (50)

Burkes' suggestion can be graphically represented in the following way:

FIGURE 3.1:



Burkes is proposing that artisanal training be dissolved, that it be restructured so as to provide a range of technical training modules. After the progression of a certain number of years, the worker studying a given number of modules would be upgraded from Grade C - unskilled labour - to Grades B2 or B1, the categories of semi-skilled labour. Finally, after the completion of further modules, the worker would be promoted to Grade A: artisanal labour. The significance of this concept lies in the fact that it will free work done previously by artisans, to be done by modular-trained semi-skilled labour. Artisans will have a four year specialized experience of certain specific skills. Burkes envisages that these specific artisanal skills (as opposed to general artisanal skills) will constitute an increased skilling of artisans. More importantly, these skills will need to be supplemented by certain highly in demand, although more ideologically defined, artisanal skill capabilities: managerial skills, industrial relations skills, and supervisory skills. Artisanal training in South Africa at present does not develop these non-technical skills sufficiently. This constitutes a major skill deficiency.

This restructuring suggestion is very similar to recommendations made by both the De Lange Commission's technical and vocational sub-committee, as well as by the more recently compiled NTB's investigation into artisan training in South Africa. These views are now supported by many state structures:

> The normal duties of an artisan often include tasks that are relatively simple and that could be easily performed by workers with less training so that the artisan could do only the highly skilled work. (51)

The state in 1986 accepted the recommendations of the NTB investigation into artisan training in South Africa. Even though the changes proposed have yet to be fully implemented, this state acceptance nonetheless represents a significant shift in the control over apprenticeship training. Modularized, competency-based forms of training have been accepted. A large-scale devolution of powers from the Department of Manpower and the National Training Board to industry-based Artisan Training Boards will be implemented in the near future. These industry-based boards will be greatly empowered to

dissolve the old apprenticeship system, see to the introduction of modularized technical education, the greater use of more semi-skilled labour, and the use of artisanal labour in more specialized as well as ideologically defined roles (52). These are all changes that have been urgently sought by capital during this period of economic crisis and are likely to benefit it greatly it its battles with the skilled white working class. The importance of raising Burkes 'division of labour' restructuring theme and the NTB recommnedations is thus to highlight the everpresent possibility of deskilling tendencies advancing in the metal industry, particularly as the impediments which have been mentioned earlier are overcome.

However, it is important not to underestimate some of the very real constraints to further mechanization in many of the metal companies in South Africa. These have been examined in detail in Chapter Two, for example: the high costs of imported technology, a restricted domestic market, skilled labour problems, and low worker productivity. The above case studies have also highlighted the way in which the very real technical requirements of certain production processes - the complex work operations - make mechanization, automation and robotics very difficult in those production environments.

> No matter how desirable it would be in terms of labour problems, our complex operations will never allow for a fully automatic situation on the factory floor. (53)

Reskilling in the metal industry

At the outset, it is important to emphasize that deskilling has affected only craft workers to date. Unlike the fragmentation and breaking up of the all-round skills of the craft worker, other productive occupations can not be deskilled in the same way. Furthermore, the craft category of workers represents only 6% of the South African working class. Thus, in fact, only a small segment of the working class are threatened by this deskilling and homogenization process. (54)

Also, the introduction of CNC machinery has not always meant that the work process has been deskilled, and that only operators are required. A representative of Steinmullers (Africa) Limited, the monopoly corporation that provides South Africa with its electrical power stations, was quick to point out that:

> The introduction of sophisticated and expensive CNC machines has still required us to maintain artisans on these machines. It is not simply a question of pushing buttons. You need to know about the machine, its technology, how to intervene, correct any errors, etc. We can't leave these expensive machines in the hands of operators.(55)

In this environment of complex and expensive machinery involving difficult programming, decision-making and machine responsibility, artisans are still needed. The workforce has in fact often grown - in terms of both numbers and skill requirements - as a result of mechanization. Previously requiring only a single all-round skilled artisan, the introduction of CNC machinery has sometimes necessitated the need for a computer programmer, a maintenance artisan, a quality controller/tester and a machine operator.

Reskilling the Artisan

Deskilling has not occurred uniformly amongst all craftworkers. As has already been mentioned, the work of the moulder, welder and turner has been noticeably deskilled as a result of CNC technology. However, some production tasks in engineering remain too complex, and can't be easily mechanized, automated or roboticized. The all-round skills of the traditional artisan are still required. In particular, technically competent artisans are much in demand in certain complex, primarily jobbing production situations. Dorbyl, R H Harris, Scaw Metals all confirm this trend.

Furthermore, some trades have become increasingly specialized. Take the case of the fitter: with the advances made in hydraulics and pneumatics, fitters have since 1979 been required to study these subjects as part of their training schedules. The trade has thus become more skilled (56). The same can be said of the electrician, particularly in the field of electronics and computerization.

As a result of the introduction of more advanced machinery, artisans have needed to develop new skills such as computer programming and quality control. The NTB, in its 1985 survey on the impact of technological changes, concluded that:

> It can be anticipated that this type of technological development will generate the need for a more highly trained and skilled artisan and the demand for more persons trained in programming and in quality control. (57)

Reshuffling the skill contributions of artisans, technicians and engineers

There are other new skills required of artisans in the metal industry today. Burkes of Scaw Metals indicated that artisans needed to be more effectively equipped with managerial, supervisory and human relations skills. Scaw in fact intends:

> ...sending every one of our third and fourth year apprentices to a supervisory skills development course. We are going to train them to be supervisors so that when they become artisans, they will have all these new skills. (58)

The Wiehahn Commission reported that many employers were "concerned about the shortages of managerial skills amongst artisans and the inadequacy of present programmes in this respect" (59). The recent NTB investigation into Artisan Training also recommended that specialized skills such as 'supervisory and management techniques...should be recognised by industry and an appropriate training and evaluation system be introduced for this purpose' (60). The Chairman of the NTB, Mr Naude, suggested in an interview that:

> ...trade Theory should be removed from the Technical Colleges and included with practical on-the-job training. In its place, it should be substituted with courses on management, supervisory and industrial relations skills, as well as training on how to train others. (61)

The De Lange Commission's Technical and Vocational Education Subcommittee proposed a five-year Technical College, which would be based on the Taiwanese model, enrolling students with a completed Standard Seven. The Committee motivated the five years of specialized technical study in the following way:

> People who are to operate in middle management positions need, apart from technical skills also managerial skills, as well as an appropriate value system for the field they are working in. (62)

A major contributing reason for this stress on artisans performing more control and ideological functions, in addition to or in place of their technical functions, is the significant shortage of HLM in South Africa, and the absence of training courses aimed at developing these HLM skills. This shortage is not only quantitative, but also has to do with qualitative factors such as the low level of education and training of South Africa's HLM. High level manpower, particularly managers, senior supervisors, artisans and foremen play crucial roles in labour control, discipline and factory productivity. Given the low level of development of these managerial and industrial relations skills and the upsurge of worker resistance over the last decade, it has become a crucial initiative for capital to encourage the training of artisans (as senior workers strategically placed on the factory floor and easily co-optable) to be equipped with these skills. These ideologically defined skill requirements are as significant as the purely technical skill requirements of production. Hence, even if the technical contribution of artisans is in the process of being diluted and deskilled, their ideological skill contribution is nevertheless in the process of being upgraded. This is an important aspect of reskilling.

The introduction of advanced technologies has also resulted in the emergence of a whole range of new highly skilled technical occupations, for example: scientists, technicians, engineers, computer programmers, product designers, and technologists. In South Africa there has been a marked shortage of skilled personnel to fill these occupational categories. Because of this, there have been calls over the last decade for the restructuring of the differing roles played by the artisan, technician and the engineer. This restructuring has been aimed, firstly, at contributing to alleviating the skill deficiencies amongst HLM personnel; secondly, it is aimed at re-allocating the technician and the engineer's work contribution from involvement with productive tasks into industrial research and design. The Kleu Commission, published in 1985, noted the urgency of this reshuffling of tasks:

> South Africa is largely dependent on imported technology... the country's expenditure on research and development is small, ... there is a shortage of experts for the creation, adaption and use of the most suitable technology...researchers should become more geared to the demands of the market and the work situation. (63)

By involving artisans in managerial functions, this would free technicians and engineers to develop R&D skills. Burkes of Scaw Metals elaborated on this shift:

> It has always been my contention that the traditional university trained engineer is not a shop floor man. He should be fully involved in research and design. (64)

The technician, too, should be distinguished from the artisan 'in that he has a higher technical ability, and his work (should be) less confined to manual skills and (be) more varied and intellectual' (65). Because of the skill deficiencies in the South African economy, technicians have until recently been involved primarily in artisanal-type technical tasks, ignoring the development of their more cognitive-skill abilities. A restructuring of the functions performed by these differing levels of skilled labour would alleviate certain key constraints on effective management, R&D and industrial productivity in South Africa. (66)

Hence, seemingly contradictory processes are occurring with regard to the skill contribution of the artisan and other more skilled labour-power. On the one hand, there is an increase in the knowledge and ability requirements of artisans, as well as an upgrading and reshuffling of the productive, cognitive, and ideological contributions of artisans, technicians and engineers. On the other hand, there is an undoubted deskilling of certain tasks. In fact, a particular craft skill may be deskilled in one production process, and reskilled in another. These contradictory phenomena are a consequence of the unevenness of capitalist development in the metal industry.

The social construction of skill

A crucial factor determining whether work is either deskilled or reskilled in the metal industry is the resistance of skilled workers to the dilution of their trade. Braverman, in his seminal study of the capialist labour process (67), makes very little reference to this working class resistance and struggle in his treatment of the degradation of work in the twentieth century. Sarup writes:

> The capacity of capital to reorganise the labour process is so heavily emphasized (in Braverman's work) that capitalism appears as an all powerful juggernaut. (68)

A more correct analysis of the labour process would stress the ability of skilled workers, using the might of their trade union organization, to construct and defend their own definitions of 'skill'. The skilled white metalworkers in South Africa have achieved this by depriving management of total control over the labour process, and by limiting the types of work which non-skilled workers are allowed to perform. They have gained control of elements of both the internal and external labour markets serving the industry, for example: entry conditions to apprenticeship, restrictive job practices, and seniority promotions.

> Workers' attempts to shape and control labour markets are attempts to compensate for loss of skills and bargaining power ....Deskilling does not necessarily lead to undifferentiated work, for the labour process can be reconstituted as a new organisation of production dominated by internal labour markets. (69)

The struggles of skilled white workers in South Africa to construct and defend their own definitions of skill was described in the previous chapter. What is significant for the purposes of discussion here is to recognise that the struggles of these skilled workers have resulted in the social construction of skills operatin in metal production. The continued prominence of skilled labour in the metal industry therefore has to do with both the technical requirements stemming from the persistence of jobbing production, as well as with social factors emerging as an outcome of skilled worker resistance to job dilution.

Upgrading of African operative labour

Reskilling phenomena have not occurred only amongst artisanal labour. Significant skills upgrading processes have occurred amongst the hundreds of thousands of semi-skilled African operative labour in the metal industry, who were previously unskilled. Sitas provides 1977 figures for the whole of the metal industry which highlight the shift of African workers into these semi-skilled occupations:

TABLE 3.13: SKILL DISTRIBUTION OF LABOUR FORCE IN METAL INDUSTRY, 1977. (70)

WORKERS	PERCENTAGE	NUMBER
Artisans,apprentices	17	53 365
Semi-skilled operatives	50	173 573
Unskilled labourers	33	112 573
TOTAL		343 411

Africans constituted 67% of those semi-skilled workers:

TABLE 3.14: RACIAL COMPOSITION OF THE SEMI-SKILLED PRODUCTION WORKERS IN THE METAL INDUSTRY, 1977. (71)

	PERCENTAGE	NUMBER
African	67.0	116 236
White	16.4	28 442
Coloured	13.2	22 992
Indian	3.4	5 903
TOTAL	100.0	173 573

Meth warns against ignoring this reskilling phenomenon:

> To ignore the potential for enhanced worker power amongst 'new' workers, who presumably enter the market without any industrial skills whatsoever; to ignore the possible gains in strength of the new collective workers...is to ignore the ever present contradiction of capital and to assert that real domination can be achieved by restructuring the labour process. (72)

The shift of these African workers from unskilled secondary jobs into semi-skilled subordinate primary positions has had two important effects. Firstly, it has enhanced the bargaining power of these workers, as they now perform more strategic functions in production, and as a result of this, they have acquired some control over the

labour process. These skills are not instantly replacable, as in the case of unskilled labour. This is evident by observing the important work contributions made by operatives in the six metal factories visited, particularly in those factories highly dependent on operative labour. Haggie Rand, for instance, was brought to a complete stand still for three weeks in March 1986 as a result of a worker sit-in strike. (73)

> The operator is an important link in the overall production process. His knowledge and competence are therefore vital. (74)

The second important effect of this shift has been an increase in the skills required of African labour in the metal industry. Semi-skilled African workers need a certain technical know-how to do their jobs. Haggie-Rand trains their full operator workforce via short modular courses. Most other companies do this kind of technical training on-the-job. Van der Watt of Dorbyl elaborated on these technical skills:

> They must have the following technical qualities: mechanical insight, mathematical ability, 3-dimensional perception, hand-eye co-ordination and mental alertness. All of these are crucial for safe and productive operating of expensive and sophisticated machinery. (75)

Operative labour is also required to be literate and numerate. This, according to Burkes, is because the "operator has a lot of paperwork to do - reading the technical instructions, filling in documentation concerning productivity, reading the CNC screen instructions, and so forth" (76). Peveritt of the SEIFSA Education and Training Board added that literacy training which aimed at developing communication skills, was crucial:

> What we are aiming to do currently, is to find a literacy programme that is intended to improve the communication in the factory....It is actually aimed at trying to stop the industrial unrest that we have got at the moment, because that is largely due to a lack of communication in the factory. (77)

Many companies, like Scaw Metals, have started literacy classes amongst their workers with the aim of achieving an improved level of literacy and industrial communication.

The increase in the pay as well as the greater significance of the work, are very real encouragements for African workers to upgrade themselves as operative labour. The following table illustrates some of the differing job definitions and wage structures for the various industrial grades of skill:

TABLE 3.15: WAGE STRUCTURE AT STEINMULLERS, FEBRUARY 1986. (78)

JOB DESCRIPTION	GRADE	MINIMUM PAY PER HOUR	NUMBER OF WHITES	NUMBER OF AFRICANS
Artisan	A	R5.90-R9.51	87	8
Foreman	A	R6.35-R8.17	12	1
Artisan-aide	AA	R4.47-R5.61	10	11
Crane driver	B	R3.85	6	38
Machine operator	C	R2.39		25
"	DD	R2.83		3
"	DDD	R2.71		2
Painter	E	R2.33		6
1st-line supervisor	F	R3.34		3
Slingers, grinders	G	R1.96		112
Labourer	H,I	R1.90		44

Although most African workers are employed at the level of grades G, H and I, access to higher occupational grades has now become a reality, as the above figures indicate. Such an occupational change for the individual worker would yield a significant rise in income. With their improved structural location as operative labour in production, as well as with the rapid growth of their industrial trade unions, these workers are in a position to bargain for job and pay upgrading. They are thus in a position to construct aspects of their own skill contribution. These changes in the occupational opportunities for operative workers represents an important shift in their market status, from secondary market to subordinate primary market workers.

The skill requirements of operators are not only technical. Capital requires a certain ideological component to operative skills. This is because African semi-skilled workers have acquired sufficient knowledge of the production process to be able to sabotage it, if the need were to arise. In response, particularly since the emergence of crisis conditions in the mid-1970's, capital has become engaged in ideological training efforts to dispose workers more favourably towards capitalism. This was made very explicit in a recent study by UNISA'S Graduate School of Business Leadership, produced in conjunction with the business sector, entitled Project Free Enterprise. Launched with the aim of researching black worker attitudes to free enterprise, the report noted that black workers often sabotaged production as a form of resistance to apartheid and capitalism:

> Metal objects were dropped into moving machinery, kilometres of conveyor belt were ripped apart by the attachment of a sharp object at one end of the system...go-slows, not reporting mechanical problems and the loss or destruction of company property such as overalls and stationery were also symptoms of negative attitudes by workers to the private sector. (79)

These training activities are examined in Chapter Eight.

SUMMING UP - THE CO-EXISTENCE OF DESKILLING AND RESKILLING TENDENCIES

Capitalism has developed in a highly uneven manner in the South African metal industry. On the one hand, jobbing production has persisted, even within the largest of the monopoly corporations, resulting in an acute dependency on artisanal labour. Furthermore, there is significant evidence of reskilling processes occurring amongst a varied spread of occupational categories: amongst certain recently emerged and highly skilled occupations, amongst certain artisanal trades, and amongst black operative labour. These reskilling processes have fundamentally reshaped and influenced the technical, ideological and socially-constructed components of the skills employed in the South African metal industry. On the other hand, it must be accepted that deskilling is also a concrete process present in the industry, although constrained and limited by a number of factors described earlier in the text. In other words, it would be appropriate to conclude that both reskilling and deskilling tendencies are occurring in the metal industry simultaneously.

FOOTNOTES

(1) TABLE: THE METAL INDUSTRY IN RELATION TO THE MANUFACTURING SECTOR, BY SIZE AND TOTAL EMPLOYED, 1979.

	NUMBER OF FIRMS	% SHARE OF TOTAL FIRMS IN MANUF	EMPLOY TOTAL	% SHARE OF TOTAL MANUF EMPLOY	GROSS OUTPUT (R-mill)	%
THE MANUFACTURING SECTOR:						
	17 124	100.0	1 324 869	100.0	29 929	100.0
THE METAL SUBSECTOR:						
IRON AND STEEL	186	1.1	97 884	7.3	2 783	9.3
METAL PRODUCTS	2 721	15.9	132 349	9.9	2 522	8.4
MACHINERY	1 456	8.5	80 640	6.0	1 658	5.5
ELEC. MACHINERY	755	4.4	64 711	4.8	1 398	4.7
METAL SUBSECTOR'S SHARE OF MANUFACTURING	5 118	29.9	375 584	28.3	8 361	27.9

Source: Central Statistical Services, Census of Manufacturing, 1979, Report Number 10-21-39, 1984, Table 1, p 5.

(2) In an attempt to overcome the problems both of a lack of research into the question of industrial skills and the alleged skill shortages crisis, as well as to move beyond the limitations of state-compiled statistical information, a case study was undertaken in the metal industry of the Pretoria-Witwatersrand-Vaal region. 12 firms were actually surveyed, but much repetition of trends emerged, so only six of these firms are being presented in the analysis. The labour processes of these six firms were closely observed. This involved some 30 extensive interviews with management, personnel officers, technical training staff, artisans, semi-skilled and unskilled workers. Extensive on-site observations of the production processes within each of these metal firms was also undertaken. State officials involved with technical and industrial training were interviewed in Pretoria.

(3) Interview, Mz. D Peveritt, 3/3/86.

(4)See Bloch (1980) pp 78-86, 94-96; See D Kaplan, 'Class conflict, capital accumulation and the state: an historical analysis of the state in twentieth century South Africa', University of Sussex, unpublished D.Phil. thesis, 1977, p 285.

(5)Sitas (1983) p 67.

(6)Bloch (1980) p 144.

(7)For an examination of the PACT governments commitment to a policy of industrialization in the 1920's, see Black and Stanwix (1987) pp 4-7; Bozzoli (1981); R Davies et al, 'Class struggle and the periodization of the state in South Africa', Review of African Political Economy (7) 1976; Kaplan (1977) pp 77-91.

(8)Webster (1985) pp 56-57.

(9)J Lewis as quoted in Webster (1983) p 35.

(10)Innes (1983) pp 3-4.

(11)Sitas (1983) p 127.

(12)See Bloch (1980) pp 178-201. Bloch unfortunately does not quantify the extent of state financial support during the 1960's for developing industrial infrastructure.

(13)Bloch (1980) pp 178-179; See also pp 179-201 for specific detail on state economic policies that acted to facilitate the transition to internationalized capitalist relations under the aegis of monopoly capital.

(14)Sitas (1983) p 134.

(15)Ibid, p 150.

(16)Sitas (1983) p 152.

(17)Ibid, p 170.

(18)Ibid, p 153. The metal industry is comprised of 6 sub-sectors. Metal products is thus only one. The size of the firm is measured in terms of the number of employees.

(19)Central Statistical Services, Census of Manufacturing, 1979, Report Number 10-21-39, 1984, Table 4.1, pp 68-70.

(20)Ibid, Table 6, pp 124-126.

(21)Central Statistical Services, Census of Manufacturing, 1985: Statistical News Release, August 1987, Report Number P 10, Government Printer, Pretoria, pp 8-9.

(22)Sitas (1983) p 149.

(23)Jobbing is not unique to South Africa. Jobbing, or more correctly, small batch production is prevalant within sectors of the American manufacturing industry. See Shaiken (1980); See also American Machinist, November 1977, p 1.

(24) Interview, Mr van der Watt, 17/2/86.
(25) Ibid.
(26) Ibid.
(27) Interview, Mr R Edwards, 19/2/86.
(28) Ibid.
(29) Interview, Mr L Dormer, Group Personnel Officer, Haggie-Rand, Germiston, 12/2/86.
(30) Interview, Mr T Burkes, 11/2/86.
(31) Interview, Mr R Westeby, Training Officer, Atlas Kopco, Benoni, 20/2/86.
(32) Interview, Mr G Harris, Director of R H Harris, Jeppe, 28/2/86.
(33) Sitas (1983) p 178.
(34) Interview, Mrs P Vorster, Training Officer, ICAL, Alberton, 17/2/86.
(35) Interview, Mr T Burkes, 11/2/86.
(36) Ibid.
(37) Shaiken (1980) p 1.
(38) Shall (1985) p 14.
(39) Ibid, p 19.
(40) Ibid, p 17.
(41) Shaiken (1980) p 36.
(42) Ibid, p 44.
(43) Rumberger (1984) Table 4.
(44) Ibid, p 24-25.
(45) ILO, The Socio-economic Impact of New Technologies (1985) p 35.
(46) Shaiken (1980) p 12.
(47) Ibid, p 29.
(48) ILO, The Socio-economic Impact of New Technologies (1985) p 41.
(49) Shaiken (1980) p 49.
(50) Interview, Mr T Burkes, 11/2/86.
(51) Department of Manpower, Report of the NMC for...1983, p 278; See also Human Sciences Research Council (Investigation into Education), Report of the Work Committee into Teaching of the Natural Sciences, Mathematics and Technical Subjects, Technical and Vocational Education, Pretoria, 1981; HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985;
(52) Republic of South Africa, White Paper on the Joint Report of the HSRC and the NTB on the Investigation into the Training of Artisans in the RSA, with Comments, Standpoints and Decisions of

(70) Sitas (1983) p 224

(71) Ibid.

(72) Meth (1981) p 15.

(73) Weekly Mail, 27/3/86.

(74) Department of Manpower Utilization, Report of the NMC for ...1980, p 51.

(75) Interview, Mr Van der Watt, 17/2/86.

(76) Interview, Mr T Burkes, 11/2/86.

(77) Interview, Mz. D Peveritt, 20/6/85.

(78) Payroll of Steinmullers (Africa) Limited, as at the 1/2/86.

(79) Cape Times, 9/6/86.

CHAPTER FOUR SKILL SHORTAGES IN SOUTH AFRICA

During the last few years there has been an intense debate in academic circles over whether a skill shortages crisis has existed, and if so, to what extent. Furthermore, academics have investigated the way in which the skill shortages crisis has contributed to the general crisis experienced throughout the South African social formation over the last decade. In examining these issues, this chapter develops a new approach to the skill shortages question. It does so by applying the case study observations described in Chapter Three which concern deskilling and reskilling tendencies in the metal industry of South Africa.

STATISTICAL DATA ON SKILL SHORTAGES

Most writers on the skill shortages question in South Africa depend on the same set of government collated manpower statistics to substantiate their arguments. As a first step, it is appropriate to review this data before examining the differing arguments that constitute the debate. Tables 4.1, 4.2, 4.3, and 4.4 are compiled from the various Manpower Surveys published between 1977 and 1985. These tables will be presented as a unit over the following two pages.

The figures contained in Table 4.1 reflect a number of important factors. Firstly, 1981 can be considered to be the year when the so-called 'skill shortages crisis' was at its peak. The total number of vacancies had almost doubled from 99 260 in 1977, to 187 000 in 1981. During that year, the shortages were most acutely felt in the HLM occupations. These HLM shortages are considered by bourgeois economic theorists and state manpower planners to be the most crippling, for as the NMC argues:

> The employment-creating class consists of management and executives as well as the professional and highly skilled workers, and other workers are dependent on these two groups for job opportunities....There is a great burden on the managers and professional groups to create job opportunities and that, as a result of the more rapid growth of the unskilled groups, this burden will increase (1)

TABLE 4.1: TOTAL SHORTAGES DISTRIBUTION ACCORDING TO SKILLS LEVEL, 1977-1985. (2)

	1977		1981		1985	
	NUMBER OF VACANCIES	% OF TOTAL	NUMBER OF VACANCIES	% OF TOTAL	NUMBER OF VACANCIES	% OF TOTAL
OCCUPATIONAL GROUP:						
HLM	16 863	17.0	43 432	23.2	36 101	21.5
MLM	27 971	28.2	77 691	41.3	60 858	36.2
LLM	54 426	54.8	66 770	35.5	70 999	42.3
TOTAL	99 260	100.0	187 893	100.0	167 958	100.0

TABLE 4.2: VACANCIES BY SECTOR, 1981. (3)

SECTOR	NUMBER OF VACANCIES	% OF TOTAL VACANCIES
Mining	6 210	3.3
Manufacturing	22 315	11.9
Electricity and gas	9 323	5.0
Building,construction	14 488	7.7
Commerce	10 906	5.8
Transport & Communication	28 293	15.1
Miscellaneous services	17 931	9.5
General government	78 413	41.7
TOTAL	187 879	100.0

TABLE 4.3: VACANCIES IN THE NON-AGRICULTURAL SECTORS OF THE RSA, 1977-1985. (4)

	1977	1979	1981	1983	1985
Number of vacancies	99 260	114 682	187 893	190 106	167 958
Filled posts	5 289 415	5 259 046	5 507 726	5 498 649	5 363 788
Total number of posts	5 388 675	5 373 728	5 695 619	5 688 755	5 531 746
Vacancy rate	1.84%	2.13%	3.30%	3.34%	3.04%
Annual % change in vacancies	-	15.50%	63.80%	1.18%	-11.65%

TABLE 4.4: VACANCY RATE PER OCCUPATIONAL GROUP, 1977-1985. (5)

	1977	1979	1981	1983	1985
HIGH LEVEL MANPOWER:					
Engineers	4.23	8.06	12.70	7.77	4.88
Scientists	6.35	9.46	13.17	8.63	8.84
Technicians, technologists	2.72	5.24	9.94	9.06	7.94
Medical doctors	6.66	5.77	6.46	6.25	4.10
Nurses	7.51	8.53	10.98	9.44	9.85
Other paramedical	8.31	11.66	17.32	14.07	11.66
Lawyers	1.68	1.92	2.57	2.76	2.66
Educationalists	1.08	1.16	2.73	1.29	1.88
Architects, surveyors	1.09	2.61	8.17	5.99	3.23
Church ministers	0.36	1.91	2.36	1.87	1.01
Accountants	0.76	3.80	4.22	2.53	2.23
Agriculturalists	10.70	13.75	14.64	11.67	13.81
Other professionals	2.70	6.21	10.04	7.88	6.41
Managing directors	0.01	0.05	0.09	0.16	0.15
Other managers	0.17	0.42	0.98	0.70	0.71
Administrative	1.57	2.21	3.49	4.19	5.96
TOTAL:	2.62	3.68	6.03	4.81	4.61
MIDDLE LEVEL MANPOWER:					
Clerical workers	0.77	1.54	2.80	2.28	2.26
Sales workers	0.34	1.07	2.11	0.89	0.96
Mine workers	1.51	2.11	3.29	0.38	3.96
Transport workers	7.23	8.14	7.80	10.13	11.88
Supervisors	1.26	2.92	2.57	3.27	3.96
Service workers	3.96	6.15	11.17	7.60	6.62
Artisans, apprentices	2.87	3.79	8.52	3.88	4.15
TOTAL:	2.02	2.98	5.33	3.60	3.94

After observing the information contained in Table 4.2, it is also apparent that these skill shortages have affected the public sector most severely. However, after taking into consideration the total number of employment positions in the non-agricultural sectors of the South African economy, the shortages indicated in the tables above represent a relatively small percentage of the total workforce. As Table 4.3 highlights, the peak vacancy rate in 1981 was a mere 3.3% of the total number of employment positions. Even though the absolute number of shortages had increased slightly by 1983 (with a total number of shortages at 190 106 and a vacancy rate of 3.34%), this must be viewed as a function of the cyclical lag problem in manpower planning and training, a phenomenon which will be examined in more detail later in this chapter. What is most significant in the data contained in Table 4.3 is that the economy by 1983 had visibly begun to reflect the impact of recessionary conditions post-1981. The total number of employment posts available after 1981 dropped, and retrenchments and cutbacks in production led to a reduction in the total number of employed workers (filled posts). As a consequence of these shrinkages, the annual percentage change in the number of vacancies fell from a massive 63.80% in 1981 to 1.18 % in 1983, finally culminating in a negative (-11.65%) annual shortages growth rate by 1985. Clearly, on the basis of these statistics, a peak shortages rate of 3.3% in 1981 cannot be described as a 'crisis' situation.

However, crisis conditions have been experienced in particular occupations. Dr H Reynders, Chairman of the NTB summed up the official position by saying:

> Even though this shortage situation can't be described as a crisis situation, one must look into the individual jobs,... here you get shortages of 15% , 20%. (6)

In general, occupational categories with a manpower vacancy rate of greater than 5% are considered to be experiencing a severe skills shortage. Table 4.4 provides data on the extent of shortages in particular occupational categories between the years 1977 and 1985. The data focusses specifically on HLM an LLM occupations, because, as bourgeois and state economists would argue, these occupations contribute significantly to national economic growth and job creation.

As can be seen in Table 4.4, many individual occupations experienced vacancy rates greater than 5%, particularly in 1981. Personnel affected included engineers, scientists, technicians, medical practitioners, nurses, other paramedics, public service workers, artisans and apprentices.

THE SKILL SHORTAGES DEBATE: DAVIES' CONTRIBUTION

The debate began in 1978 with an article by Rob Davies on 'Capital restructuring and the modification of the racial division of labour in South Africa'. Davies argued that:

> ...in the period since the mid-sixties at least, the extended reproduction of monopoly capitalist relations of production has proceeded at a rate in excess of the rate of growth of the white population; and that under these conditions the totality of factors underlying the continued reproduction of the racist hierarchical social division of labour within the wage-earning classes (including, for example, such structural heritages from capital's past practices as the racist education system as well as job colour bar regulations and current white trade union pressures) have resulted in capitalists experiencing shortages of certain categories of mental, supervisory and skilled manual labour power. (7)

Davies argues that these shortages were emerging in the boom years of the 1960's, but their potentially adverse effects on capital accumulation were mitigated by two factors: firstly, the policy of floating the colour bar (employing cheaper semi-skilled African labour in production whilst promoting white labour up the occupational ladder); and secondly, by the abundance of foreign capital. Foreign capital acted as a counter to the restricting effects on productivity as a consequence of both the skill deficiencies experienced amongst artisanal labour, as well as the high costs of skilled white labour. Because of these mitigating effects in the 1960's and early 1970's, there was no pressing need for capital to modify the racial division of labour so as to remedy these skilled labour shortages.

Subsequently, however, the situation changed. To quote Davies again:

> ...it was only under the pressures of the current economic crisis and the recent struggles of the urban blacks that such a modification has become imperative from the bourgeios point of

view. (8)

As a result of the increased political instability and the diminished economic profitability that emerged during the mid and late 1970's, floating the colour bar became too costly, and foreign capital inflows fell dramatically (9). The cushioning effects of these mitigating factors had collapsed. The shortages were now acute and damaging to economic profitability and expansion. Davies writes that further mechanization had also become essential for increasing productivity. Hence, the modification of the racial division of labour had become imperative for capitalist profitability. Its continued reproduction no longer accorded with the interests of the bourgeoisie.

Reform was needed not only to resolve the skilled labour shortages. It was also aimed at winning back substantial levels of foreign investment, as well as winning over the allegiance of a sizeable black middle class to the cause of profitable accumulation in South Africa. This involved removing barriers to the upward mobility of urban blacks in the occupational structure. These reforms were contained in the Riekert and Wiehahn Commissions of 1979. For instance, job reservation was abolished, and apprenticeship was opened up to all races. Employers would now be encouraged to train and promote blacks into the occupations where these shortages occurred.

METH'S CRITIQUE

Meth has been instrumental in presenting a counter argument to that of Davies. He begins his critique by questioning the value of government statistics which Davies uses in his hypothesis:

> Statistics on skill shortages produced to support this claim share one important characteristic and that is their almost universal unreliability....Because of the absence of hard data, most analyses of skill shortages tend to be future oriented in the sense that they speculate about potential consequences rather than attempt to analyse the past. (10)

Government statistics have proved to be notoriously unreliable, filled with discrepancies. They are clearly not a source of information on which academic arguments can be built. Factors that contribute to the

inaccuracy of these statistics are, firstly, the fluctuations in yearly figures as a result of certain regions in the country obtaining 'independence'. These changes in the boundary lines of the South African national economy make comparative occupational-change analysis impossible. Secondly, definitions regarding occupational categories, for example, what constitutes the definition of a productive worker, a semi-skilled operative or a machinist, are very unclear in the state manpower surveys. These skill boundaries are arbitrarily chosen. Lastly, the differing government sources are themselves not comparable. Major divergencies exist between figures provided by the Department of Manpower's 'Manpower Surveys', the Population Census, and the Central Statistics Services. However, these are the only figures available that attempt to calculate employment and occupational trends in the South African economy. Scholars have no other option but to use them. Nevertheless, it is important that these figures be used only as indicators of possible trends, not as factual evidence of concrete realities.

In his counter-argument then, Meth reluctantly presents his own intepretations of the data, and refutes the alleged shortages. In most cases, he argues that the shortages are low. For example, Meth examines the alleged artisanal and apprentice shortage by making use of artisan/apprenticeship ratios. On the basis of these ratios, he argues that there is a low level of apprenticeship training in the metal products, machinery, electrical machinery, and transport equipment sectors. Alternatively, he shows that there is a higher level of apprenticeship training in the basic metals sector (dominated by Iscor), the government and provincial administrations, and the South African Railways and Harbours (11). What this indicates, according to Meth's reasoning, is that in the metal industry (excluding the Iscor dominated Basic Metals sector) training of skilled workers is low, and claims of skill shortages are in fact made with other purposes in mind:

> ...as a convenient smokescreen behind which co-optation of an incipient black petty-bourgeosie can proceed. (12)

It is the public sector, then, that provides large amounts of apprenticeship training. Management in the metal industry, on the other hand, are reluctant to train and acquire their skilled personnel via 'poaching' from other (larger) companies, and from the public sector. Meth further questions the existence of these alleged shortages, given the contrasting reality of a rising level of unemployment amongst qualified workers, for example, building workers, artisans, black youths with senior certificate qualifications, and unemployed whites (13). It is doubtful, Meth suggests, whether there are any opportunities for large scale upward mobility for black personnel. Given the limited size of vacancies and the small number of new job openings, as well as the ever-present possibility of increased employment from the ranks of the white unemployed and white women, black advancement prospects seem dim (14). For these reasons, Meth rejects Davies' thesis that the gravity of these shortages, as well as the limited expansion of the white population, necessitated the modifying of the racist division of labour, allowing for the partial upward mobility of blacks to relieve these shortages. Meth argues that the potential supply of skilled white workers had not been fully exhausted, and could easily meet the low level of shortages prevalent in the late 1970's and early 1980's (15). He is also critical of the 'mitigating effects' thesis constructed by Davies. Although he concedes that large outflows of foreign capital did occur in the crisis periods of 1976-1977, much of this was related to the repayment of short-term foreign loans. Also, relatively large inflows of foreign capital continued through this period. The state in fact was the major beneficiary of foreign loans - needed to finance its inflationary public sector expenditure. Davies does not comment on these complex capital flows. Meth writes that "these complex processes cannot be boiled down to a few simplistic assertions about mitigation" (16).

With reference to Davies' stress on industry's need to restructure production at a higher organic composition of capital (17), Meth shows statistically that there has been no major advance of capital intensity in South Africa's economy. Mechanization had advanced in some sectors: mining, basic metals and chemical products. However, this cannot be said to be the case for the economy as a whole. (18)

Meth rejects Davies' suggestion of increasing homogenization of the workforce. African operative labour has undergone substantial increases in worker power and skill ability, and contributes crucially to the production process. Davies refers incorrectly to the expansion of monopoly capitalist relations as the dominant process throughout the South African economy. This approach ignores the simultaneous expansion of competitive capital, particularly in the manufacturing sector, with small competitive firms proliferating on the periphery of the monopoly giants.

Thus for Meth, Davies presents a confusing and somewhat contradictory analysis. He stresses the emerging dominance of monopoly capitalism, mechanization and increasing capital intensity as the major processes occurring within the South African economy. Yet, in an almost uncritical acceptance of the 'skills upgrading' thesis, he argues that increased economic growth and profitability will require increased amounts of skilled labour. As Meth points out:

> A moment's reflection suggests that this line of reasoning is naive: capitalist technology has succeeded in reducing many skilled occupations to a mere shell. (19)

In response to this, Meth presents his own approach. He concedes that shortages of certain types of skilled labour have existed. For instance, the shortage of apprentices and artisans are real, but Meth suggests that high turnover rates and time loss between consecutive jobs are more important contributing factors to the problem of shortages than any real non-availability of skilled labour. Turnover rates are high for artisans and apprentices: 58% per annum (20). Low apprenticeship pay, the apathy and disinterest inherent in 'low-end' jobs, and the failure of skilled workers to identify with the goals of the company have been put forward as reasons for this high turnover rate. Managements themselves contribute to this high rate by poaching trained labour from other companies. The economic damage caused by this time loss, Meth argues, far exceeds the damage reputedly done by the alleged shortages.

Furthermore, Meth suggests that it is because of the apprenticeship system that there will always be a permanent disequilibrium in the demand and supply of skilled artisanal labour. The supply of craft skill is determined by the extent to which craft unions can influence and control entry and access into the trades. Craft unions will be resistant to any changes, determined as they are to preserve their 'skilled' status. It is in the context of this conflict that the skill shortages crisis must be understood. Skilled workers seek to preserve their status. Capital seeks to maximize profit and minimize costs. Hence, by advocating the skills shortages myth, and by deliberately exaggerating the extent and impact of these shortages, capital creates an ideologically prepared environment in which it can justify rationalizing the labour process. Employing larger numbers of cheap black labour, and relying less on skilled and costly white labour, are moves which capital can argue are 'necessary' in the context of these 'shortages'.

ADDITIONAL CONTRIBUTIONS TO THE DEBATE

Both sides of this debate have found academic support. For instance, Davies' outline has been uncritically incorporated within an article on the capitalist crisis of the mid-1970's entitled 'The state and the reproduction of labour power in South Africa' by M Hartwig and R Sharp:

> The shortages of skilled labour caused by the rapid expansion of manufacturing employment and the unavailability of white skilled and supervisory manpower, has proved a barrier to the further development of the productive forces. (21)

On the other hand, Chisholm, in her work on restructuring processes occuring in black education and training, has adopted the Meth position. She argues that there have not been significant shortages of technically equipped labour-power. However, Chisholm has stressed the shortages of ideologically-prepared new workers, this shortage being particularly acute in the context of increased worker militancy. As a result of the failure of schools since 1976 to create ideologically prepared school leavers, capital has sought both to lobby for changes in formal black education as well as to institute its own education

and training programmes on the factory floor. It has attempted to nurture 'good worker' attributes through these courses. It seeks to encourage stronger loyalties towards 'free enterprise' values and beliefs.

Chisholm sees the skill shortages crisis as a sophisticated construction by capital and reformist sections of the state to create a rationale for changes which could be perceived by the skilled white working class as a threat to their interests, and which therefore could not be brought about directly. It is an explicit attempt to 'win over a new common sense about education' which would allow for limited occupational mobility for certain strata of black workers, and which would promote their co-optation as well as a greater belief in the apparent benefits of the free enterprise system. (22)

John Davies adds to Chisholm's arguments about the ideological significance of the skill shortages rhetoric. He criticises Rob Davies for rooting his analysis of the reform process too firmly in the economic (focusing only on skill shortages at the point of production), and by so doing, ignoring the equally important ideological and political determinants of restructuring. The decade of the 1970's was a period of massive student and worker uprisings. Of greatest significance, is the fact that resistance practices underwent a fundamental transition from a general anti-apartheid stance to a more clearly articulated anti-capitalist ideological position. John Davies quotes a student protest pamphlet of the 1980 school-unrest period, which clearly illustrates this shift:

> We must see how...short term demands are linked up with the political and economic system of this country. We must see how the fail-pass rate in schools is linked up with the labour supply for the capitalist system. (23)

According to John Davies, reformist elements in the state, in alliance with the representatives of monopoly capital, had come to realize the urgency of restructuring the racial order in South Africa. This would entail allowing for the greater economic incorporation of certain strata of blacks, and the further devolution of local government powers to urban blacks in the hope of satisfying their political

aspirations. Most significantly, it involved initiating crucial ideological work that would generate new legitimacy for the oppressive racial order in South Africa, a new legitimacy that would more successfully obscure the real conditions of exploitation. The 'skill shortages' rhetoric was a key aspect of this ideological work, and it has come to play a major role in providing a rationale for restructuring in black education and training.

Webster, in his contribution to the debate, has argued that the skill shortages crisis served as an ideological and psychological onslaught against skilled workers. Management strategy was aimed at putting pressure on skilled workers to open up reserved jobs by challenging their capacity to find enough members to fill certain jobs. This shortages claim, when made by representatives of capital, was always combined with calls for the increased use of semi-skilled and less costly skilled African labour. Thus, it has always been capital's intention to use the shortages issue as a tool to help pave the way for the use of more African operative labour.

The above has proved to be a highly effective strategy. As Webster highlights in his work on the moulding trade, the craft unions ultimately succumbed to the pressure to have semi-skilled work opened up to African labour. The craft unions themselves finally opened their membership to Africans in the late 1970's and early 1980's. (24)

Webster suggests that the 'rising-skills' thesis, which argues that technical change and mechanization require increased skill levels, is an important allied concept. These liberal capitalist ideological messages are important, for they obscure the real processes of deskilling and structural unemployment that is occurring as a result of mechanization; they create false impressions concerning the value of education and training and the possibilities for occupational mobility. These false ideological constructs are significant in the sense that they act to distance capitalism from apartheid. Upward mobility and skills upgrading would flourish if it were not for the impediments to capitalist development imposed by apartheid policy. Rather, labour bottlenecks and skill shortages occur as a result of racial constraints on economic growth. Webster is thus suggesting that the skill shortages crisis has more to do with necessary ideological work, and far less to do with any real technical shortages being experienced at the point of production.

Schaffer, in her recent dissertation on 'South African industrial training discourse and policy, 1977-1982', presents similar arguments. The major thrust of her analysis has been to apply Gramscian concepts to the South African reality, identifying the nature of the 'organic crisis', and tracing the formative efforts of the state to establish a restructured and stable basis for social reproduction in South Africa. As Schaffer argues:

> During periods of intense social contest and change, the apparently automatic reproduction of the social formation is disrupted and the ideological unity is shattered with the result that social contradictions become apparent, and social agents experience an 'identity crisis' until mobilized by a new or a reformulated dominant ideological bloc. This process of mobilization was evident in the South African training discourse by the beginning of 1980 when the messages of the most powerful fractions of the state and capital developed a noticeable unity in form and content. (25)

Schaffer proposes that industrial training discourse - the urgent calls for increased black industrial training, and the strong emphasis placed on the promotion of free enterprise values - has been an important element of this ideological restructuring. In her explanation of the skill shortages 'crisis', she argues that its significance lies far more in terms of its contribution to this critical ideological work, than in terms of any need to address real technical skill shortages:

> The 'labour shortages' crisis talk (was) grossly exaggerated and distorted through the frequent repetition of opinions and hunches about such shortages until it formed part of conventional wisdom concerning the labour situation. (26)

There are thus two schools of thought within materialist scholarship on the skills shortages question. Rob Davies, Hartwig and Sharp argue that real shortages of technical and supervisory labour emerged and reached crisis proportions during the mid-1970's, thereby necessitating fundamental restructuring of the racial order in South Africa. Alternatively, Meth, Chisholm, Webster and Schaffer argue that there were no significant shortages of skilled labour, but rather,

that the skill shortages rhetoric was necessary to perform certain ideological tasks crucial for continued capitalist stability and prosperity. These writers have argued that reform and restructuring in South Africa in the late 1970's was necessitated by the need to curb and contain the massive upsurge in worker and student struggles during this period. These struggles created a crisis of substantial economic, political as well as ideological proportions. It would be incorrect to stress only the economic aspects of crisis as the major determining influence for reform.

NEW INSIGHTS INTO THE SKILL SHORTAGES QUESTION

The findings contained in this study concerning the nature of industrial skills in the South African metal sector have highlighted a number of shortcomings in the existing skill shortages literature. It is precisely because of the persistence of jobbing production, the on-going dependency on skilled artisanal labour and the emergence of reskilling processes, that various categories of skilled and highly skilled labour have been in great demand. Heightened by the skill deficiencies prevalent amongst existing personnel, this dependency on artisanal labour has led to certain shortages being experienced in these categories of skilled work. These emerged in the mid-1970's and continued into the early 1980's. The extent of these shortages has not been clear, primarily because of the unreliability of government-published statistics. Certainly, these shortfalls have never reached crisis proportions, and the figures in Table 4.3, of a 3.3% average vacancy rate for all occupations, seems to be a realistic measure. However, as mentioned earlier, shortages in particular occupations during the boom period of 1979-1981 did reach crisis proportions, attaining vacancy rates of greater than 10 and 15 percent. It is now necessary to examine the nature of these shortages in more detail.

Skill Shortages and deficiencies amongst Artisanal labour

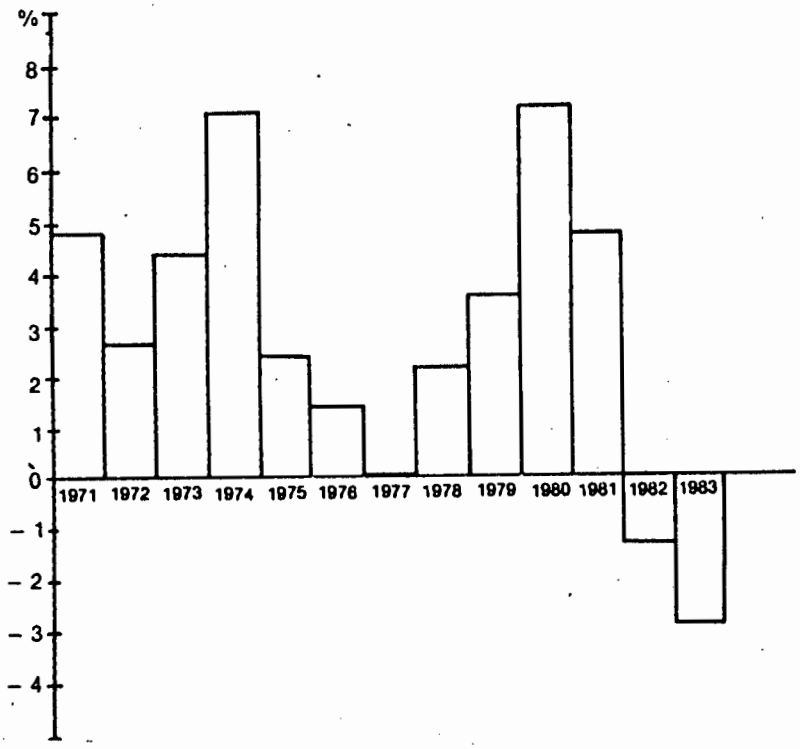
Because of the persistence of jobbing production and the continued reliance on skilled artisanal labour in the metal industry, qualified artisans were in short supply, particularly during the boom periods of

1973-1974 and 1978-1981. This has occurred because the metal industry, the largest recruiter of apprentices and artisans, is highly responsive to cyclical fluctuations in trade. As a consequence, during boom conditions there is a substantially increased demand for artisans. During economic downturns, however, demand for artisans declines. However, the 'qualification-of-artisans' cycle lags far behind the business cycle, resulting in an acute shortage of skilled labour precisely at times when the expansion of jobbing output requires increased numbers of artisans. This lag problem is highlighted by Table 4.5 illustrating the % changes in apprentices attaining artisanal status, and Figure 4.1 which illustrates the fluctuations in economic activity in South Africa:

TABLE 4.5: ANNUAL % GROWTH IN THE NUMBER OF APPRENTICES ATTAINING ARTISANAL STATUS,1970 -1983. (27)

YEAR	METALWORKS
1970-71	5.0
1971-72	-11.2
1972-73	- 6.4
1973-74	7.7
1974-75	7.9
1975-76	6.3
1976-77	77.8
1977-78	-27.6
1978-79	2.9
1979-80	-16.6
1980-81	- 8.8
1981-82	21.2
1982-83	12.6

FIGURE 4.1: REAL % CHANGE IN SOUTH AFRICA'S GDP, 1971-1983. (28)



Thus, as the above information indicates, the realities of apprenticeship recruitment in South African industries are such that as production increases, so apprenticeship recruitment numbers are increased, and vice-versa. However, difficulties emerge in that these increased numbers of apprentices qualify as artisans only four years later, in the midst of the economic downturn. During boom periods, however, acute shortages are experienced because of insufficient forward planning. These problems have been widespread in the metal industry. One response amongst the larger companies to this problem of lag has been to establish Apprenticeship Training Centres: Dorbyl, Scaw, ICAL, Steinmuller and Haggie opened training centres in the mid-1970's as a response to their artisan shortages problem. The Haggie representative commented:

> To insulate ourselves from these shortages we actually increased the size of our Training Centre. In 1982 we had a high total of 95 apprentices. So we are very aware of the shortages, but we are creating our own supply. (29)

SEIFSA established a Training Centre in Benoni in 1981 with the purpose of helping:

> ...the small companies train one or two apprentices so as to cope with the artisan shortages. (30)

As mentioned in Chapter Three, other artisanal skill shortages and deficiencies have been experienced in the metal industry. For example, new technologically advanced skills have been required of artisans - pneumatics, hydraulics, computerization, electronics - and many new highly skilled occupations have emerged. It is particularly in these areas that serious shortages of qualified personnel have been experienced. The absence of highly skilled artisans and technicians in production, as well as the lack of scientific and R&D personnel are major impediments to industry's further technological and economic expansion. A glance at the figures contained in Table 4.1 confirms the high vacancy rates for these professions. (31)

But shortages have not been purely of a quantitative nature. The quality of artisanal labour in South Africa has been extremely low. This is reflected in the number of apprentices who actually pass their trade tests:

TABLE 4.6: SUMMARY OF TRADE TEST RESULTS. (32)

YEAR	NO OF APPRENTICES TESTED	% WHO PASSED
1978	12 055	50
1979	11 386	53
1980	9 016	56
1981	9 098	58
1982	10 604	56
1983	12 757	51
1984	14 577	50
1985	16 565	53
1986	14 757	52

In other words, almost 50% of apprentices fail their qualifying tests. However, many of these failed apprentices become qualified artisans through the system which is known as 'the effluxion of time': that is, after four years of experience, the apprentice automatically qualifies as an artisan and acquires a Trade Certificate (33). The number of apprentices who have benefited in this way are as follows:

TABLE 4.7: NUMBERS OBTAINING ARTISANAL TRADE CERTIFICATES THROUGH THE EFFLUXION OF TIME (34)

YEAR	TRADE CERTIFICATES
1979	216
1980	304
1981	310
1982	181
1983	149
1984	172
1985	170
1986	165
TOTAL AWARDED BY 1986	4 382

A leading South African economist, W H Hutt, has explained this high failure rate in the following way:

> Administered in the spirit of the civilized labour policy, the Apprenticeship Act (now the Manpower Training Act of 1981), with its effluxion by time clause (clause 27(1) of the 1981 Act) has assisted in reserving the better remunerated employment for whites, but in such a way that it has weakened the incentive for self-improvement among them. Thus, whilst it developed facilities for training in technical colleges, and made attendence compulsory for apprenticeships, it never insisted upon them passing the examination in order to qualify. Consequently, the majority have never treated seriously the expensive facilities provided. They became journeymen merely through the passage of time. (35)

Added to this technical/practical skill deficiency, is the fact that many of the 257 449 apprentices and artisans employed in South Africa presently only have a Standard Seven or Eight level of formal education. (36)

This quality deficiency becomes a serious problem in production for two reasons. Firstly, jobbing production often requires well-qualified and versatile artisans to do difficult and complex work processes which cannot be mechanized. Many artisans in employment today do not meet these standards. As Mr G Harris of RH Harris elaborated:

> So many welders today have been trained in only one specific welding process for one job application. They are partially trained. This is a problem for us smaller companies, for we need the all-round welder who is capable of doing our high quality pressure welding. (37)

ICAL put an advertisement in the newspapers at the beginning of 1986 for fully qualified welders. 560 applied, but only 12 passed ICAL's stringent entry tests. The ICAL training officer suggested that this low pass rate was "surely a good measure of the extent of the quality deficiency we face today". (38)

The second problem is that most artisans in South Africa today do not have sufficient skills to perform the new tasks which are increasingly being expected of them - the managerial, human relations and supervisory functions. This need to restructure the skill capability and contribution of artisan, is linked to similar processes of changing the roles performed by technicians and engineers. Mr Naude of the NTB explained this:

> At least 20% of the work of engineers should be done by the technician. But there are too few technicians....To complicate things further, the artisan should be doing some of the managerial work the technicians have to do, but they are obliged by law to do work that the operator could do. This is where the skills shortage arises....The engineer should only be involved in the research, planning and future development of production in the industry. The technician could fill the gap at the HLM (managerial, administrative, supervisory) level....The artisan should also move up to fill this gap.(39)

Burkes of Scaw Metals had similar views:

> 90% of present artisanal training is wasted...what needs to be done is that the 90% be broken up into semi-skilled components. The more semi-skilled work you can take off the artisan, the more you can allow him to advance into other skill areas... allow him to become a better manager, a better organiser, a better planner...Our problem is not so much a skills shortage problem as much as it is a mismanagement of manpower problem. (40)

Major occupational reshuffling is currently required: changes that would free the engineer and technician to do more R&D work, allow artisans to do more managerial, ideologically orientated and labour control type work. These changes would also open the way for operatives to do more of the technical tasks in production. Various state investigations and commissions, including the De Lange report on formal education, the NTB report on artisan training in South Africa, and the Goode Committee investigation into the role of engineers and technicians, have all highlighted the urgent need for the restructuring of the functions performed by these differing levels of labour. (41)

Skill deficiencies amongst operative labour

Shortages of artisans and other highly skilled labour categories have not constituted the full range of shortages. As a result of the massive growth of African semi-skilled labour, most of whom were previously unskilled, certain skill shortages and deficiencies have been experienced. The technical and ideological skill requirements of operative labour in the metal industry have already been dealt with: qualities required are for example, a degree of literacy, numeracy, technical comprehension, communication skills, paperwork skills, machine 'responsibility', 'good worker' attributes, and so forth. However, as a result of inferior 'Bantu Education' and inadequate industrial training, most African workers groomed for secondary market jobs, have not had sufficient education and training to develop these skills. Neither have they received an adequate general education which can serve as a foundation for further development. These skill and educational deficiencies present serious problems for capital which requires a flexible operative labour force - that is, workers who are capable of being easily retrained on-the-job in the use and application of new machine technologies. In mechanized work processes, operative tasks change rapidly and new applications emerge as technology advances. Dr K Hartshorne, ex-director of the Bantu Education Department, summed up the problem:

> The real root of the problem lies in the general inadequacy of black basic schooling. If your basic educational foundation is inadequate...having operative labour which hasn't enough numeracy, communicative language, and so on... then there is nothing to build upon....What there is definitely a shortage of, is black men and women who have a sufficient platform of

> background education, which can enable them to take off and benefit from something more than simply that limited skill.... There is a shortage of an ability to move into an employment situation and to benefit from it. It is a shortage of skills-upgrading potential. (42)

Precisely because African workers have been inadequately schooled for operative tasks, capital has begun lobbying the state for improved basic education for black South Africans. Capital itself has channelled substantial amounts of finance into formal black education. These issues are taken up in Chapter Five of this study.

Shortages of HLM

Lastly, much has been said about the shortages of HLM in South Africa, and particularly the need for black South Africans to be properly equipped to fill these positions:

> It is clear that the highest priority is increasing the contribution of the Non-white groups to the country's HLM, since the contribution made by whites is apparently already largely utilized. (43)

The last decade has witnessed a substantial inflow of black workers into these occupations. Many of these occupational categories have been acutely understaffed by mainly white employees with generally low levels of education. Emerging at the same time as this inflow of black workers, have been calls for higher educational entrance requirements for these positions. Chapter One argues that the higher educational entrance qualifications for these HLM jobs must be understood in the context of the following four factors. Firstly, there has been a general rise in the educational levels of urban blacks over the last decade. Secondly, readjustments of the racially constructed segmented labour markets in South Africa act to downgrade the value of educational credentials held by black South Africans. Thirdly, educational credentials play an important ideological role in allocating educated agents to HLM (petty bourgeois) occupations, ranking them hierarchically one against the other. Fourthly, through increased educational levels, capital hopes that certain ideologically defined values conducive to capitalist profitability (for example,

greater loyalty to company identity, stronger aspirations to free enterprise ethics, etc) can be more easily obtained. This complex educational restructuring amongst HLM jobs can be seen, then, as a way of maintaining labour control in vast state and monopoly corporation bureaucracies (where most white collar HLM jobs are located) through the maintenance of an educationally-based hierarchical division of labour. The resultant outcome is that employers of HLM are requiring well-qualified blacks for their unfilled positions. These black personnel are in short supply.

Skill shortages reassessed

It is thus evident that skill shortages have been a reality, some of which continue to exist in the South African metal industry today. Such an observation conflicts with much of the argument contained in the skill shortages literature. As was suggested earlier, this is because of a number of shortcomings contained in this literature. Firstly, arguments by Rob Davies and counter-arguments by Meth are presented at an overly statistical level, abstracted from the real processes prevalent at the point of production. Both authors question the value and the reliability of the government produced data. Nonetheless, both use these statistics on which to base fairly firm arguments to either defend or reject alleged evidence of skill shortages in the economy. Thus, although Davies was not incorrect in stressing the shortages of certain strata of technical labour, his mistake was to base his arguments on these unreliable statistics, and not on a detailed reading of labour processes prevalent 'on-the-ground'. On the other hand, Meth, Chisholm and Schaffer have correctly stressed the ideological aspects of 'skills' required in production, and the ideological functions performed by the skills shortages rhetoric. However, they overstress this ideological component, and disregard, or in fact reject, the reality of concrete, technical skill shortages.

Secondly, most of these writers ignore the preservation of skill as a result of working class struggle. In this regard, Webster makes a useful contribution in his study of the moulding trade. Here he shows how skills have historically been preserved and perpetuated as a

result of the resistance of skilled workers against job dilution. He has also highlighted the increasing ability of African operative labour, as a result of their improved structural position in production, to defend job security and demand on-going skills upgrading. However, an adequate approach to industrial skills required in the South African economy, can only be obtained by examining all three components of skill simultaneously. This has been the major shortcoming of the writers mentioned above, all of whom have only focussed on one specific component.

Thirdly, many of these scholars, as a result of their dependence on statistical data, have ended up overstressing the dominance of monopoly capitalism in the South African economy, thereby ignoring the co-existence and growth of competitive forms of capital in the manufacturing sector, particularly the metal industry. Furthermore, descriptions of monopoly corporations have tended to be characterized simplistically by references to large scale mass-production runs, deskilling and homogenization tendencies. The reality of jobbing production and the persistence of skilled artisanal labour is overlooked. The enhancement of semi-skilled worker power and skill is unaccounted for.

Lastly, these scholars have missed the key process observable 'on-the-ground': that is, the co-existence of both deskilling and reskilling tendencies in the economy. It is this key observation that has enabled new light to be thrown onto the skills shortages debate. Precisely because of reskilling tendencies, new skills have emerged for which there have not been adequately trained personnel readily available. Occurring simultaneously though, is the seemingly contradictory process of job dilution and deskilling. However, the existence of one process does not deny the existence and importance of the other. Unfortunately, many labour process scholars in South Africa have stressed only the deskilling tendencies. (44)

Thus, in this micro-study of the metal industry in South Africa, very definite evidence has emerged of skill shortages. They have emerged in the context of significant changes to the production process in South Africa over the last two decades: changes which have affected

technology and the labour process, as well as changes which have brought about the partial dismantling of the racist division of labour. Furthermore, they have not been only the shortages most commonly identified in the standard commentaries on the skill shortages question, that is, technical and artisanal shortages. Rather, these shortages are located throughout the whole range of occupational categories, and they take the form of either technical or ideological skill shortages, or a combination of both. Of course, these skill shortages must also be seen as part of capital's strategy in its struggle against the strength of skilled labour. Capital's deliberate exaggeration of the extent of the shortages has been aimed at preparing the ground for the dilution of skilled labour and the increased employment of 'necessary' cheaper African operative labour.

FOOTNOTES

(1) NMC, High Level and Middle Level Manpower in South Africa, 1987, p 25. See also J L Sadie, Human Resources in the Hybrid Economy (Research Unit for Economic Demography, Stellenbosch University, 1983) p 2.

(2) NMC, High Level and Middle Level Manpower in South Africa, 1987, p 20. This report defines HLM and MLM as follows: HLM is defined as highly skilled workers with at least two years of education and training post matric. All professional and semi-professional occupations and posts for technicians, managers and executives are included here, as well as a few transport and service occupations. A portion of farmers and farm managers are likewise included here. MLM includes skilled occupations for which at least a number of weeks or months of training within and/or outside the working environment is needed. In most cases an educational qualificaton of at least Standard Seven or Eight is needed for the practice of such occupations. This category includes clerical workers, a certain percentage of sales workers, holders of blasting certificates and other skilled mined workers, skilled transport workers, foreman and supervisors, a certain percentage of farmers and farm managers, certain service workers, artisans and apprentices. Source: p 3.

(3) Department of Manpower, Report of the NMC for...1982, Table 4.5, p 98.

(4)NMC, High Level and Middle Level Manpower in South Africa, 1987, p 19.

(5)Ibid, p 22.

(6)Interview, Dr H J Reynders, Chairman of the National Manpower Commission, Pretoria, 19/6/85.

(7)R Davies (1978) p 182.

(8)Ibid, p 184.

(9)Davies quotes net inflows of long-term Investment as having dropped as follows: R1 561 million for the period 1975/1976, and R 452 million for the period 1976/1977. Also a net outflow of R121 million was experienced in 1976/1977. Source: Davies (1978) p 188.

(10)Meth (1981) p 5.

(11)C Meth, 'Trade unions, skill shortages and private enterprise', The South African Labour Bulletin, 5 (3) 1979 p 80.

(12)Meth (1981) p 1.

(13)It is estimated that by 1987 there will be a 4 % unemployment rate amongst white workers with Standards 8, 9and 10. Source: Meth (1981) p 13.

(14)Meth (1981) p 12; He writes that in 1970 there were 159 084 non-economically active white women with Std 10, 42 046 non-economically active white women with Std 10 and Diplomas, and 14 702 non-economically active white women with degrees.

(15)C Meth, 'Class formation: skills shortages and black advancement', in South African Review, (1) 1983 p 197.

(16)Meth (1981) p18.

(17)Davies (1978) p 189.

(18)Meth (1981) pp 14-15, and Table 6, p 24.

(19)Meth (1981) p 3.

(20)Meth (1979) p 76.

(21)M Hartwig and R Sharp,'The state and the reproduction of labour power in South Africa.', in Kallaway (1984) p 317.

(22)See L Chisholm and P Christie, 'Restructuring in education', in South African Review, (1) 1983; L Chisholm, 'Training for capital: the De Lange reports', Perspectives in Education, (unnumbered edition) May 1982; Chisholm (1983).

(23)J Davies, 'Capital, state and educational reform in South Africa', in Kallaway (1984) p 357.

(24)Webster (1985) pp 156-177.

(25)Schaffer (1985) pp 215-216.

(26) Ibid, p 205.

(27) HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985, Table 3.10 p 72.

(28) Ibid, p 69.

(29) Interview, Mr R Edwards, 19/2/86.

(30) Interview, Mz. D Peveritt, 20/6/85.

(31) White Paper on the Kleu Study Group on Industrial Development Strategy (1985) p 9. In this section of the report, concern is expressed at the lack of Research and Development (R&D) personnel in South Africa.

(32) Department of Manpower, Report of the Director-General for ...1983, Table 4.7, p 48; Department of Manpower, Report of the Director-General for ...1986, p 74.

(33) See Republic of South Africa, Manpower Training Act, Government Printer, Pretoria, 1981, Clause 27 (1).

(34) Department of Manpower, Report of the NMC for...1983, p 387; Department of Manpower, Report of the Director-General for ...1986, pp 62, 78.

(35) As cited in Webster (1983) p 215.

(36) HSRC/NTB Investigation into Artisan Training in South Africa, 1985, p 22.

(37) Interview, Mr G Harris, 28/2/86.

(38) Interview, Mrs P Vorster, 17/2/86.

(39) Interview, Mr Naude, Chairman of the National Training Board, Pretoria, 25/6/85.

(40) Interview, Mr T Burkes, 11/2/86.

(41) See Human Sciences Research Council (Investigation into Education), Report of the Main Committee of the HSRC Committee into Education: Provision of Education in the RSA, Pretoria, 1981; HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985; Department of National Education, Report of the Committee of Inquiry into the Training, Use and Status of Engineering Technicians in the RSA, (Chair: R C J Goode), unnumbered, Government Printer, Pretoria, 1978.

(42) Interview, Dr K Hartshorne, former Director of the Bantu Education Department, presently the Director of the Centre for Continuing Education, Wits University, 24/6/85.

(43) NMC, High Level Manpower in South Africa, 1980, p 12.

(44) For an example of the tendency to overstress deskilling, see the editorial comment in the South African Labour Bulletin,

entitled: 'Critique of Wiehahn and the 1979 Amendment to the Industrial Conciliation Act', SALB, 5 (2) 1979 pp 70-71; see also Chapter Three of Schaffer (1985), for similar analytical errors.

CHAPTER FIVE CAPITAL'S INVOLVEMENT IN BLACK EDUCATION AND INDUSTRIAL SKILLS TRAINING

> All our strategies for growth and our plans for industrial development could be doomed to failure unless we are able to produce a pool of educated and motivated people who have a stake in the development of their country and who aspire to positions of responsibility at all levels in the South African economy. A commitment is needed by those in power to work for the necessary change, for waiting in the wings are radicals who have little sympathy for white people, who regard the free market as the free white market, and who see a limited future for the white community in this country. These radicals are the product of Bantu Education. (1)
>
> (Michael Corke, Principal of a non-racial school, financed by the private sector.)

This chapter attempts to explain why capital, particularly the large monopoly corporations, have placed such a strong emphasis on the need for state reform and private sector involvement in the black education and training arenas.

Reducing the mismatch between education and the world of work

Representatives of capital have been particularly concerned, since the mid-1970's, with the inability of the present educational system to meet industry's manpower needs and skill requirements. In 1980 at a Johannesburg conference entitled 'The development and training of black employees in South African Industry', a leading industrialist, Mr J Brett, summed up business leaders' attitudes in this regard:

> 'Education' rarely researches its market place to identify, specify and analyse the skills, attributes, characteristics, aptitudes and human qualities needed by inhabitants-to-be of the business world. (2)

> It seems that whilst some role-playing is permitted prior to qualification, that little if any actual interface with workplace conditions, populations, environments, systems and lexicology deemed necessary, actually happens. (3)

> Their (the newly-educated school leavers) behavioural patterns indicate to me that they have not been taught to budget their time and resources, let alone been monitored and corrected when impunctual or wasteful. Also, a willingness to comply with deadlines, rules and behavioural patterns intrinsic to business scenario's, is often absent. Sometimes this amounts to truculence or dumb insolence. I think young people are spoilt today by their parents, by the schools and universities. They seem to lack a sense of urgency, dedication, loyalty and service. (4)

Similarly, the recently released Project Free Enterprise report, involving almost 900 business organisations throughout South Africa and published by the UNISA School of Business Leadership, had the following conclusions regarding workers educational and skill abilities:

> Pupils leave school before they obtain suitable vocational qualifications, skills or appropriate value systems that will be of service to them. This neglect of vocational training is the effect of a bias in the South African educational system towards an 'academic value system'....There should be a move towards a balance between general formative preparatory education and career education which relates better to the manpower needs of the country... A mentorship and advisory interrelationship between members of the private sector and school pupils and staff could facilitate the bridging of schooling activities and socio-economic needs of the business sector. (5)

In an interview with the Training Officer of a large engineering firm in Vereeniging, the reason for these education and training problems was identified as:

> ...a case of incompetence amongst the people at the top in Education. They believe they're the only ones to decide on education. (6)

Capital has sought changes in educational provisioning which would rectify this 'mismatch' between schooling and the world of work in three important ways. Firstly, changes are required that would serve

to improve the supply of manpower skills needed in the South African economy: from operative level through to artisanal and technician personnel, through to white collar administrative personnel. Such changes would serve to defuse the shortages in certain key professions mentioned in Chapter Six. Secondly, changes are sought which would create a firm basic educational foundation. Such changes would facilitate any subsequent occupational training and retraining of workers needed by industry. Lastly, a restructured educational system is needed in order to enhance appropriate worker value systems with regard to productivity, punctuality, motivation, and ultimately, with regard to a more favourable worker perception of capitalism.

These changes required in the functioning of the black education system need to viewed in the context of the transformation which has taken place in the labour process since the early 1970's. As Chapters One and Two have outlined, the consolidation of monopoly capitalist relations of production in South Africa since the late 1960's/ early 1970's, has led to a massive expansion of black workers into both technical as well as new petty-bourgeois white-collar occupations. Bureaucratic control emerged out of this transformation of the labour process, primarily as a response to the need to find new ways of stabilizing, organizing and controlling this expanded labour force. As part of its package of control, Bureaucratic control and the independent primary labour market associated with it, has placed great emphasis on the attainment of higher educational credentials. These credentials provide a crucial differentiating mechanism whereby educated agents are allocated to the vast spectrum of differentiated independent primary jobs. This has become a priority for capital in its current pursuit of the creation a black middle class. The allocation of newly trained black petty bourgeois agents is directly bound up with the greater acquisition of educational credentials.

The emergence of bureaucratic control has also resulted in a greater stress on what this study has defined as the ideologically-constructed component of skill. This has been in large part a response to the intensification of working class struggles during the 1970's and 1980's. 'Good worker attributes', a powerful fostering of occupational consciousness, enhanced company loyalty, increased job mobility, increased personal incentives for greater individual productivity - all of these are key components of capital's present initiatives in the black education and industrial training arenas. (7)

Attempts at curbing unrest in black schools

Mass uprisings of black students in 'Bantu Education' schools exploded throughout the country in 1976. These explosions occurred again in 1980 and in 1985. Capital was deeply perturbed by the extent and depth of these struggles. As Judge Steyn of the Urban Foundation warned:

> No free enterprise system can survive in circumstances of persistent social disruption and disorder (8)

'Bantu Education' itself was the major generating force behind this insurrection, both via its blatant racism and inadequate provisioning of schooling, as well as through its perceived irrelevance in terms of future employability. Jakes Gerwel, rector of the University of the Western Cape, explains this phenomenon:

> The advantages of the present system are not seen by the pupils as sufficiently rewarding to keep them within the system. They have more faith in rewards possibly resulting from disorder, than in rewards offered by an unacceptable education system. (9)

Hence, the struggles in 'Bantu Education' schools have had three important outcomes: they have heightened the politicization of black education; they have generated widespread social unrest; and with the large numbers of youths leaving school and seeking employment, they have contributed to increased worker militancy on the shopfloor.

The response of capital to the crisis in black education has mainly taken the form of financing the infrastructural development of black education, extra-tuition schemes, bursaries for studies at higher/overseas institutions, and so forth. Also, capital has been extremely vocal in lobbying the state for urgent changes to deracialize education, equalize opportunities and bring educational provisioning under the direction of one government ministry. In doing all of this, capital clearly hopes that improved educational opportunities will win the allegiance of most if not all of the black middle class, for whom 'Bantu Education' has always been a major source of bitterness. It is also hoped that improved educational facilities will be seen as a beneficial agency, as an important instrument for black occupational mobility and peaceful change.

Ultimately, capital hopes that through its benevolent involvement in black education, it will engineer a new legitimacy both for the discredited educational system, as well as for capitalist society at large. Rosholt, the Chairman of Barlow Rand, reported in the 1984 company Annual Report that it was because of inadequate education that blacks were unable to particpate meaningfully in the free enterprise system. He warned:

> It is important that blacks, as the majority group, should be given the opportunity to fully understand and to participate in the benefits of the free enterprise system because if they did not, their bias will undoubtedly be towards the socialistic systems which have failed in so many African countries....The private sector can contribute greatly (to the provision of a more adequate education system). (10)

'Habituating' the South African workforce

Unrest within the workplace has proved equally disconcerting for capital. As was suggested in Chapter Two, employers have never seriously attempted or succeeded in the past to 'habituate' ideologically their workforces into accepting the 'benefits' of what the bourgeoisie like to call the 'free enterprise system' (11). Sitas defines this 'habituation' process as follows:

> To ensure stability, punctuality, hardwork, respect of property, loyalty, etc...a set of normative orientations, or values (which) have to be internalized by the working class....However, white South Africa has in the past shown little interest in integrating urban blacks through assimilationist policies and they have been unable to sincerely struggle over the 'soul'of African workers. (12)

In the absence of effective ideological work in the factories on the part of capital, work-based and hostel-based resistance cultures have emerged. These activities involve:

> A culture of restricting output, absenteeism, dodging work and trying to gain as much as possible from the world of slavery. (13)

Sitas cites many cases of how workers have resisted management attempts at increased productivity. A typical example of workers attempts at undermining 'time and motion' studies in a metal workshop on the East Rand, is illustrated by a metal worker:

> The funniest thing was the time and motion. When they come to time your work; the white supervisor talks to the boilermaker in our section. He comes to us and says there will be some funny men coming with a clock and they will do all kinds of things to you. They will tell management that you work slow. Don't be stupid when they come, work slower than usual. When management says you must work faster tomorrow, you do it and it's still the same speed. (14)

The Project Free Enterprise initiative, mentioned earlier in this chapter, was established specifically to examine worker perceptions of capitalism, as well as the implications of their exclusion from the benefits accruing from the system. Whilst all workers are exploited under capitalism, because of the racial dimension of the South African system, this Project was primarily aimed at black workers. It concluded:

> The exclusion of workers from meaningful participation (in the free enterprise system) undermines the very essence of organisational survival - quality, productivity and growth. (15)

In analysing worker beliefs regarding capitalism, the Project noted that these perceptions reflect a high level of resistance towards business and the so-called free market which is seen as being inherently exploitative. Workers view the 'free market system' as having very little benefit for them and as being conducted for the benefit of white management alone. They perceive that the outputs and benefits accruing from production activity have very little direct relevance for them as the suppliers of labour inputs. For this reason there is minimal motivation for the worker to improve his labour inputs (16). The Project consequently warned:

> The economic goals of stability, productivity and development cannot be successfully pursued unless the perceptions of exploitation and discrimination are corrected...(they) make the development of an environment for constructive negotiation and the improvement of rewards and benefits for all employees impossible....These perceptions act as major deterrents to any improvement in quality and productivity. (17)

Capital's newly found concern for the 'habituation' of the African working class coincides directly with the explosion of black community and labour unrest in 1976 and afterwards. Sitas argues that the spillover of 'street-resistance-culture' into industry resulted in the emergence of a strong dislike of wage labour and a perception of work as a wage form of slavery. Capital was by now aware that it was in the schools and townships that black anger and frustration were being bred, and that this frustration was spilling over into the factories with potentially explosive consequences. Remedial action was thus urgently required and the previous accommodationist stance of business towards apartheid policies was increasingly untenable. Project Free Enterprise made this explicit in its recommendations to government:

> There are certain distinct socio-politico and socio-economic issues which would have to be addressed in order to change worker perceptions. These issues may be viewed as the foundation upon which dissatisfaction and the perceptions of discrimination rest....A lack of constructive and urgent attention to the implementation of corrective strategy around these macro issues would make it impossible to create an environment in which the worker will commit himself to the growth and development of business in a free market economy. (18)

Capital was proposing both fundamental restructuring at a societal level, and the implementation of factory based worker-participatory, reward-oriented systems of labour management. Such reform would equip capital to fight competitively in the on-going hegemonic struggle for the 'soul' of the African working class.

Moving away from racial differentiation

Chapter One argued that the way in which educated agents are allocated to positions in the occupational structure has changed fundamentally since the upheaval of the mid-1970's, and particularly since the formal abolition of job reservation in 1979. This change has involved moving away from racial differentiation towards a more class-based system of exclusion. Educational qualifications have become increasingly more important as a differentiating agency for access, particularly to HLM (petty-bourgeois) jobs. Because of this

phenomenon, capital has been determined to expand the educational opportunities for an emergent black middle class in South Africa. Capital has continually stressed the importance of job advancement programmes which would open up primary market job opportunities for credentialed black petty-bourgeois agents. This is so, not so much because capital has suddenly acquired a strong 'humanitarian concern' for the greater provisioning of educational facilities for blacks, but rather because education has become a central aspect of a new class-based system of occupational/social status differentiation. Capital hopes that this system will be perceived to be more legitimate than the previous system of racial exclusion.

The extent of this broadening of educational opportunity is actually very limited. Capital is only committed to providing opportunities for those black workers in or moving into, subordinate and independent primary jobs. This involves a minority of the urban African workforce. Educational reform will consequently be of no significance to the millions of migrant workers and urban dwellers in secondary market jobs, nor will it benefit rural outsiders who have been completely excluded from this new dispensation in education.

Implementing Corporate Social Responsibility: Rescuing capitalism from Apartheid's crisis

The mid-1970's and 1980's to date, have been a period of mass upheaval and resistance, both against the apartheid system as well as against capitalist exploitation in the workplace. For most working class blacks, capitalism and apartheid are closely intertwined: their experience of racial/national oppression is inseparable from that of their class exploitation. Because of this reality of the South African way of life, the past decade of resistance has witnessed the forging together of struggles both in the workplace and against the apartheid state. This is concretely evidenced in the very close working relationship that has been constructed in struggle between COSATU, the giant progressive non-racial trade union organisation, and the UDF, the 'Charterist' oriented and community-based political movement (19). Saul, in his study of the South African crisis, writes of the 'simultaneity' of struggles around racial oppression and class exploitation:

> It was the search for a conceptualization that would help make sense of the lived simultaneity of the national and class

> struggles that led Gelb and myself to emphasize the interplay of 'popular democratic' and 'proletarian' assertions...we argue that the possibility that these will come to reinforce each other is at least as great as the possibility that they will stand in contradiction. Nor are 'popular democratic' assertions ...presented as being any less real or less legitimate under South African conditions than currents that might be expected to place socialism more firmly on the agenda...we suggest that the popular-democratic cast of the struggle in South Africa can actually help give a more broadly revolutionary thrust to working class self-assertion than might otherwise be the case. (20)

This simultaneity of struggle is not simply an abstract concept generated by academics to describe the specificities of struggle against the racial capitalist order in South Africa, but it reflects a concrete understanding of the direct link between racial oppression and class exploitation which has permeated through to the ordinary membership of trade unions and mass organizations. A COSATU shop steward illustrated this point succinctly:

> We have long recognised that industrial issues are political, and the struggle for workers rights on the shop floor cannot be separated from the struggle for the freedom of our people. (21)

A consequence of this advancing liberatory movement has been the growth of an increased commitment to socialist transformation in a future South Africa. The UDF believes that the route which it has chosen, national democratic struggle (a multi-class strategy of resistance), is the only vehicle which will make socialism a reality in a future South Africa. By building structures of people's power, national democratic struggle ensures the development of people's democracy, which in turn will enable working people to seize the leadership initiative in struggle. Socialism and working class leadership are not assured merely by a commitment to socialist principles; the UDF argues that this has to be built in national-democratic struggle (22). COSATU, on the other hand, has adopted a far more explicit commitment to socialist transformation. At its Second National Congress in 1987, COSATU affirmed the belief that:

> The struggle against national oppression is inseparable from the struggle against capitalist exploitation.... The unity of the working class based on the principles of non-racialism, democracy

> and workers control is of paramount importance in our struggle.... While we are involved in a struggle for national liberation, true liberation can only be achieved through the economic and social transformation of our society to serve the interests of the working class....Workers in our country are not only striving for better conditions in the mines, factories, shops and farms, but also for a democratic socialist society controlled by the working class. (23)

Having realized the threat of this growing tide of anti-capitalist sentiment, capital has sought over the last decade to demonstrate that capitalism and apartheid were not inextricably linked. It was necessary to demonstrate in a concrete way the benefits of the 'free enterprise system' to a sizeable sector of the black community. This was the task of 'Corporate Social Responsibility'. Judge Steyn of the Urban Foundation defined the concept in the following way:

> It is hardly necessary to stress the interest the private sector has in the promotion of the free enterprise economic system. An essential element in this promotion is the opening of the free enterprise system to the full and profitable participation by the black community. This is a complex issue, in which the long history of disadvantages suffered by black businessmen must be kept in mind. However, the private sector should be prepared to take responsible action beyond that required simply to increase its share of the market action, but which will actively assist the extension of the free enterprise economy to all. (24)

This concern by capital for improving the quality of life of its workforce was related to two threatening tendencies: the growing hostility towards it amongst the organized African working class; and the distortion imposed on its functioning by the racist apartheid system during the 1970's and 1980's. The second factor has become a central focus of capital's opposition to apartheid. The successful reproduction of labour-power and the realization of surplus value in South Africa involves not only the imposition of extra-economic coercions to compel workers to labour at low wages (as so many Apartheid structures in the past have been created to achieve), but it also involves the provision of a broad range of facilities esssential

for the maintenance of a stable and productive workforce. These facilities include housing, transport, health-care, education and training, a minimal standard of living, amongst many more. In South Africa, the government has signally failed to provide these facilities. The then American Ambassador to South Africa, Herman Nickel, speaking at a conference on 'Corporate Social Responsibility' in Johannesburg in 1985, made it quite clear why the provision of these facilities was essential to capitalist prosperity:

> The requirements of the competitive process at work in today's market economy are known...one is high productivity. In contemporary South Africa this is as much a function of housing policy as of any of the other elements of compensation. If workers waste hours going to and from work, if they are not free to find suitable accommodation for themselves and their families near the workplace, both valuable production time and an important motivational tool are lost. Other requirements...including health care and good educational opportunities, are arguably among the strongest motivational tools available to government and management. (25)

Many of the practical steps advocated by capital in its 'Corporate Social Responsibility' programme are aimed at improving the provisioning of an urban black community infrastructure that would provide for the satisfactory reproduction of a stable, motivated and productive workforce.

CAPITAL INTERVENES: THE ESTABLISHMENT OF THE URBAN FOUNDATION

Launched in early 1977, the Urban Foundation's primary aim was to improve the quality of life in black townships. Education was to be a central area of activity, as the following table indicates:

TABLE 5.1: EXPENDITURE BY THE URBAN FOUNDATION ON IMPROVEMENT PROJECTS (1 March 1977 to 31 March 1983). (26)

TYPE OF PROJECT	AMOUNT R'000	NO. OF PROJECTS	% OF AMOUNT
Housing	16 220	66	36
Education	16 433	235	37
Community facilities	7 752	168	17

Business Development	2 700	37	6
Research	903	55	2
Negotiations/Other	1 006	70	2
TOTAL	45 014	631	100

Many of the 235 projects in education tabled above, involved close co-operation with the Department of Education and Training (DET). For instance, the Urban Foundation provided the finance for the construction or upgrading of many technical high schools, technical colleges or teacher training colleges, whilst the DET supplied the curricula and teachers. In fact, once the construction/upgrading had been completed, most of these educational institutions then fell under the full control of the racially structured government education department. Not suprisingly, the Urban Foundation soon found itself under attack for being too closely alligned with the state. The Foundation was perceived by many of the emerging progressive political movements in the black communities as being too entrenched within the ambit of apartheid education and too closely linked with monopoly capitalist interests. Its projects were seen to be initiatives for the benefit of the black petty-bourgeoisie. Judge Steyn, Executive Director of Foundation, himself acknowledged that many black criticisms of Urban Foundation work were that it was "simply making apartheid more comfortable for a few wealthy blacks" (27). Fikile Bam, a UDF activist in the Eastern Cape had the following specific criticisms to make:

> ...people were suspicious of its policitical motives .... They described the work as an attempt to build a black middle class and, in so doing, to fragment black unity. The Foundation has been described as a status quo organization, staffed by whites, its activities designed merely to ameliorate the conditions of apartheid. (28).

Wilkinson, in attempting a periodization of the Urban Foundation's history, suggests that the organization and the state collaborated most closely during the 'reformist era' of 1979-1981, a result of the state's 'display of mutual goodwill toward capital' during this period (29). However, as a result of the resurgence of rightwing sentiment

within the National Party and the broader Afrikaner community during the election year of 1981 and after, the state was forced to withdraw from any bold commitment to a process of reform. What resulted was a very contradictory state restructuring programme, involving a partial commitment to reform action occurring simultaneously with the continuation of apartheid policy and repression. In 1983 for instance, the state rejected most of the significant reform recommendations of the De Lange Commission into education.

These two developments - the emergence of community hostility towards the Urban Foundation, and the lack of commitment on the part of the state toward fundamental reform - led the Urban Foundation to change its direction in late 1983/ early 1984. This is clearly articulated in an internal policy document dated 1985:

> Blacks generally see the free enterprise system as repressive and discriminatory. In education, that is how blacks perceive the state and its system of provision. It seems, therefore, that the private sector should be wary of too close an identification with the state in education if its image, which is already tainted in the free enterprise system, is not to become further tainted in education. Thus there appears to be a good case for the private sector to avoid copying the efforts of the state in education, such as infrastructural improvement, which is likely to be perceived by blacks as 'more of the same', and as cosmetic rather than structural change. (30)

The Urban Foundation thus committed itself to the promotion of Non Formal Education (NFE), i.e. all the planned and organized education and training experiences which take place outside of formal educational institutions. NFE was seen to be more relevant, particularly in the sense that it could respond directly to immediate developmental needs such as local community requirements, the social problems of the poor, the illiterate, the dropouts and the rejects from the formal school system. It permitted capital to be involved in education outside of the rigid parameters of apartheid ideology and state control.

The Urban Foundation believed that this type of involvement in education would yield far greater results than those emanating from previous infrastructural-improvement type projects. This is because of its perceived 'multiplier and replicability' effects. The initial NFE project can be easily replicable on a large scale, and its impact on people's lives often has a multiplier effect. For instance, adult education, which aims to improve teacher qualifications, would ultimately have a positive impact on the future pupils of those teachers. Similarly, pre-school education would improve youngsters' school-readiness, thereby improving the impact of their later formal primary schooling itself:

> Our previous crisis-response route to educational involvement is an endless bottomless pit. There is a never ending saga of inadequacies to be resolved....Rather, the Urban Foundation is now trying to get a multiplier effect in Education - that is, for each R1 we invest, we want a R5 effect. This is why we have emphasized pre-school education and teacher training. (31)

The Urban Foundation defines three areas of NFE. The first area is compensatory education: literacy programmes, numeracy lessons, primary and secondary courses in nightschools, correspondence study, teacher upgrading and pre-school education. The second area of NFE is proficiency education: in-service training of all kinds, skills training, management, supervisory and industrial relations training. The third area is community education: leadership courses, community development skills and health courses. (32)

To encourage the development of this NFE, the Urban Foundation established a R3.5 million educational centre in Soweto in the early 1980's, the Funda Centre. Four educational projects are based at Funda. An in-service teachers training centre has been established, aimed at upgrading the qualifications of Soweto's teachers, particularly in the science and mathematics fields. The adult education centre is geared "to providing educational opportunities to those adults who have missed out. Existing adult education programmes of the DET are not linked directly to the needs of the community and there is much frustration about this" (33). A teachers resource centre is also part of Funda, as well as an arts centre. Black cultural groups such as the Federated Union of Black Arts (FUBA) are using these creative facilities on a permanent basis.

Mr W Davies, director of Funda, said that it was imperative that other community groups use the Urban Foundation facilities:

> A number of organizations orientated towards black education have been approached to branch out to Funda, where they will be encouraged to work together and pool their efforts to the existing problems in the area. The motivation behind this is that joint participation is more effective than fragmented efforts. (34)

The Urban Foundation has become far more sensitive to the need to work with other community groupings in the area of black education. Foundation representatives regularly stress that NFE should be voluntary and should involve consultation and co-ordination with the communities involved. Clearly, such a new educational initiative is geared to overcoming the problems of state stigmatisation and community hostility. Unfortunately, sufficient time has not yet passed for the results of this recently implemented approach to be systematically analysed. However, a razor edged politics has already surfaced as a result of this new policy. Roger Matlock, Eastern Cape Urban Foundation Director explained:

> The minute you talk to the state, the township organizations think you've sold out, and the minute you talk to the township organizations, the state thinks you've joined them. So it's fraught with difficulties but eventually I think we'll get the thing pretty well settled. (35)

There has been a definite shift on the part of some township organizations over co-operation with the Urban Foundation. Fikile Bam of the Eastern Cape confirmed this movement. In 1987 Bam voiced some reservations concerning the role of the Urban Foundation, but added:

> The picture here in Port Elizabeth seems somewhat different. The management includes representative blacks - they're not Uncle Toms. I wouldn't even describe them as moderates. They're fully involved, they have complete credibility....There is an advice centre run by the Urban Foundation in Kwazakhele which is doing very good work, concentrating mainly on housing problems. I even talked to radicals about the housing programmes and they gave it high praise....In the Eastern Cape as a whole, there is a long tradition of people of different ideologies being able to work together. People here tend to concentrate on common ground rather than on their differences. (36)

Matlock has also stressed that his organization had held fruitful meetings with UDF organisations. The Urban Foundation discovered that many of the education items of their programme of action dovetailed closely with the demands of the students in the area. Much had been gained from these informal contacts (37). The motivation on the part of community organizations for a more active engagement with the Urban Foundation is unclear, but certain determining factors are evident. Firstly, the period of 1983 to 1985 was a period of great confidence and assertion for mass organizations. They were unlikely to be overwhelmed by 'charitable' private sector interventions in their community (as would have been the case in earlier phases), and were powerful enough to determine the nature of such assistance. Secondly, the state of emergency from 1985 onwards, which affected the Eastern Cape particularly severely, has forced activists to seek new legal spaces for work, new leverage in which to manouevre. Lastly, there has also been a realization that physical reconstruction work cannot wait for a post-apartheid period in some distant future. Township activists in certain areas have strategically decided to harness the resources of capital to upgrade conditions of life in the black communities.

The present position of the Urban Foundation with regard to its role in the black community is thus highly tenuous: on the one hand it is faced with a general attitude of distrust and hostility, but on the other hand it is encouraged by the growing cases of close collaboration with community organizations on joint projects. The Leadership magazine has warned that increasing demands will be made of the Urban Foundation to heighten its political profile, and state its position clearly with regard to the more explicitly political questions of the day:

> Should it do so it risks the umbrage of government and powerful elements of the private sector. It's a tough choice, but the new reality of political control in the townships may force the Urban Foundation, for the sake of credibility in the constituency to which it is dedicated, to follow Tony Bloom's advice and 'choose sides'. (38)

Apart from its work in the black community, the Urban Foundation has evolved another important area of work. With the full weight of monopoly capital behind it, the Urban Foundation has become increasingly committed to the task of lobbying the state for the dismantling of apartheid:

> There are strong indicators that the Urban Foundation should move beyond financial contributions, to negotiating, facilitating and lobbying roles....There is an urgent need for the private sector to develop innovative strategies that will bring about structural change in the system. (39)

> The Urban Foundation aim is not to always work outside of the system, but rather to lobby and engage the system so as to eventually influence state provision of education. Otherwise, we will be condemned to running purely compensatory education programmes forever. (40)

One of the major lobbying achievements of the Urban Foundation was to have amendments passed to the Income Tax Act which now permit donations to registered Educational Trusts as tax-deductable. These deductions are in addition to already established concessions for direct in-service training expenditures. In response to this change in the Act, the Urban Foundation immediately launched its own Educational Trust in March 1982 with prominent businessmen, Harry Oppenheimer, Mike Rosholt, Anton Rupert, amongst others as its trustees. By March 1983 it had obtained R3 million in pledges. (41)

Other successes have included the opening up of township areas to white building industry entrepreneurs, specifically for the purpose of large-scale housing development. Also, the Urban Foundation lobbyied the state around the highly sensitive area of influx control, and over a two year period, the organization carefully pressurized the state into revising these control measures. Judge Steyn elaborates:

> A considerable effort went into the campaign to abolish influx control. Our research was impeccable. Our strategy of communication with politicians, officials and business leaders was carefully designed and implemented over a two year period which culminated in a public campaign. (42)

The Urban Foundation has also sought to obtain private sector representation on state educational committees. In an internal document dated June 1985, the Urban Foundation expressed concern that the state did not seem equally committed to private sector influence in the formal educational arena:

> The government's attitude toward private sector involvement in education seems cooler that that advocated by the De Lange

> report. The government appears to be protecting the formal academic curriculum from inroads by the private sector....How much power the private sector will be able to wield from within the system will only become clearer when the South African Council for Education and the local management bodies are established and the meaning of its say can be assessed. (43)

Hence, even though the state recognises the important contributions that capital can make in terms of infrastructural improvements in formal education and in terms of in-service training via NFE, the state nevertheless is wary of relinquishing control over the governing of formal education. The Urban Foundation is determined to lobby for private sector influence in this arena, and to encourage the planning of formal educational policy to extend beyond the ambits of Apartheid ideology. Influence by capital in this formal educational planning arena is crucial, as the Urban Foundations Annual Report of 1983 observed:

> Little of note has happened at the education policy level. In fact, in the last 3 years, no major national policy reform has actually been introduced in education....And yet unless Government action is seen to be taken as soon as possible on at least some of the key policy recommendations of the De Lange Report, the impetus of the investigation could well be frustrated, with grave consequences. In this regard the creation of a single ministry either in reality or as intention is of the highest symbolic significance. This is the real basis of legitimacy of the entire system in the eyes of the users. (44)

In other words, the effectivity of the Urban Foundation's reform mission ultimately rests on the actions of the state in creating a broad environment of reform and legitimacy. It is with this understanding that the Urban Foundation has prioritised its lobbying activities.

INTERNATIONAL CAPITAL INTERVENES

South African-based monopoly capitalist entreprises have not been the only companies actively engaged in the task of providing improved educational facilities for black South Africans. European and particularly American corporations (45) with South African business interests have the very same concerns as that of local capital for a technologically more compotent and ideologically more prepared black labour force. However, these multinational corporations have additional reasons to intervene in the general area of social change and reform in South Africa, and particularly in education.

Since its inauguration in 1980, the Reagan government has propagated a policy of 'constructive engagement' in its relations with South Africa - a policy of encouraging the reform process of the Botha regime. The Reagan administration and American capitalist interests in South Africa were particularly perturbed by the rise of an increasingly militant and left-leaning resistance movement. The use of armed warfare and counter-violence against the repressive state has become a more widespread resistance practice. Also, the emerging ideology of radical resistance resulted in the growth of a general hostility towards American imperialist interests in South Africa. All in all, black resistance in South Africa represented a serious threat to American hegemony in the sub-continent.

These concerns necessitated American intervention in an attempt to stabilize the South African situation - through supporting both the Botha reform initiatives, as well as by engaging in its own independent efforts toward evolutionary change. American policy hopes that this will provide an alternative to the post-apartheid policies articulated by the internal and external liberation movements, policies which the Americans perceive to be revolutionary and threatening to their long-term economic interests in the subcontinent. Direct intervention has been mainly in the area of black education which has been identified as being particularly important in its ability to contribute to peaceful change. Education is seen as a viable instrument of co-optation, able to win over those African middle class elements who would benefit from such educational

assistance, and more broadly, capable of acting as an 'agent for counter-insurgency and counter-revolution' (46). Chester Crocker, US Assistant Secretary of State, said at a specially convened American conference in 1981 entitled "Furthering education of black South Africans - how can the United States best help?":

> Education is central to peaceful evolutionary change in South Africa, and in that sense the classroom suggests itself as one very important key to United States policy toward South Africa....If change is underway in South Africa, albeit slowly, the choice confronting South Africa between radical violent revolution and peaceful evolutionary change is becoming even more starkly drawn....The choice lies in part between the battlefield and the classroom. Certainly failure in the latter will hasten violent confrontation in the former. (47)

But intervention in black education has also emerged as a central part of American businesses response to the sanctions and disinvestment threat. In the United States, anti-apartheid groups have been very successful in campaigning for American disinvestment from South Africa. American universities, for instance, have been strongly pressured by their students to halt the investment of faculty funds in those USA corporations that do business with South Africa. Legislation in both the American House of Representatives and in the Senate has introduced varying forms of sanctions and disinvestment action against South Africa. These campaigns have won widespread support amongst the American public.

In response to the pressure both externally and internally, American corporations in South Africa launched 'corporate social responsibility' programmes in South Africa in the late 1970's/early 1980's. These programmes were specifically geared to show the anti-apartheid lobbyists back home that American firms in South Africa were in fact beneficial to black people. American capital, the pro-investment lobbyists claimed, provided jobs, education and training opportunities for local blacks. However, a large percentage of the millions of rands invested in black education by American firms represents, in fact, a deliberate initiative to undermine the arguments of the disinvestment lobby. Recently, the American Chamber

of Commerce in South Africa, AMCHAM, which represents all American companies in South Africa, put a full-page advertisement in all the daily newspapers throughout the country, pleading for an increased urgency in the building of a new South Africa. The advert read as follows:

> Apartheid is totally contrary to the idea of free enterprise. Economic freedom is no less important than political or social freedom. In fact, we can't have the latter without the former. Every South African deserves the right to succeed , or fail, according to his own abilities and willingness to work hard. Yet, by being here, our offices around the world are labelled supporters of Apartheid. Nothing is further from the truth...We believe in South Africa and all its peoples. We have an obligation to all those we employ and serve - millions of South Africans of all races. Together we have spent hundreds of millions of rands in South Africa: on education, housing, small business development, health care, job creation and rural development....Business can only be good for everyone when there is social and political stability. American companies are under increasing pressure from overseas, and our long-term plans and investments in the future are taking a back seat....Let's move faster. Let's contribute to the new South Africa so that all reasonable people can share in its future. (48)

As popular struggle intensified in South Africa, and as the anti-apartheid movement obtained greater support in the USA, so American involvement in reform processes in South Africa shifted noticeably. Initially, the advocates of 'constructive engagement' argued for a close collaborative relationship with the Botha reform initiative. However, because of the outrage expressed in the United States against any close links with the South African government, many of the current educational aid programmes are specifically geared so as not to have any formal relationship with DET projects. Alternatively, they seek closer links with community-based organizations, such as SACHED or the Equal Opportunities Council established by Archbishop Desmond Tutu of the Anglican Church. Nonetheless, the nature of America's educational aid is such that it cannot ultimately be considered to be hostile to the South African

government's reformist initiatives. In many ways, an agency outside of the South African state apparatus, like the American government-sponsored Agency for International Development (AID), is better placed to assist in the provisioning of improved educational and occupational opportunities for certain elite groups of South African blacks. This is because the South African state is far more constrained, because of its large right wing constituency, from effectively introducing such improvements.

There are two major ways in which American aid has been allocated in South Africa. Firstly, American firms who are signatories to the Sullivan Code are obliged by the sixth working principle of the code to involve themselves in improving the quality of employees' lives outside of the work environment, in areas such as education. By March 1985, Sullivan-signatories had contributed over R100 million towards improving black education, housing and health care facilities in South Africa. Educational projects have received the largest portion of this money (49). For instance, in one elite project, the prestigious private commercial school in Soweto, PACE College, was built by the American Chamber of Commerce in South Africa - at a cost of R 6 million (50). Secondly, funds are obtained from the American government itself, through AID. In 1982, AID voted $4 million per annum for bursaries for disadvantaged South African blacks tenable at United States institutions. There have also been plans for a further $5 million for a scholarship programme available within South Africa itself. Furthermore, AID, in conjunction with the National African Chamber of Commerce, NAFCOC, has launched an entreprenuerial training programme for black managers in South Africa. The American trade union organisation, AFL-CIO, has also developed a programme to train black South African trade union leadership. (51)

A brief examination of the most recent American corporate initiatives in black education is very revealing. For example, in 1985 the Firestone car tyre company pledged almost "R1 million annually for the next three years to support programmes enhancing economic opportunities for blacks in South Africa" (52). A major part of this money was intended for black education and training projects. Firestone motivated this investment by arguing that the future

marketing opportunities of its South African subsidiary would "largely be determined by the ability of blacks to earn incomes sufficiently high to permit them to become active consumers of tyres and other automotive products". This investment was also strongly motivated by the need to respond more effectively to its "ethical and social responsibilities as a United States investor in South Africa" (53). Firestone intended channeling the majority of its funds for black education via SACHED and the local black technical training institution in Port Elizabeth, the Iqhayiya Technical College.

Coca Cola, the giant American cooldrink company, announced in 1986 the establishment of the Coca Cola Trust. This trust has at its disposal a massive sum of R25 million, all of which is to be spent on the development and advancement of black education. The fund is managed by a South African-based group of trustees, which include a number of prominent educationalists and anti-apartheid leaders: Dr A Boesak, World Alliance of Reformed Churches leader; Archbishop D Tutu, head of the Anglican Church in South Africa; Mr A Chaskalson, a prominent human rights advocate; Professor A Thembela, rector of Zululand University; Professor J Gerwel, rector of the University of the Western Cape; and Dr A Boraine, executive director of the Institute for a Democratic Alternative for South Africa. (54)

The growing success of the disinvestment campaign has had the effect of rapidly increasing both the number and size of investments in corporate social responsibility programmes over the last three years: In 1984, Seven American companies disinvested from South Africa; In 1985 the figure grew to 40, by 1986 it involved 49 firms and in 1987, 47 American firms withdrew from South Africa (55). It has already been argued that it is precisely those American companies determined not to disinvest that have increased their corporate social responsibility programmes as a way of attempting to buy credibility in the eyes of American as well as local disinvestment lobbyists. However, some of the American companies which have disinvested have nevertheless set up local trusts, and have transferred ownership of their South African assets to these trusts. As part of the transfer arrangements, the trusts will use some of their profits to support local community development projects and to distribute bonuses to the employees under

a profit sharing formula (56). The case of America's biggest oil company, Exxon, is a good example of this form of disinvestment. In April 1987, Exxon converted its local subsidiary, Esso, into a locally based trust company renamed Zenex. The new managing director, on taking office, was proud to explain to the media the new arrangements concerning company profits:

> Once Exxon has been paid, all profits will be 'invested' in projects of an educational or social nature for the communal benefit of our country. Based on past experience, these are likely to amount to R10 million to R20 million each year. All our employees will immediately participate in a profit sharing scheme as well. (57)

SUMMING UP

Monopoly capital, both local and international, has identified the black schooling and training arena in South Africa as a crucial area requiring particular kinds of reformist interventions and critical ideological activities. Representing the more progressive wing of the business community in South Africa, and certainly the most dominant grouping within the capitalist bloc, local and international monopoly capital view black education and training restructuring as a key process in the struggle for the preservation of South African capitalism in a stable form.

FOOTNOTES

(1) The Star, 4/7/78.
(2) J L K Brett, 'The Business worlds expectations of the contribution from secondary and tertiary education' in NIPR Symposium, Development and Training of Black Employees in Industry, 1980, p 109.
(3) Ibid, p 113.
(4) Ibid, p 116.
(5) Final Report of Project Free Enterprise, 1986, p 48.
(6) Interview, Mr van der Watt, 17/2/86.
(7) Chapter Six of this study will look at capital's education and training initiatives which have been specifically geared to developing these ideologically

determined requirements of industrial 'skill'.

(8) J H Steyn, Director of the Urban Foundation, as cited in T Karon, 'The Urban Foundation: government supporters and critics', in L Cooper and D Kaplan (eds), Selected Research Papers on Aspects of Organisation in the Western Cape (University of Cape Town, 1982) p 124.

(9) The Star, 27/10/80.

(10) The Star, 5/12/84. This view of education as being instrumental in the promoting of 'free enterprise values' to the South African black community has become widespread within business ideological discourse. See Schaffer (1985); See also the interview with Gavin Relly in Leadership, 4 (3) 1985 p 16.

(11) See Bozzoli (1981) p 197; Sitas (1983) pp 196-219; Greenberg (1980) pp 176-207. All of these writers stress the inability of capital, (focussing specifically on manufacturing capital) to incorporate sectors of the urban African working class within the social institutions and values of capitalist life.

(12) Sitas (1983) pp 196-198.

(13) Ibid, p 302.

(14) Ibid, p 315.

(15) Final report of Project Free Enterprise, 1986, p 18.

(16) Ibid, p 37

(17) Ibid, p 37.

(18) Ibid, p 54.

(19) Saul and Gelb (1986) p 20.

(20) Ibid, pp 20-21.

(21) COSATU shop steward as quoted in South African Metalworker, a MAWU journal, 1/6/1986.

(22) See T Karon and M Ozinsky, 'The working class in national democratic struggle', in Work in Progress, (42) 1986; Also see copies of the UDF journal Isizwe.

(23) Congress of South African Trade Unions, COSATU's Second National Congress Report (Durban, 1987) p 31.

(24) J H Steyn, 'The social responsibility of industry', in NIPR Symposium, Development and Training of Black Employees in Industry, 1980, p 146.

(25) Corporate Social Responsibility, speech by former USA Ambassador, H Nickel, to the Public Relations Institute of South Africa, May 1985, issued by United States Information Services, American Embassy, Cape Town, p 4.

(26) Urban Foundation, Annual Review, 1983, Johannesburg, 1983,

p 36.

(27) The Urban Foundation: A Leadership publication, June 1987, p 20.

(28) Ibid, p 27. See in the same interview comments by Muntu Myeza, AZAPO Publicity Officer, and Neville Alexander, Cape educationalist and member of the National Forum.

(29) P Wilkinson, 'Straddling realities: the Urban Foundation and social change in contemporary South Africa', Witwatersrand University, unpublished African Studies Institute seminar paper, 1982, p 3.

(30) Urban Foundation, 'The role of the private sector', unpublished paper, Johannesburg, 1985, p 82.

(31) Interview, Mrs J Hofmeyr, Education Advisor, Urban Foundation, Johannesburg, 21/6/85.

(32) R Lee, 'The significance of non-formal education', in 1820 Foundation Conference, The National Education Conference: The De Lange Report, Assessment and Implementation: The future of Education in South Africa , Grahamstown, 1982, p 54.

(33) Mr W Davies, Principal of the Funda Centre, as cited in the Rand Daily Mail, 13/2/84.

(34) Ibid.

(35) The Urban Foundation: A Leadership Publication, June 1987, p 77.

(36) Ibid, p 27.

(37) Ibid, p 27.

(38) The Urban Foundation: A Leadership Publication, June 1987, p 27.

(39) 'The role of the private sector', 1985, pp 85-86.

(40) Interview, Mrs J Hofmeyr, 21/6/85.

(41) Financial Mail, 1/4/83.

(42) The Urban Foundation: A Leadership Publication, June 1987, p 20.

(43) 'The role of the private sector', 1985, p 84.

(44) Urban Foundation, Annual Review, 1983 pp 16-17.

(45) For the purposes of this chapter, international capital will be viewed through the interests and activities of American companies. This is done primarily for the purposes of simplification of data collecting. However, American firms have been in the forefront of social responsibility programmes in South Africa, primarily as a result of the implementation of the Sullivan Code in the late 1970's. Also, the disinvestment

campaign has been most successfully waged in America. As a result, American companies have attempted to counter this threat via investment in South African community development projects. European and British-based monopoly capital have not been as heavily affected by the disinvestment campaign, nor have they articulated a clearly defined social responsibility commitment.

(46) J Davies, 'United States foreign policy and the education of black South Africans', Africa Perspective, (25) 1985 p 65.

(47) Evening Post, 13/1/82.

(48) Sunday Times, 10/8/86.

(49) Corporate Social Policy, 1985, p 4. However, as a result of the deteriorating situation in South Africa, particularly the lack of progress towards substantial reform, Leon Sullivan announced the abandonment of his Sullivan Code programme on 4/6/87, and called instead for a total withdrawal of American companies from South Africa. Sullivan signatories in South Africa, all members of the US Corporate Council, all vowed nonetheless to continue with the code as long as they stayed in the country. See Business Day, 4/6/87.

(50) The PACE College has had a very turbulent history since its inception. In 1986 the school was closed, and it reopened in 1987 as a community college. See Sunday Times, 7/12/86 and 1/2/87; Sowetan, 18/8/87.

(51) Davies (1985) p 62.

(52) Daily Dispatch, 22/285.

(53) Ibid.

(54) Natal Mercury, 25/2/86; Argus, 25/7/86.

(55) See D Hauck, What Happens when United States Companies Sell Their South African Operations (Investor Responsibility Research Centre, Washington, 1987) p 1.

(56) Ibid, p 4.

(57) Star, 9/4/87.

CHAPTER SIX RESOLVING IDEOLOGICAL SKILL DEFICIENCIES.

> It is quite true to say that our black workers need better education and training. If, however, they are to play a meaningful role as members of industrial society, they will need much more than purely technical ability. They will have to accept the value systems of this society and must be willing and, indeed, eager to contribute socially to the formal and informal organization in a company. This means learning a range of social skills. Management must thus ensure that the climate is encouraging so that it develops workers who are technically able, want to achieve well, and want to participate in the industrial society and have the skills to do this. (1)
>
> (J Horner, NIPR conference, RAU, 1980)

Separating the ideological from the technical

The technical and ideological (or control) components of skill are not in reality separable qualities. Capitalist technology itself has developed historically in ways which has served to maximize management's control over the labour process. Thus, it is often difficult to identify, in the nature of a particular work task, the purely technical aspects of skill from other, more ideologically defined qualities of industrial skill. In this chapter, however, the examination of education and training initiatives aimed at resolving ideological skill deficiencies is undertaken separately from those aimed at resolving technical skill deficiencies. This is done for analytical convenience, and not because of any belief that the technical and the ideological are separable skill entities in capitalist production.

Having said this, it must be recognised that most education and training projects are aimed at improving the technical/vocational skills of the workforce. Nonetheless, in the last four/five years a growing number of training initiatives which have been defined in specifically ideological terms have emerged. These training programmes have been aimed at improving worker perceptions of capitalism, and at

improving worker motivation and productivity. For example, the entire Project Free Enterprise initiative, which published its recommendations in June 1986, was specifically oriented to examining worker perceptions of capitalism, and the means whereby certain ideological dispositions could be established amongst the African workforce in South Africa.

The 6-M course - understanding capitalism better

The statement quoted at the beginning of this chapter epitomizes the need regularly expressed by South African businessmen to develop amongst their black workforce particular social and ideological skills essential for profitable business. The most significant education and training programme to have emerged in recent years with this purpose in mind has been the 6-M business simulation course. Designed by the National Productivity Institute (NPI), the course tries to explain to mainly African workers the functioning of a capitalist enterprise. 6-M projects the view that increased productivity by workers and therefore the companies improved profitability directly benefits workers themselves:

> Throughout the training the link between the strength of a company and the benefits it can offer its employees as a result, as well as the positive effects employees can collectively have on company strength, is emphasized. (2)

The 6-M (manpower, material, machinery, money, markets, management) course is structured in such a way that participants actually simulate the tasks of running a business. Workers are encouraged to identify with the goals of the course, these also being the goals of a profitable business. This identification is established through positive re-inforcement for correct answers, active participation and familiarization via examples and analogies similar to the workers daily experiences. Dominant messages in the course are regularly repeated so as to increase retention of the material. (3)

The 6-M course is broken up into four modules. In Module One a simulated model of the company is built up explaining concepts such as money, bank loans and shareholding. In Module Two, the market and

other constraints on the company are demonstrated. Concepts such as company competitiveness, product quality and the determination of product prices are explained. Market characteristics are defined, and the course specifically projects the view that a competitive company implies job security and the best possible working conditions. Module Three shows how the company's income is distributed. Concepts such as 'profit and loss' are explained. The distribution of company profit amongst wages and salaries, raw materials, repayments on machinery, loan repayments, electricity, R&D, advertising, tax and shareholders' dividends are all discussed. And lastly, Module Four poses the following question: what does all this mean in practical terms to the employees of the company? In answering this question, the course content encourages the human and physical efficiency of resources in production. Other areas discussed include the necessity of minimizing wastage, the negative effects of absenteeism and lateness, and the connection between efficiency, competitivess, company strength and worker benefits. (4)

A useful insight into this programme is the way in which the distribution of profit is explained. Here is an excerpt from the 6-M trainers manual:

TABLE 6.1: THE 6-M TRAINERs MANUAL (5)

KEY QUESTION	CORRECT ANSWERS TO BE OBTAINED FROM TRAINEES
1) What do you think happens to a company's profit?	Three things - tax, dividends and a reserve fund.
2) Do companies pay tax?	Yes, approximately 50% goes to the government.
3) After the government, who else must be paid from the profits?	The shareholders who provided money to start the company.
4) Why are the shareholders entitled to a share of profits?	They risked their money and must be rewarded for the confidence they have in the company by receiving part of the profit.
5) How much of the remaining profit should the shareholders receive?	Enough to satisfy them. If they do not receive sufficient money they may decide to withdraw

	their money from the company and place it where they recieve more benefit.
6) Why do you say that?	The company must have some money in reserve for rainy days - if the company wants to expand in the future.

The 6-M course is thus a sophisticated attempt at explaining away capitalist profit as a rational process of the free market mechanism. Nothing is said about capitalist property relations, about who owns the factories, about the exploitation of the workers. The 6-M course is designed to give workers the impression that they have an equal stake in the production process. The dominant message is clearly 'work productively and efficiently, the company shall prosper and you shall be rewarded too'.

By March 1984, the 6-M had been introduced at 224 companies involving 42 522 employees, most of them African (6). For example, Scaw Metals began implementing the programme in 1985, and plan to put 2 500 of their workers through the course. Similarly, Dorbyl has trained almost 400 of its African worker complement using the course (7). The implementation of this course on a fairly large scale must be seen in the context of the growing strike wave throughout industry in this period (1979-1984), as well as in terms of the rising tide of anti-capitalist sentiment permeating South Africa's workforce. The 6-M is thus an explicit ideological intervention to shift the perception of conflict in industry away from any anti-capitalist leanings, towards a more market-economy view - with all of its bourgeois mystifications about equality in the market place, a just wage for labour 'freely' sold, and so forth.

It would seem as if the project has met with some success. The National Institute for Personnel Research (NIPR), did a survey in 1983 amongst hundreds of workers who had undergone the course, and found a positive improvement in worker attitudes towards the following subjects, as reported by their immediate supervisors:

TABLE 6.2: IMPACT OF THE 6-M TRAINING COURSE (8)

% IMPROVEMENT	AREA OF IMPROVEMENT
98	Attitude towards management
87	Attainment of production targets
93	Reporting faulty machinery
93	Efficiency
85	Idling on the job
93	Co-operation within section
98	Damage to products
88	Rate of rejects
93	Wastage of raw materials

The NIPR noted however that the 6-M course had to take cognisance of the problems of improving workers perceptions of capitalism in the context of widespread and on-going political and labour unrest. The NIPR warned that immediately after strikes "emotions were still running very high" and there was a danger that the 6-M course could be "viewed as a move from management to manipulate the workers" (9). It was thus important for the 6-M to build into its teaching a certain perspective of trade unionism:

> ...which indicates the effects of trade union claims upon a business organization and which provides guidelines on how to explain to workers what they can do to make it possible for the organization to comply with trade union demands. (10)

This evaluation of 6-M suggested that it was important to develop a harmonious notion of trade unionism to combat the more militant tendencies emerging which "incited the workers against 6-M" and "propogated the view that 6-M promotes the 'oppression' of employees by management". (11)

Clearly, attempting to win over the 'soul' of the African worker involved capital in an intense contestation of opposing value systems. On the one hand, capital attempted to popularize its own accommodationist perspectives. On the other hand, these initiatives were faced by radical oppositional and more transformative working class perspectives.

Building the need to achieve

> If the black worker is to reach the level of individual achievement of his white counterpart, the need to achieve will have to be activated - and developed. There will have to be a shift in the value base of black workers. (12)

There is a widespread belief in current South African Management Science that the low productivity and the 'non-achieving values' of African workers has to do with personality traits resulting from their 'tribal' and cultural backgrounds, and from their customary attitudes towards working in a social group. This belief led Professor Nasser of the UNISA School of Business Leadership to evolve a programme aimed at adapting these:

> ...less sophisticated and educated people to the demands of competing in an industrial economy (13)

The African people, according to Professor Nasser:

> ... are a society with a high need for affiliation, are typically not individualistic but are group-oriented, looking to the group for security. They tend to be poor competitors and lack the ability to progress in an industrial society. Characteristics essential to business, such as the desire for achievement, individual responsibility and assertiveness are generally weakly developed in the South African black worker. (14)

In response to these problems, Prof Nasser has developed a training programme using business games aimed at overcoming this need for affiliation, and which are geared to activating the need to achieve:

> After having competed as groups (in the business games), they started competing against one another as individuals. This taught them that they had to take risks and show initiative if they wanted to win....Later, they had to relate these business games to

> their own jobs, to how this could affect their own career paths and to how they could promote profitability in their firms. (15)

This Achievement Training Programme has been implemented in many companies, including Haggie Rand in Germiston. Success was obtained particularly in the area of improved job performance, which was seen to be directly related to a rise in achievement motivation (16). Similar progress reports have been forthcoming from other companies which have used the programme, including the Sigma Motor Corporation and the Rustenburg Platinum Mine, two companies where the course was initially introduced. (17)

An identical project is the 'Junior Achievement Programme' of the Witwatersrand University's Graduate School of Business. Partipants are selected from schools throughout Johannesburg and Soweto. They are put into multiracial teams, and they engage in a training game which involves them forming a company with the aim of establishing a profitable management. The Urban Foundation is a part-sponsor of the project. Pat Dempster, Director of the Transvaal branch of the Urban Foundation, commented:

> The programme is a means of getting the message of free enterprise across to all young South Africans, and enables us to identify potential entrepreneurs for possible further development. This could lead to the establishment of viable small businesses. (18)

Why have such courses been implemented? Certainly, as Nasser would argue, developing a competitive and individualistic value system is essential for improving productivity and worker motivation on the factory floor. However, the considerations behind the implementation of these programmes cannot be identified purely at the level of production requirements. Rather, qualities such as these are integral aspects of the value system of capitalist society. In South Africa, these values have never been developed effectively amongst black workers, for their labour has always been easily obtained in a cheap form via several extra-economic pressures and inducements. But the decade of the 1970's witnessed the emergence of a new working class defiance of capitalist exploitation, in which the significance of and

the power inherent in worker solidarity and collective identity was learnt in struggle. Thus, rather than acquiring the value systems necessary to becoming obedient participants in a capitalist society, South Africa's black workers have over the last decade developed their own working class identity and collective value system - values that have increasingly come to question and challenge the basis of their participation in the economic arena. It is in this context that the emergence of programmes stressing the need to achieve, must be viewed: they are desperate attempts to shift the value base of black workers so as to win back some legitimacy for free market values and beliefs.

Literacy Training: attempting to contain industrial strife

Literacy courses for operative workers have also been introduced into factory training programmes on an ever-growing scale. At a surface level, it would at first seem as if management's only intention with these literacy courses has been primarily to improve the technical competencies of their workforces. The impression generally given is that these literacy courses are aimed at improving black workers' abilities to understand technical instructions, read and fill in the paper work that forms part of most operative jobs. However, it would be naive to believe that these were the only factors behind the implementation of such literacy drives. These literacy courses are also aimed at developing a communication link that would act to minimize the occurrence of industrial disputes. This dual purpose of literacy training was confirmed by Mr J Butler, Training Manager for Barlow Rand, when he commented that:

> Wildcat strikes will continue until workers get proper literacy training....Because of this lack of literacy, many workers cannot understand negotiating skills nor represent other workers on committees or work councils. (19)

The Wiehahn Commission in 1979 argued that the high degree of illiteracy in South Africa was a:

> ...powerful factor militating against the establishment and maintenance of sound industrial relations and the satisfactory conduct of the collective bargaining process. (20)

This belief that improved verbal communication skills will improve industrial relations is very widespread within current South African management science. Language misunderstandings are argued to be a major part of industrial tension. However, the hope that this training strategy will be successful would seem to be rather naive and misinformed on the part of management. Although workers might not communicate their grievances well, the reasons for their grievances are almost certainly acutely felt and clearly understood by most of them. Rather, what capital is hoping for is the creation of articulate spokespersons for the workers, particularly amongst liaison committee/ works committee/ company-sponsored trade union members, and amongst black supervisors, who will assist in the displacement of industrial grievances from the site of factory floor action to the more co-optable arena of company established communication channels.

Industrial Relations Training

> Organizations which have a good relationship with their workers have no problems with unions. If workers get what they want...they dont need the union. It is up to management to combat the militant ideas propagated by some unions from the inside, so that their workers don't fall for these ideas. (21)

Concern about the need for good industrial relations has been strongly articulated by both monopoly capital as well as by the Manpower institutions of the state, particularly as a result of the working class struggle activities of African workers since the Durban strikes of 1973. In a survey into industrial relations training in 1980, Nel and Rajah of UNISA established that most company in-house training occurred amongst middle and senior management, liaison committee members and supervisors:

TABLE 6.3: PERCENTAGE OF MANUFACTURING COMPANIES THAT PROVIDE TRAINING IN THE FOLLOWING CATEGORIES (22)

CATEGORIES	PERCENTAGE
Liaison Committees	62.7
Members of registered trade unions	19.7
Members of unregistered trade unions	7.7
Officials of registered trade unions	8.1

Officials of unregistered trade unions	3.1
Senior management	67.4
Middle management	72.4
Supervisors	76.4

Nel and Rajah's analysis is critical of capital's tendency to train mainly middle management and upwards, whilst ignoring the mass of unskilled and semi-skilled workers in their employ. They are also critical of management's preference for training liaison committee members, whilst again almost completely ignoring the unregistered trade unions:

> It must be borne in mind that employees in the non-managerial category usually form the nucleus of labour unrest and strikes in a company. Therefore, companies...need to give immediate and sustained attention to industrial relations training for these employees. Where no...training takes place, companies may run the risk of more labour unrest than has previously been the case...It also appears that the liaison committee form of representation was preferred by employers...Management should however not lose sight of the fact that these committees have a poor track record and cannot be a substitute for trade unions. (23)

The NMC's investigation into 'Training in Labour Relations' stressed the crucial importance of this area of work, particularly the need to train trade union members in labour relations. This would ensure the achievement of labour productivity and industrial peace. Such training would overcome ignorance concerning the role and significance of trade unions, the implications of strikes and the legal rights of workers which would otherwise:

> ...lead to unneccessary losses of income and productivity. Labour relations training would help to ensure that employees react more responsibly and judiciously when they are dissatisfied or have specific needs. (24)

The NMC report emphasized that such training would provide workers with a better understanding of the overall economic system within which they are operating and the positive role played by industrial bargaining.

Both the NMC investigation and the survey by Nel and Rajah pointed to the centrality of the supervisor as management's frontline of communication, as an important channel through which workers could direct their grievances. In this particular instance, the training of supervisors in labour relations does seem to be receiving management prioritization. As Nel and Rajah observe:

> This is an encouraging feature as it is at this level that most of the interaction on a day to day basis takes place....This is consequently also the first level of conflict and dispute settlement. A well trained supervisor can create the right labour relations environment irrespective of the form of worker representation. (25)

An area of particular concern for the state has been the lack of official regulations governing the introduction of training in industrial relations, a concern that was focussed specifically around the courses being introduced by the independent unregistered black trade unions. Wiehahn recommended that this problem be investigated and that training courses and centres be registered for approval by the Department of Manpower. The state feared that certain radical university academics and university institutes linked with the independent trade union movement were having a negative influence on the black labour situation. Wiehahn warned that:

> Some of the training on offer to workers, particularly by unregistered organizations, is of uncertain origin and questionable ideological motivation. (26)

In 1981, with the implementation of the revised Manpower Training Act, training in labour relations fell under the control of the Manpower Department. The Act specified that training could not be initiated unless the courses had first been registered with the Department of Manpower. The NMC also announced the launch of a campaign to encourage the implementation of labour relations training programmes by management. The NMC felt that insufficient efforts were being put into what should be viewed by the private sector as a priority training area.

Improving the factory floor environment: manufacturing consent

Another major area of labour process restructuring is capital's attempts at improving the factory floor environment. The intention here is to win over workers' consent for and the acceptance of management authority in the workplace. Over the last decade, management strategies, particularly those of the big corporations, have changed. There have been strong calls for a shift away from the traditional despotic style of factory management, to one where worker participation and self-motivation become central features. These work environment changes crucially influence the effectivity of the education and training initiatives which capital might implement alongside these labour process re-adjustments:

> A training programme that is not fully integrated with sound job-evaluation, remuneration and promotion plans, will soon run out of steam. To give credibility to your programme, you must reward improved performance. (27)

Mr J A Horner, a NIPR researcher speaking in 1980 at a conference on the 'Development and training of black employees in Industry', argued that the best training in the world would be nullified if the work environment was an indifferent or punitive one. Outlining what needed to be done to create the right environment for training programmes to succeed, he referred to the need for a reward system: are jobs well structured and seen to be worth doing?. Is the pay package seen to be fair? (28). Horner argued that workers should be told how they are performing and should be rewarded accordingly. A climate which encouraged worker self-esteem needed to be created:

> Is there racial discrimination? Is there a good system of communication? Do workers participate and feel committed? Are workers provided with help and counselling? Is there adequate job enrichment, and are avenues of promotion open? Is there reasonable self regulation and autonomy? Is discipline soundly maintained? Are grievances soundly handled? (29)

Black advancement programmes are the most important of all of the projects aimed at improving the work environment. The Project Free Enterprise report of 1986 noted with concern that this is also an area which has received an enormous amount of superficial attention, and has very little to show by way of results:

> Management tends to be satisfied with broad, generic statements

> of intent, rather than implementing specific action steps.... Management pays lip-service to some important issues like black advancement. (30)

While the superficiality of capital's commitment in this regard will be dealt with in Chapter Eight, it is important to acknowledge at this point that certain key business corporations with large workforces have committed themselves to creating career paths for their black employees at all levels. The most developed systems to date are the policies implemented by companies like Haggie-Rand and Scaw Metals, both Anglo affiliates. As Mr T Burkes of Scaw Metals observed:

> For many whites working in the factory, most jobs are not really perceived by them as a career. We are trying to change many of these jobs from a white job to a career opportunity for the black worker....For instance, in the Mills, what was a strong part of the artisan's job, was often in reality done by the blacks, with the artisans sitting on their bloody asses. And the blacks were not getting the pay for it. So we came along and said, let's train the blacks to do the job with the rate....The black operative now sees this semi-skilled work as a career. (31)

The employment of increasing numbers of operative workers, essential for the profitability of large-scale capital, is being seen as a mechanism for creating an atmosphere of career advancement and the opening-up of employment opportunities for blacks. The creation of internal labour markets (that is, the promotion of employees from within the company) is a useful devise for creating worker loyalty, for workers perceive that there is potential for personal occupational growth. In this context, education and training programmes take on a directly material reality for black operative labour: they represent very real openings to career progress, however limited they appear to be.

Haggie-Rand has developed these strategies to a fairly advanced level. They have introduced what they call 'self-supervised operative labour', as well as 'super-operators':

> We are now developing our wire-bench operator into what we call a 'wire-drawer', increasing his technical and self-supervisory-type responsibilities. He is now self-directed. This has allowed us to eliminate the 1st level of supervision.... And with the first level of supervisors, we found that they were

> providing more of a technical role, a super-operator of sorts.... Now we want to promote all our operators to super-operator status, and our first level supervisors to second level supervision. (32)

Throughout the Haggie factories jobs are thoroughly analysed and categorized, and then are linked to clearly-defined career progression paths. Black labour upgrading has been most substantial at the level of operative labour, but these Anglo companies are also encouraging the recruitment of more black artisans, engineers and technicians. Anglo has an extensive bursary scheme for the training of blacks at tertiary technical institutions.

Black advancement programmes are not the only aspects of improving the work environment. An equally important task is that of encouraging worker participation and consequently, encouraging worker identificaton with the interests of the company. By not including workers into the corporate-identity of the enterprise, the very serious problem of worker exclusion emerges which 'undermines the very essence of organizational survival - quality, productivitiy and growth'. (33)

Project Free Enterprise has called for a fundamental change in South African management techniques. The project reported that:

> Management is generally still guilty of totalitarian and autocratic styles of management that negate or prevent any meaningful participation by workers in basic processes such as performance improvement, productivity enhancement and decision making. (34)

The report then recommended that:

> The most effective means of gaining understanding and commitment to the process of business as well as ensuring personal development, is the encouragement of worker participation. (35)

The ultimate requirement however for improving the work environment, was to reward improved performance adequately. Project Free Enterprise felt that if improved productivity was to be achieved, it was

imperative that a 'performance-based work culture' be developed (36). Worthy rewards were the only way to do this. However, for these participatory-reward systems of labour control to succeed, it was absolutely essential to get workers to understand why it was necessary for an organization continuously to upgrade and enhance its productivity. Workers needed to understand that business was not a linear process, but was in fact a self-generating cycle in which the wealth that the business generated was in turn utilized to fund the costs of business. It is in this context that Project Free Enterprise stressed the importance of education and training programmes for South Africa's black industrial workers. (37)

SUMMING UP

Worker-participatory schemes as motivated by Project Free Enterprise, as well as the other training strategies mentioned in this chapter, are thus sophisticated responses on the part of capital to the current crisis of low productivity, worker resistance and falling profitability. They are strategies geared to win the co-operation and consent of workers themselves in re-establishing the profitability of capitalist enterprises. The worker participatory schemes are sophisticated in the sense that they are formative efforts, offering some workers real opportunities for betterment and progress.

FOOTNOTES

(1) J A Horner, 'Training black workers to play a meaningful role in the work environment', in NIPR Symposium, Development and Training of Black Employees in Industry, 1980, p 290.
(2) National Productivity Institute, The 6-M Simulation Training Course Manual, Resource Package One, Pretoria, 1981, p 1.
(3) Ibid, p 3.
(4) Ibid, pp 5-8.
(5) NPI, The 6-M Simulation Training Course Manual, Resource Package Thirteen, 1981, pp 41-44.
(6) National Institute for Personnel Research News, March 1984.
(7) Interview, Mr L Dormer, 12/2/86; interview, Mr T Burkes, 11/2/86.
(8) NPI, 6 M Simulation, Pretoria, undated; see also National Institute for Personnel Research, Evaluation of Longer-term

Effects of the 6-M Simulation Training Course, Johannesburg, 1983.

(9) National Institute for Personnel Research, 6-M Simulation Training Course: Implications of Labour Unrest, Johannesburg, 1983, p 1.

(10) Ibid, p 5.

(11) Ibid, pp 2, 4.

(12) Horner (1980) p 294.

(13) Sunday Times, 11/11/79.

(14) Ibid.

(15) Ibid.

(16) Interview, Mr L Dormer, 12/2/86.

(17) Financial Mail, 19/10/79.

(18) Financial Mail, 29/2/80.

(19) Star, 15/5/81.

(20) Wiehahn (1982) p 112.

(21) Cape Times, 6/8/86.

(22) P Nel and M Rajah, 'Industrial relations training and orientation programmes by large companies in South Africa', The South African Journal of Labour Relations, 6 (2) 1982 pp 24-31.

(23) Ibid, p 30.

(24) Department of Manpower (National Manpower Commission), Report on Training in Labour Relations in South Africa and a Levy System for the Promotion and Financing of Industrial Training, RP 70/1982, Government Printer, Pretoria, pp 5-6.

(25) Nel and Rajah (1982) p 28.

(26) Wiehahn (1982) p 110.

(27) I J Le Roux, 'Current needs of low level employees in respect of technical training', in NIPR Symposium, Development and Training of Black Employees in Industry, 1980, p 284.

(28) Horner (1980) p 302.

(29) Ibid, p 302.

(30) Final Report of Project Free Enterprise, 1986, p 18.

(31) Interview, Mr T Burkes, 11/2/86.

(32) Interview, Mr R Edwards, 19/2/86.

(33) Final Report of Project Free Enterprise, 1986, p 18.

(34) Ibid, p 19.

(35) Ibid, p 19.

(36) Ibid, p 26.

(37) Ibid, p 27.

CHAPTER SEVEN RESOLVING TECHNICAL SKILL DEFICIENCIES

CREATING AN IMPROVED EDUCATIONAL FOUNDATION

Since 1976 many business corporations in South Africa have invested millions of rands directly in formal black education. They have done so in the hope that the provisioning of a better basic educational foundation for black youth will allow for their more satisfactory integration into the world of work. Capital also hopes that a financially more equitable educational system will assist in the legitimation and depoliticization of black education (1). However, these interventions have not been motivated by ideological considerations alone, but are also related to the technical requirements of producing future workers who are re-trainable and upgradable within the factory itself.

The Urban Foundation is clearly the most important organization in this regard. As indicated in Chapter Five, the Urban Foundation has mobilized nearly R17 million for investment in over 200 educational projects, many of them directed towards improving formal black education. Similarly, the Anglo American Corporation established the Chairman's Fund in 1973 with the specific purpose of funding black educational projects. It spends almost 30 million rands yearly on these ventures. The Chairman's Fund viewed the upgrading of teacher qualifications and an increase in the numbers of black teachers as the most important ways of improving black formal schooling. It was with this view in mind that the Soweto Teachers' Training College was started in 1978. Established at a cost of R1.8 million, this first black college in a white urban area currently has a capacity of 600 student teachers (2). The Chairman's Fund also co-funds the United States-South Africa Leadership Exchange Programme (USSALEP), which involves sending young black South Africans to a United States educational institution for a year. All in all, the fund has spent R65 million on general education, and a further R83 million on black secondary and tertiary education over the last five years. (3)

Barlow-Rand has also pumped large amounts of money into black education. Of particular concern to Barlow is the education of the children of their black mine employees. The scheme at Rand Mines is confined at the moment to pre-primary and primary education only. It cost over R2.5 million to establish, involving the construction of new schools and the refurbishing of the 29 existing ones. Rand Mines is also aiming at improving teacher qualifications and reducing the teacher/pupil ratio down to 1:30 at all of its schools - a significant improvement on the government school ratio of 1:48. There are over 4 000 pupils involved and 115 teachers. Barlow's investment per student is far greater than the state per capita expenditure on black education. For example, in 1981 Barlow-Rand spent R130 per student as compared to the DET's R98 per capita expenditure. (4)

Another area of business sector involvement has been the development of prestigious schools for blacks: here the PACE (Planned Advancement in Community Education) College in Soweto is the most important. Established by the American Chamber of Commerce in South Africa in 1981, and costing almost R6 million, PACE was the first elite private black commercial school in South Africa. Specifically geared towards developing future black entrepreneurs, accountants, business administrators and managers, the school was initially well received by leading Sowetans. It attracted the well-known poet, Oswald Mtsali, as its Vice-principal. Dr Ntato Motlana, Chairman of the Soweto Civic Association, commented after the launching of the school:

> If this is what American investors do with part of their profits - there can be something said for a continuing American presence in South Africa. (5)

Mr Rex Pennington, principal of PACE outlined its educational goals:

> We are aiming at middle management positions....Those who graduate from here will become community leaders. (6)
> ....I hope the PACE project will play a major role in black education and convince young blacks of the value of the free enterprise system. (7)

Anglo and the Johannesburg Consolidated Investments Corporation have financed the New Era Trust, a trust which is planning to establish four new non-racial private schools "to help construct the foundations for a new non-racial South Africa". The joint cost will be in the region of R20 million rand (8). The first school in Tongaat, Natal, opened in January 1987, and is to be followed by three other schools in other regions. Two former headmasters of elite white schools, Mr Deane Yates of St Johns and Mr Steyn Krige of Woodmead, Johannesburg, are involved in the project. The Chairman of the Trust is the former Vice-Chancellor of Witwatersrand University, Prof G Bozzoli. The stated policy of these new schools is to ensure that each population group in South Africa is fairly represented in each class "so that no child will feel that he or she is in a tiny, disproportionate minority dominated by others" (9). The Principal of the school was adamant that the initiative was not seen as elitist:

> We are not looking to creating a community of boffins. We are not trying to create an elite, nor are we looking exclusively for geniuses, although obviously we will offer the best kind of education we possibly can. What we are really trying to turn out is well-educated and well-balanced South Africans of all races who have learned to live with one another. (10)

Educational-aid projects have also benefited from private sector investment. For instance, the TEACH organisation has fund-raised for years for school infrastructural improvements. READ (read, educate and develop) is geared towards developing libraries in each of South Africa's black schools. The project is run in co-operation with DET, which provides the first R5 000 for each library. The total amount needed from the private sector for this venture to be completed is in the region of R1,6 million (11). The TOPS project (Teacher Opportunity Programme) seeks to assist the upgrading of the almost 60 000 under-qualified black teachers. The organizers of the project aim to collect a total of R2 million a year from the signatories of the Sullivan Code, which are all American corporations in South Africa. By May 1984, 1 200 teachers had benefited and R450 000 had been collected for the programme (12). The implementation of the Sullivan Code, however, has since the fourth of June 1986 been withdrawn from South Africa, which has possibly weakened the ability of this teacher upgrading initiative to fundraise. (13)

Computer-assisted extra-educational tuition schemes which complement the formal syllabi in DET schools are also a major area of investment by the private sector, particularly by the computer companies. For example, Control Data started a R250 000 computer learning centre in Soweto in 1979. Syllabi ranging from standard three through to matric were offered. Control Data has also designed a computer-aided teaching programme called Plato. The crucial feature of this computer model is that the student 'talks back' to the machine, answering its questions and posing his/her own. This computer system monitors student performance, and allows the student to proceed at his/her own pace. It is at present being used at the University of the Western Cape, both for its under-graduate students, as well as amongst thousands of Western Cape secondary school students. (14)

Similarly, Barlow-Rand has financed a mobile mathematics computer clinic in Soweto, which cost R1.5 million to import from Israel. The mobile clinic visits all the schools in Soweto. With 32 terminals, it allows 40 mathematical examples to be done in 10 minutes. A computer printout provides answers and evaluation. Some 1 200 Soweto children make use of this facility each week (15). IBM too has spent R2.6 million over a 3 year phase in developing a video-based educational-aid system, specifically to help with the teaching of science, biology and mathematics. About 40 black schools have been provided with these video facilities. (16)

PROMOTING BLACK TECHNICAL AND COMMERCIAL EDUCATION.

The single most concentrated area of private sector investment in formal black education has been in technical education (17). This is clearly a direct response to the shortages of certain categories of skilled labour-power in industry, but is also an attempt to improve the technical competencies of the future black workforce.

The Urban Foundation has again led the way with technical education projects. It established the first black technical high school at Jabulani in Soweto in 1979 at a cost of R1 million. Up until that point technical education to the level of the N-III (matric) course was not available outside of the so-called 'National States'. The Urban Foundation has established another such project, the Iqhayiya Technical College in Port Elizabeth at a cost of R1.6 million. (18)

The Chairman's Fund of the Anglo American corporation financed probably the largest private sector initiative in black education, when Umlazi's Mangosuthu Technikon was established in 1981. Anglo provided R6.7 million towards the R7 million complex. The Technikon is significant in that up until 1980 there were no Technikons for black students in South Africa. Only in 1980 did the DET begin the process of establishing its first black Technikon at Mabopane East. Clearly, in the case of the Mangosuthu Technikon, the private sector has provided a crucial technical education resource which is in great demand. Mangosuthu will eventually have a capacity of 500 students. Other Chairman's Fund technical education activities include R13 million for the Isidingo Technical College in Daveyton, Benoni. (19)

Barlow Rand's major contibution in this area of education was the establishment of the Buchule Technical High School in Mdantsane in 1979. The school cost R700 000 and offers courses in carpentry, metalwork, motor mechanics, electronics, fitting and turning. (20)

Companies have also been active in developing the business and managerial skills of potential black entrepreneurs. In 1979, there were only two black MBA's in South Africa. To remedy this problem, representatives from Anglo, South African Breweries, Unisa's School of Business Leadership and SACHED jointly launched a pilot training programme to develop 30 black MBA's. The course, established in 1979, aimed at upgrading the learning base of black business employees, as well as combating their high dropout and failure rate in business courses in industry (21). The Chairman's Fund also provides bursaries for black students to attend tertiary institutions. This is known as the Anglo American 'Undergraduate Cadet Scheme' aimed mainly at young blacks with the potential for becoming engineers, technicians, accountants and business managers. Cadets are put through a pre-university bridging year to prepare them for the demands that will be made of them at university and at work. They are employed by one of the many Anglo companies whilst studying. (22)

ADVANCING BLACK INDUSTRIAL IN-SERVICE TRAINING

Much of the education and training activity launched by capital in its attempt to remedy the skill shortages problem in production, has occurred in the in-service training realm. Within this arena of training, unskilled workers have been upgraded to semi-skilled operative workers; artisans, technicians and 'Research and Development' scientists have also been trained; improved supervisory and management skills have been developed. In this examination of private sector in-service training, the discussion will be structured in the following way: first, a general overview of the extent of in-service training will be provided; secondly, a more detailed account of the number of companies participating in the varied training projects and the number of workers trained will follow; thirdly, the state's involvement will be assessed; finally, a global statistical picture will be provided describing the size and growth of this private sector/state-aided in-service training.

A general overview of In-Service Training

In 1980/1981 the NMC undertook a major survey of the extent of in-service training in the South African business sector (23). The NMC surveyed 2 194 organizations, which together employed 2 060 726 workers, and established the following patterns:

TABLE 7.1: NMC SURVEY ON THE EXTENT OF INDUSTRIAL TRAINING (24)

FIRMS WHICH TRAIN	PERCENTAGE
948 firms conducted training	43% of firms surveyed
WORKERS TRAINED	**PERCENTAGE**
337 000 trainees were trained on-the-job	16.3% of workforce
399 000 trainees were trained off-the-job	19.3%
53 000 trainees were trained externally	2.6%

The survey also found that the proportion of large organizations which train their own employees is twice as great as that of medium organizations, and four times as great as that of small organizations. The following table was provided:

TABLE 7.2: THE PERCENTAGE OF ORGANISATIONS WHICH TRAIN (25)

	SMALL CO.	MEDIUM CO.	LARGE CO.
On-the-job training	12.6	21.0	48.8
Off-the-job	5.2	13.0	42.5
External	9.3	24.4	59.4
All forms of training	19.3	34.3	68.9

Training activity was widespread, distributed throughout all skill levels as the following table indicates:

TABLE 7.3: PERCENTAGE OF RESPONDING ORGANIZATIONS WHICH TRAINED THEIR EMPLOYEES BY FORM OF TRAINING AND LEVEL OF SKILL, 1980. (26)

	ON-THE-JOB TRAINING	OFF-THE-JOB TRAINING	EXTERNAL TRAINING	ALL FORMS OF TRAINING
Unskilled workers	44.0	37.5	13.5	43.6
Semi-skilled	69.2	59.1	46.4	68.4
Artisan	36.5	38.7	41.3	45.3
Skilled	61.7	79.3	74.0	78.6
Highly skilled	33.3	60.8	66.3	63.5

From Table 7.3 it can be deduced that most companies provided semi-skilled workers with the largest amount of on-the-job training, skilled workers with the largest amount of off-the-job/external training, and unskilled workers and artisans with the least amount of in-service training. In terms of the actual numbers trained, most attention went to the following categories of workers, in order of priority: machine operators, unskilled staff, artisans and supervisors. (27)

An occupational breakdown in terms of state designated population group was as follows:

TABLE 7.4: EMPLOYEES TRAINED BY OCCUPATION AND POPULATION GROUP (28)

OCCUPATION	WHITE	AFRICAN
Top management	98.0	0.9
Middle management	95.0	2.7
Supervision	75.1	18.6
Professionals	72.5	11.8
Engineers	96.8	1.3
Technicians	87.6	6.9
Artisans	92.9	3.1
Machine operators	21.0	71.0
Commercial areas	63.7	18.3
Clerical	72.1	14.3

It is evident that the percentage of Africans being trained for various occupations was exceptionally low in relation to the number of white employees trained. The only exceptions were the large number of African workers trained as semi-skilled machine operatives, and the increasing numbers of Africans being trained in the sales, supervisory and clerical categories of work. (29)

The survey did however identify some growth in the amount of training between 1978 and 1980 (30). The percentage increase in employment of the responding organizations was 12% per annum. The increases were 17% p.a. for on-the-job training, 17% p.a. for off-the-job training, and 49.6% p.a. for external forms of training (31). Thus in terms of the NMC survey and taking into account the increases in employment, the actual increases in in-service training ranged from 5% to 37% during this period.

In terms of the content of the training courses offered, the Department of Manpower released the following statistics for training courses registered and approved by it in 1984:

TABLE 7.5: TYPE OF COURSES ACCORDING TO TRAINING AREAS (32)

NATURE OF THE COURSE	NUMBER OF SUCH COURSES REGISTERED	% OF THE TOTAL
Production	4 902	25.0
Maintenance, construction and power generation	3 922	20.0
Computers	2 630	13.4
Management Principles (planning, organisation, control)	1 260	6.4
Marketing, sales, client relations	953	4.9
Transport	935	4.8
Financial	921	4.7
Personnel	509	2.6
Clerical and administration	483	2.5
Induction and orientation	400	2.0
Other courses	2 661	13.5
TOTAL	19 576	100.0%

In terms of training infrastructure, large companies again dominated. The 1981 NMC survey presented the following statistics:

TABLE 7.6: TRAINING BY SIZE OF COMPANY. (33)

	COMPANIES WHO HAVE OWN TRAINING STAFF	COMPANIES WHO HAVE OWN TRAINING CENTRES/ ROOMS
Large companies	59%	57%
Medium companies	19%	17%
Small companies	13%	6%

the Metal and Engineering Industry (particularly those metal companies based in the Pretoria-Witwatersrand-Vaal area) has been central to this large in-service training initiative. This is clearly revealed in the following tables released by the Department of Manpower in 1984:

TABLE 7.7: TRAINING COURSES PER INDUSTRY, 1984. (34)

INDUSTRY	NUMBER OF COURSES	PERCENTAGE
Manufacturing of chemical products	2 787	14.2
Business services including attorneys and accountants	2 006	10.2
Manufacturing of iron and steel, and steel-products	1 676	8.5
Manufacturing of clothing and textile materials	1 477	7.5
Educational services like driver schools and Group Training Centres	1 061	5.4
Manufacturing of motor vehicles and spare parts	952	4.8
Wholesale (motor vehicles excluded)	965	4.9
Retail (motor vehicles excluded)	957	4.8
Construction and Engineering	894	4.5
Financial institutions and Insurance	717	3.6
Manufacturing of foodstuffs	689	3.5
Other	5 395	27.5
TOTAL	19 576	100.0%

TABLE 7.8: IN-SERVICE TRAINING IN TERMS OF GEOGRAPHIC LOCATION, 1984. (35)

AREA	NUMBER OF COURSES OFFERED	% OF TOTAL FOR THE WHOLE OF S.A.

Pretoria/Witwatersrand/Vaal-triangle	11 860	60.6
Durban/Pinetown	2 401	12.3
Port Elizabeth/Uitenhage	755	3.9
Cape Penisula	704	3.6

The overall findings of the NMC survey underscore the observations made in Chapters Three and Four of this thesis, particularly with regard to the increased training of African labour in the operative as well as supervisory, clerical and sales occupational categories. The survey, however, highlights a number of inadequacies in capital's in-service training programme. These include the domination of the training scene by large corporations, and the lesser contributions made by other companies; the minimal impact this training has made in terms of changes to South Africa's racially defined occupational structure; the fact that only small numbers of black managers, administrators and skilled/highly skilled workers have been trained; the low levels of black artisanal training was specifically mentioned. These inadequacies are examined in more detail in the next chapter.

Data on the extent of private sector involvement in in-service training activities: 1976-1986.

The Black Employees In-Service Training Act of 1976 initiated the establishment of in-service training centres and schemes in the 'white' urban industrial complexes of South Africa. The historical background to the passing of this Act is significant. In 1973 the inter-departmental Van Zyl Committee was appointed to look into the problem of the lack of training of black employees urgently required in the 'white' urban industrial complexes. The committee recommended that certain measures were necessary to overcome the skill inadequacies prevalent amongst the African labour force. Firstly, eight departmental public training centres should be erected, situated in the urban industrial complexes of 'white' South Africa. Secondly, industrialists themselves should be encouraged to construct private training centres in these urban industrial complexes, thereby meeting their own training needs. The state should register and approve such centres, and should provide as much non-financial assistance as possible. The Committee also recommended the introduction of a tax concession scheme, with a view to the partial, if not total defrayment of training costs incurred by these industrialists. (36)

These recommendations formed the basis of the Black Employees In-Service Training Act which became law in 1976. Similarly, in 1979 the In-Service Training Act was passed which provided similar concessions for the establishment of white, coloured and Asian training centres and schemes. After the Wiehahn recommendations, these provisions were all included in the rationalized Manpower Training Act of 1981, and the task of approving and registering these centres was taken over by the Department of Manpower. After some lag caused by the need to 'start-up', capital responded remarkably:

TABLE 7.9: TOTAL NUMBER OF REGISTERED PRIVATE TRAINING CENTRES. (37)

YEAR	NUMBER OF CENTRES
1978	2
1979	2
1980	50
1981	218
1982	389
1983	529
1985	746

Table 7.10 shows the number of employees who were trained at these private training centres during the past five years, and the number of courses in which training was offered:

TABLE 7.10: TRAINING BY PRIVATE TRAINING CENTRES. (38)

	NUMBER OF COURSES IN WHICH TRAINING WAS PROVIDED	NO. OF BLACKS TRAINED	TOTAL NUMBERS TRAINED
1981	1 522	25 913	77 275
1982	3 511	40 367	164 361
1983	4 249	49 141	202 638
1984	4 662	*	201 004
1985	4 963	*	129 759
1986	2 557	*	126 347

As can be seen, the number of trained workers fell substantially after the high level attained in 1983 - a reflection once more of the impact of the recession on industrial training.

Employers who did not establish formal training centres, but implemented training projects or schemes, were also eligible for tax rebates if the schemes were registered with the Department of Manpower. By 1985, a total of 1 179 schemes were registered. The growth of the schemes over the years has been as follows:

TABLE 7.11: REGISTRATION OF PRIVATE TRAINING SCHEMES, 1979-1985. (39)

YEAR	NUMBER OF SCHEMES
1978	328
1979	349
1980	562
1981	690
1982	889
1983	1 146
1985	1 179

The numbers of courses offered and employees trained were as follows:

TABLE 7.12: TRAINING SCHEME COURSES OFFERED AND NUMBER OF EMPLOYEES TRAINED, 1981-1985. (40)

	NUMBER OF COURSES IN WHICH TRAINING WAS PROVIDED	NUMBER OF BLACKS TRAINED	TOTAL NUMBERS TRAINED
1981	3 722	95 461	226 244
1982	5 543	104 184	247 750
1983	4 781	79 929	219 430
1984	3 765	*	256 141
1985	3 412	*	155 562
1986	1 848	*	132 968

(African workers represent about 42% of those trained.)

Once again the recession has made a significant inroad into the numbers trained and the number of courses offered, with figures declining drastically after 1982.

The private sector has also been able to make use of the state provided public in-service training centres since their establishment in 1976. Initially, eight centres were constructed in 1976, but a ninth centre was built in Cape Town in 1986. The construction of these centres represented the acceptance by the state of the permanency of the urban black in the 'white areas', and hence the need to train and stabilize this labour force. These centres were constructed at a cost of R2 million each. Running costs, however, were to be met by the industrialists making use of the centres. The DET (and after 1979 the Department of Manpower) were responsible for providing professional advice, syllabi, testing and certification of all trained workers.

These nine centres are geared to training semi-skilled operative workers in varied work categories. They share a general aim of increasing worker productivity and technical ability. One of the trainers at the Waltloo Public Training Centre commented that:

> These workers will be able to assist artisans in the repair shops, they will even be able to do specific tasks without the overseeing of the artisan. (41)

Courses range from motor mechanics, welding and building construction to business equipment service and repair. Courses last from one week to seven weeks for a 'Repair Shop Assistant', and to eleven weeks for a 'Basic Electronics Assistant'. Many courses are aimed at developing and enhancing the skills of the operator, in order to enable him/her to assist the artisan, and in fact to work independently in the artisan's absence. The number of semi-skilled workers put through this training has fluctuated: from 14 068 in 1982, it has dropped to 12 700 in 1984, but reached a peak of 15 700 in 1985. (42)

In a speech in 1979, the Minister of Education and Training urged that there should be co-operation between the private sector and the existing public training centres, so that they could be used to maximum potential, and that there be no overlap of training:

> It is my firm conviction that these in-service training centres could be utilized better if companies or firms use them for their general training needs. Training at in-company centres should be

limited as far as possible to specific job-training which cannot be done at the public centres. (43)

State supervision of capital's industrial training activities

It is necessary to examine briefly the state-controlled industrial training environment in order to obtain a more rounded picture of capital's efforts in this regard. The state has legislated a number of laws regulating industrial training. The 1944 Apprenticeship Act was passed primarily to co-ordinate the training of thousands of young white workers employed in the ammunitions and manufacturing industry during the war years. The 1950 Training of Artisans Act was passed in the post-war boom years, particularly in response to the severe shortage of skilled labour. This Act allowed for the training of adult workers (those over the apprenticeship age of 21) to meet these shortages. The 1970 Amendment to the Industrial Conciliation Act of 1956 enabled an Industrial Council or group of employers to establish a joint training scheme and training fund for the industry concerned. The 1976 Black Employees In-Service Training Act and the 1979 In-service Training Act provided for the registration of private training centres and courses. Both Acts allowed industry to apply for tax concessions for training costs incurred. Of greatest significance is the 1981 Manpower Training Act, which was brought into being by the recommendations of the Wiehahn Commission, and was specifically aimed at rationalizing all other existing industrial training legislation. Its major innovation was allowing black workers to be indentured as artisans in the 'white areas' of South Africa.

Apprenticeship training is the most important of all the state's industrial training activities. The Manpower Training Act of 1981 specifies that the minimum age for apprenticeship is 16 years, and the minimum educational qualification is a Standard Seven certificate. Apprentices serve a prescribed period of between three and four years, depending on their trade. A minimum period of between 80-93 weeks of practical training has to be undergone before a trade test can be written. This training can either be obtained at an institution (off-the-job), or it can be obtained on-the-job under the guidance of a trained artisan. Apprentices also need to attend trade theory

classes, either at a technical college or by correspondence. The different trades specify whether it is necessary to obtain the National Technical Certificate-I (NTC-I, equivalent to Standard Eight) or the NTC-II qualification. At the end of their contract, the apprentice will then write a trade test at Oliphantsfontein under the control of the Committee Of Trade Testing (COTT), which is supervised by the Department of National Education and the Department of Manpower.

Because educational colleges are racially structured, a single factory's apprenticeship workforce may have to acquire their theoretical insights at as many as four different colleges. There are few black technical colleges in the urban industrial complexes, and this has become one of the major problems for industries attempting to train black artisans.

Table 7.13 indicates the numbers of apprentices registered each year, and the numbers that have qualified:

TABLE 7.13: NUMBER OF APPRENTICESHIP CONTRACTS REGISTERED ANNUALLY (44)

YEAR	METAL(ENGINEERING) TOTAL	TOTAL FOR ALL ECONOMIC SECTORS
1979	3 358	9 192
1980	3 822	10 527
1981	4 184	11 967
1982	5 517	14 497
1983	3 573	12 485
1984	3 759	12 661
1985	3 765	11 573
1986	3 370	9 660
NUMBER OF CURRENT CONTRACTS IN OPERATION:		
1973	9 928	37 743
1979	9 424	28 089
1980	10 002	28 911
1981	11 053	31 757
1982	12 983	36 098

1983	12 604	37 568
1984	11 790	37 130
1985	10 289	33 752
1986	9 555	29 826

The statistics on apprentices registered according to state-designated population group are revealing, because they highlight the number of African apprentices trained since the racial restrictions were removed in 1979:

TABLE 7.14: NUMBER OF APPRENTICES PER POPULATION GROUP (45)

	WHITES	AFRICANS	COLOUREDS	ASIANS
1979	8 078	-	867	247
1980	8 568	82	1 406	471
1981	9 232	495	1 595	645
1982	10 659	741	2 219	878
1983	9 867	656	1 455	507
1984	9 851	654	1 653	503
1985	9 246	666	1 148	513
1986	8 032	582	727	319

Prior to the Wiehahn induced changes of 1979, Africans were not allowed to be indentured in white areas. In fact, there was only one technical institute for blacks in the whole of 'white' South Africa: the George Tabor Centre in Soweto. All other technical training was available only in the homelands. Those Africans who contracted for apprenticeship in the homelands wrote DET administered trade tests at Babelegi Training Centre, and the homeland governments issued the qualifying certificates. The following numbers of homeland-trained black artisans were tested and qualified at Babelegi:

TABLE 7.15: THE NUMBER OF HOMELANDS-TRAINED BLACK ARTISANS (46)

YEAR	NUMBER
1975	71
1976	128

1977	207
1978	218

There was, however, one exception to this general pattern: the Riekert Commission noted that blacks were allowed to perform certain types of bricklaying in the white areas, and for this they were trained and certificated under the Black Building Workers Act Number 27 of 1951. They constituted partially-trained artisans who, the Riekert report claimed, "could attain full artisan status in a comparatively short time" (47). The number of black building workers trained in 1975 was 2 033, and in 1976 the figure increased to 2 713 (48). By the end of 1979, 15 369 registered black building worker certificates had been issued. (49)

After Wiehahn had recommended changes in 1979, the major obstacles to black apprenticeship training were removed and the number of black apprentices jumped from nothing, to 741 in 1982. But, because of the recession which set in after the mini-boom of 1978-1981, the recruitment of African apprentices has remained at a level of approximately 600 trainees per year, with almost 50% of them being recruited by the metal industry. Even though the number of white apprentices has dropped drastically by 4 837 during the period 1982-1986, the large majority of all new recruits still come from the white population group. There does not seem to be much commitment on the part of management to make a substantial break with the racially restrictive practices of the past. (50)

Manpower Survey, Number 15 of 1983 stated that there were 313 872 apprentices and artisans currently employed in South Africa. It gave the following racial breakdown:

TABLE 7.16: TOTAL NUMBER OF ARTISANS AND APPRENTICES EMPLOYED IN SOUTH AFRICA, 1983 (51)

	WHITES	AFRICANS
Artisans	176 404	10 036
Apprentices	42 189	11 986
TOTAL	218 593	22 019

The surpisingly large number of African apprentices and artisans (surprising given the fact that formally, no black artisans could be trained in South Africa prior to 1979) is thus due to the historical accumulation of homeland trained artisans, upgraded black building workers, as well as the (post-1979) newly indentured black apprentices and the newly qualified black artisans. This figure of 22 019 represents the total number of technically skilled black workers currently employed in South Africa.

The Manpower Training Act also makes provision for the training of adult trainees: that is, the training of persons other than minors who have not had the opportunity of entering into an apprenticeship. This apprenticeship training is provided at adult training centres at Westlake (Cape Town) and Vereeniging for white trainees; Sastri (Durban) for Indian trainees; the Bellville Centre for Coloured trainees; and lastly, the George Tabor Centre (Soweto) for African trainees. Admission requirements are a minimum of Std 6 education and an age of over 21. Adult trainees receive one year of intensive training, both practical and theoretical, and they are also required to obtain the NTC-II qualification. At the same time, they are placed by the state with an approved employer. They then do two years in-service training and finally write a trade test. The number of adult trainees attaining artisanal status is far less than the number following the apprenticeship route. Furthermore, up until the end of 1985, no African adult trainees had been recruited. In 1986, 59 African trainees were recruited. Table 7.17 highlights the relevant figures:

TABLE 7.17: ADULT TRAINEES IN TRAINING, AND THOSE OBTAINING ARTISANAL STATUS. (52)

	IN TRAINING	ATTAINING ARTISANAL STATUS
1978	444	170
1979	437	158
1980	477	147
1981	348	108
1982	536	74

1983	324	124
1986	464	125

Another area of state-aided industrial training are the schemes initiated by the National Industrial Councils. The Industrial Conciliation Act of 1956, subsequently incorporated within the Manpower Training Act of 1981, allowed Industrial Councils to establish and fund a training scheme for the industry concerned. The following industries have set up such schemes: printing and newspaper, electrical contracting, jewellery, retail meat, clothing, furniture, motor transport undertaking (goods), motor vehicles, and the iron, steel, engineering and metallurgical industry (53). These schemes have trained the following number of employees during each of the years listed below:

TABLE 7.18: TOTAL NUMBER OF EMPLOYEES TRAINED UNDER INDUSTRIAL COUNCIL TRAINING SCHEMES. (54)

	INDUSTRIAL COUNCIL TRAINING
1980	9 033
1981	12 979
1982	21 174
1983	10 926
1984	13 749
1985	9 040
1986	9 570

Again,the severe impact of the recession can be observed, particularly in the drop of trainees from 21 174 in 1982 to 10 926 in 1983 - a drop of over 50%. The motor industry trained virtually no new workers in the latter year. Training picked up again in 1984 to 13 749 workers trained, but it has since plummeted to 9 570 by 1986.

SEIFSA runs industrial training schemes for the Iron, Steel, Engineering and Metallurgical industry. It has an Education and Training Fund which provides for the payment of grants to those employers who undertake training of apprentices, technicians and other skilled categories of labour. It is intended that the fund will act as a catalyst for the training of a widening pool of employees, as all companies are obliged to contribute a levy to the Fund, irrespective of whether they train or not.

SEIFSA's Technological Fund provides bursaries to students enrolling at technical colleges and Technikons for advanced technical courses. Furthermore, the Supplementary Scheme provides grants to those employers engaged in operative training schemes. The Industrial Council has the legislative ability, through the sanctioning powers of the Minister of Manpower, to authorize the employment of certain levels of black labour in jobs previously restricted for skilled white labour. Much of the SEIFSA Supplementary Scheme training has gone into providing such layers of black semi-skilled labour: for instance, by August 1979, 2 605 non-artisanal black welders had been authorized and trained through the scheme. (55)

Many of these partially-skilled African workers have become journeymen under five year contracts, authorized by SEIFSA's Journeyman Recognition Scheme. After the prescribed period of contract, these journeymen are recognised as artisans within the metal industry. Similarly, the Artisan Training Recognition Agreement of the Metal Industry (ATRAMI) was established by SEIFSA in the early 1980's with the aim of:

> ...getting older workers through apprenticeship training as quickly as possible. It is only applicable to men over the age of 20, and the maximum length of training is 93 weeks....Once they have been recognised by us as artisans, they can then go and do an industry-run trade test, and become a fully recognised artisan, obviously within the metal industry only. (56)

The ATRAMI scheme is specifically geared to producing African journeymen who are in fact partial artisans, presumably a cheaper form of skilled labour-power than the more costly qualified white artisans. According to Lever:

> ...trainees of numerous public and private training schemes have enlarged the supply of skilled labour. The variety of 'Journeyman

Recognition Schemes' in a number of industries has contributed towards displacing the apprenticeship system from its role in controlling access to skill certification. (57)

These 'Journeyman' and ATRAMI initiatives reflect the on-going determination on the part of capital to weaken the dominance of costly skilled white labour, and to substitute them with cheaper quasi-skilled African labour.

In 1983, SEIFSA established an Artisan training centre in Boksburg with the intention of increasing the total of trained artisans by 30%. The centre cost R3.5 million to construct and equip. In its first year of operation, the centre trained 80 apprentices, and the aim is to increase the capacity to 200. The Benoni centre is the first technical training centre in South Africa where the tuition is both modularised and institutionalized. Completion of the training is based on the attainment of competency at each modularized stage of the training. Trainees do not only learn on-the-job, but are also tutored in formal training institutions away from the site of production. The significance of these aspects of the Benoni centre is that trainees emerge as far more competent technical workers, with a firmer theoretical foundation for the practical tasks they have to perform. (58)

The sum total of SEIFSA's Industrial Council training is reflected in the following table:

TABLE 7.19: GRANTS AWARDED AND PERSONS TRAINED BY SEIFSA TRAINING FUNDS, 1970-1979. (59)

	AMOUNT OF GRANTS PAID OUT IN RANDS	NUMBER OF PERSONS TRAINED
Apprentices qualifying as artisans	37 477 377	15 863
Adult trainees qualifying as artisans	69 501	71
Journeymen Recognition Agreement qualifiers	872 750	690
Journeymen passing		

artisan trade test	128 911	42
Persons obtaining various technical diplomas at Technical College/Technikon	1 283 049	2 114
TOTAL	39 831 588	18 780

The funds to finance these various forms of training have come from the levying of affiliate companies in the industry. Almost R50 million has been collected between 1970 and 1979 by this SEIFSA scheme. (60)

Global statistics on the extent of in-service training in South Africa

A single macro-statistical picture describing the magnitude of industrial training in South Africa over the last few years is obtainable from two primary sources. The first is the Department of Manpower, from where most of the figures quoted above have come. The latest figures published by the Department are recorded below:

TABLE 7.20: MACRO STATISTICS OF PERSONS TRAINED ACCORDING TO VARIOUS PROGRAMMES, 1982 - 1985. (61)

TYPE OF TRAINING	1982	1983	1984	1985	1986
Apprentices in training	36 098	37 568	37 130	33 752	29 826
Trainees in training	897	693	836	523	552
Group Training Centres	14 068	12 873	12 700	15 750	12 599
Private Training Centres	164 361	202 638	201 114	129 759	126 347
Private Training Schemes	247 750	219 430	256 141	155 562	132 968
Workseekers	860	3 852	9 250	12 748	10 311
Unemployed persons	-	-	-	53 981	407 259
Industrial Council Training Schemes	21 174	10 926	13 749	9 040	9 570
Non-Industrial Council training Schemes	13 375	17 249	17 266	14 197	7 149
TOTAL	498 583	505 229	548 076	425 232	736 581

As these figures illustrate, the number of workers trained in industry between the years 1981 and 1984 has been remarkable. In 1981 the global figure was 389 000 workers trained (62), but by 1984 it had attained an all-time high of 548 076. This is particularly impressive given the severe recession that had set in during this period. This phenomenal increase in training led Mr Naude, Chairman of the NTB, to comment:

> There has been a training explosion in the country in the past few years since the government extended tax concessions for training costs to all races....The government has been spending about R100 million a year subsidizing training in the private sector through these tax concessions. (63)

Dr Reynders, Chairman of the NMC suggests that the training levels during this period could be even higher. The statistics presented above are merely reflections of the recorded training activities occurring in industry. Some training initiatives are unrecorded. A number of employers, out of ignorance or incompetence, do not register their courses with the Department of Manpower for tax concessions. Dr Reynders added:

> There are a lot of companies that don't register for tax concession purposes...the numbers for training are then probably much higher if one includes these companies. (64)

Consequently, the figures employed here which approach almost half a million workers trained each year, should be considered the bare minimum, and the real total could possibly reach far higher levels of training.

This impressive growth in training which continued well into the recession phase of the South African business cycle, was a direct result of the training-cycle lag discussed in Chapter Four. The fruits of increased industrial training, initiated as a result of improved production conditions prevalent during 1979-1981, were reaped only three to four years later, occurring precisely at a time when the economy was contracting. As a result, the negative impact of the economic downturn on training was heightened by the simultaneous delayed qualification of large numbers of trained workers, the latter being a consequence of the training lag. By 1985 industrial training (excluding the training of the unemployed workers) had been cut back to 371 331 workers trained, and by 1986 to 329 322. (65)

The second important statistical source for providing a global picture of private sector, state-aided training is the NMC investigation into 'In-Service Training in South Africa, 1980/1981'. Using its sample survey of training in 2 194 business organizations, which together employed 43% of all employees in the business sector, it found that between 400 000 and 789 000 workers received training in these sample organizations. The survey then deduced that between 1 247 000 and 1 935 000 workers may have been trained in the whole business sector of South Africa during 1980/1981. The survey then subdivided this total number of trainees into population and skill level categories, both for the lower estimated limit of 1 247 000 trained, and for the upper estimated limit of 1 935 000 trained. The following table was thus produced:

TABLE 7.21: ESTIMATED NUMBER OF TRAINEES, BY SKILL CATEGORY AND POPULATION GROUP, RSA BUSINESS SECTOR, 1980/81. (66)

LEVEL OF SKILL	POPULATION GROUP: WHITES	BLACKS	COLOUREDS & ASIANS	TOTAL
LOWER LIMIT:				
Unskilled	53 000	322 000	9 000	384 000
Semi-skilled	97 000	342 000	33 000	472 000
Artisan	67 000	2 000	3 000	72 000
Skilled	168 000	37 000	25 000	230 000
Highly Skilled	77 000	7 000	5 000	89 000
TOTAL	462 000	710 000	75 000	1 247 000
UPPER LIMIT:				
Unskilled	83 000	500 000	14 000	597 000
Semi-skilled	150 000	530 000	51 000	731 000
Artisan	104 000	4 000	5 000	113 000
Skilled	261 000	57 000	39 000	357 000
Highly Skilled	119 000	11 000	7 000	137 000
TOTAL	717 000	1102 000	116 000	1 935 000

These statistics confirm that blacks received a large share of the semi-skilled training, but that most of the artisanal, skilled and highly-skilled training was still largely white dominated. Nonetheless, semi-skilled operative training constituted 38% of all training in the South African business sector in 1980/1981, and unskilled and semi-skilled training together constituted 69% of total training. Blacks recieved 83% of the unskilled training, and 73% of the semi-skilled training. Hence, African workers were the reciprients of much of this training explosion.

These figures are also revealing when compared with the size of the economically active population in 1980:

TABLE 7.22: OCCUPATIONAL DISTRIBUTION OF THE ECONOMICALLY ACTIVE POPULATION, 1980. (67)

OCCUPATIONAL GROUP	WHITE	AFRICAN	TOTAL
Professional,technical and related	371 300	177 180	622 280
Management and Administrative	125 820	4 040	137 140
Clerical workers	505 220	200 640	828 800
Sales workers	195 620	166 200	437 340
Service workers	155 820	1102 840	1428 080
Farm,forestry and fishery workers	88 900	1114 340	1363 820
Mine,production and transport workers	434 400	2143 220	3068 840
Others	27 980	668 580	779 400
TOTAL	1 905 060	5577 040	8665 700

What emerges statistically is that 1 247 000 to 1 935 000 members of the 8 665 700 economically active population were trained in 1980/1981 - that is, 14.4% to 22.3% of the total employed workforce.

The NMC In-Service Training survey also estimated that the total expenditure by the private sector on training in 1980/81 was R755 million, and that expenditure per employee was between R543 and R604 for that period of one year (68). The magnitude of this training

expenditure considerably exceeded the size of the state annual national budget for black education in 1980. DET expenditures for that year totalled R143 847 700, whilst the 'National States' spent R154 129 138 on education. Together, these figures totalled R297 976 838 - an amount significantly less than the private sector expenditure on in-service training in 1980/1981 (69). In per capita terms, the private sectors investments of R543-R604 per employee in 1980/1981 also far exceeded the state's per capita investment in black education, which was a mere R176 per pupil. (70)

CONCLUSION

The significance of the statistical account provided in this chapter is that it reveals that a sizeable number of workers have been trained each year, a trend which continued at a relatively high level even after the onset of recessionary conditions post 1981. This was as a result of the training-cycle lag, which delayed the negative impact of the economic downturn. However, its impact was eventually felt, with a severe drop in industrial training levels during 1985 and 1986. Training has since become rather sporadic, with some increases in certain training categories. On the whole\ though, training levels have shrunk.

This cyclical pattern of training must be understood in terms of the complex crisis faced by capital since the mid-1970's. In the first place, during the mini-boom conditions of 1979-1981, capitalist production was seriously affected and constrained by a shortage of skilled labour as well as by low worker productivity levels. As a result, training programmes increased dramatically. However, the severity of this skills crisis was to be substantially reduced as a consequence of the economic downturn post 1981: training levels dropped dramatically. In the second place, capital has increasingly faced the growing threat of working class struggles in both the black communities and in the workplace. Education and training initiatives have been one of capital's major strategies in dealing with these problems. Thus, industrial training in South Africa should be seen both as a function of the cyclical variations in the national economy, as well as a reflection of the intensification of class conflict between capital and labour in society at large.

FOOTNOTES

(1) The view that education is a powerful vehicle for legitimizing the South African capitalist order was most strongly voiced at a conference held at Georgetown University entitled 'Furthering higher education of black South Africans: How can the United States best help?' This view has certainly permeated USA foreign policy toward South Africa, as well as influenced the opinions of major USA multinational companies operating in South Africa. See J Davies (1985). Such a view is also central to the rhetoric of South African business leadership. See Schaffer (1985).

(2) Financial Mail, 11/11/77.

(3) Star, 28/10/82; Sunday Times, 24/11/85.

(4) Frontline, September/October 1981, p 27; Financial Mail, 17/4/81.

(5) Pace Commercial College: Phase 2, Pace College, Soweto, undated.

(6) Evening Post, 11/2/82.

(7) Financial Mail, 4/7/80.

(8) Sunday Times, 27/7/86.

(9) Sowetan, 3/3/86.

(10) Ibid.

(11) Star, 8/5/84.

(12) Argus, 19/5/84; Cape Times, 21/6/84.

(13) On the 4/6/86, the Rev L Sullivan announced the abandonment of the Sullivan Code, and called instead for the withdrawal of all American companies from South Africa. See footnote (49) of Chapter Five for further information.

(14) Post, 18/10/79; Frontline, September/October 1981.

(15) Star, 26/4/83.

(16) Star, 7/12/78.

(17) Taking the Chairman's Fund as being representative of the patterns of private sector expenditure in corporate social responsibility programmes, one sees that of the R70,3 million spent during 1986, more than 80% went towards black secondary and tertiary education. Black Technical Colleges and Technikons received most of this assistance. Business Day, 30/6/87.

(18) Urban Foundation, Annual Review, 1984, Johannesburg, 1984, p 18.

(19) Star, 28/10/82.

(20) Daily Dispatch, 22/9/77.

(21) Financial Mail, 23/11/79.

(22) Rand Daily Mail, 8/7/82.

(23) Department of Manpower (National Manpower Commission), In-Service Training in the Republic of South Africa, 1980/1981, RP 24/1984, Government Printer, Pretoria. For the purposes of this NMC study, the 'business sector' was defined as comprising the following economic sectors: manufacturing, mining, trade, construction, finance, as well as a number of parastatals - SATS, Post and Telecommunications, ISCOR and SASOL. Source: p 5.

(24) Ibid, p 15.

(25) Ibid, p 81. The In-Service Training Report defined size of organization in terms of number of workers employed. For manufacturing, the following categories were used:

A small firm	1 - 49	workers
A medium firm	50 - 499	workers
A large firm	500+	workers

Source: NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 33. The definition of 'size of firm' varied between sectors. For further information, see Table 3.3 p 33 of the NMC report.

(26) Ibid, p 82.

(27) Ibid, p 19.

(28) Ibid, p 90.

(29) Refer to the figures contained in Chapter One, Table 1.6 which highlight the remarkable shift of African workers into the clerical, sales and service-sector occupational categories during the years 1960-1980.

(30) Attempts were made to find more recent figures for In-Service Training. Neither the NMC nor the Department of Manpower have updated these 1978-1980 figures. All annual reports and research publications of the two above mentioned institutions were examined (until and including 1986) but no figures were forthcoming.

(31) NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 76.

(32) Department of Manpower (National Training Board), The Minister: Training Course Catalogue, unpublished pamphlet, Pretoria, 1984.

(33) NMC, In-Service Training in the Republic of South Africa,

1980/1981, 1984, pp 16, 18.

(34) The Minister: Training Course Catalogue (1984)

(35) Ibid.

(36) Wiehahn (1982) p 204.

(37) Department of Manpower, Report of the NMC for...1983, p 388.

(38) Department of Manpower, Report of the Director-General for ...1985, Table 4.13, p 70; Department of Manpower, Report of the NMC for...1983, p 390; Department of Manpower, Report of the Director-General for...1986, pp 79, 81. The asterisk reference indicates that no figures are available for training in terms of each population group. The Department of Manpower now has a policy of not providing racially differentiated statistics!

(39) Department of Manpower, Report of the NMC for...1983, p 388.

(40) Department of Manpower, Report of the Director-General for ...1985, Table 4.14, p 72; Department of Manpower, Report of the Director-General for...1986, p 82.

(41) Interview, Industrial Trainer, Waltloo Public Training Centre, Pretoria, 26/6/85.

(42) Department of Manpower, Report of the Director-General for ...1985, Table 4.12, p 68.

(43) Department of Education and Training (Information Services), Press Release of Speech by Dr F Hartzenberg at the Opening of the General Motors Training Centre, Port Elizabeth, Pretoria, 1979.

(44) HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985, 1985 p 285; Department of Manpower, Report of the Director-General for...1986, p 71.

(45) Ibid, p 283; Department of Manpower, Report of the Director-General for...1985, Table 4.5, p 61; Department of Manpower, Report of the Director-General for ...1986, p 72.

(46) South African Institute of Race Relations, Annual Survey, 1980, Johannesburg, 1981, p 104.

(47) Republic of South Africa, Report of the (Riekert) Commission of Inquiry into Legislation ...., 1979, p 86.

(48) Ibid, p 87; Department of Manpower Utilization, Report of the NMC for...1980, p 180.

(49) Department of Manpower Utilization, Report of the Director-General for...1979, p 23.

(50) See Chapter Eight for a more detailed critique of capital's

efforts with regard to the promotion of black artisans in industry.

(51) Department of Manpower, Manpower Survey No. 15, Government Printer, Pretoria, 1983, p 39.

(52) Department of Manpower, Report of the NMC for...1983, pp 386-387; Department of Manpower, Report of the Director-General for...1986, pp 77-78.

(53) Department of Manpower, Report of the Director-General for ...1985, p 55. There are also an additional four groupings of employers who do not fall under the control of an Industrial Council agreement, but have established training schemes - Business Equipment, Building Societies, Civil Engineering and the Mining Industry.

(54) Department of Manpower, Report of the Director-General for ...1986, p 86.

(55) Wiehahn (1982) p 192. It has proved impossible to find figures for training undertaken by SEIFSA since 1979. One of the problems is that SEIFSA discontinued its major publication in the early 1970's, and no Cape libraries have any other SEIFSA source. The NMC Annual Reports make very general reference to the training done by SEIFSA, but provide no specific figures.

(56) Interview, Mz D Peveritt, 20/6/85.

(57) J Lever, 'Artisan unions since Wiehahn', unpublished Association of Southern African Sociologists Conference paper, 1984, p 17.

(58) HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985, pp 112-124, 314-319. This report proposed that all training should become institutionalized and modularized. The report was very critical of traditional 'on-the-job' apprenticeship training.

(59) Wiehahn (1982) p 194.

(60) Department of Manpower Utilization, Report of the NMC for ...1980, p 32.

(61) Department of Manpower, Report of the Director-General for ...1985, Table 4.18, p 77; Department of Manpower, Report of the Director-General for...1986, p 86.

(62) Department of Manpower, Report of the NMC for...1982, p 133.

(63) Argus, 18/10/83.

(64) Interview, Dr H J Reynders, 19/6/85.

(65) In 1985 the state made an amount of R600 million available in order to alleviate the problem of unemployment. Of this amount, R60 million has been earmarked for the training of the

unemployed. A further amount of R106 million was spent in 1986/87. (The remainder of the R600 million is aimed at improving the employment viability of decentralized regions and for the general purposes of job creation). It has been decided to privatize this training of unemployed workers. 321 contracts have been entered into between the Department of Manpower and the private sector's training organisations. The aim of the training is to enhance the unemployed persons skills and employability. 53 091 unemployed workers were trained in 1985, and a massive 407 259 in 1986. This substantial training of unemployed workers in 1986 has acted to inflate the figures for total industrial training during that year. As Table 9.20 suggests, total training in 1986 was the grand figure of 736 581. However, if the figures for the training of unemployed workers are deducted, then the total level of industrial training for 1986 drops to an all-time low of 329 322.
Source: Department of Manpower, Report of the Director General for...1986, pp 68-69.

(66)NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 257.

(67)Department of Manpower, Report of the NMC for...1983, pp 349-350.

(68)NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 249.

(69)DET, Annual Report, 1980, Table 1.6, p 295.

(70)South African Institute of Race Relations Annual Survey, 1982, Johannesburg, p 465.

CHAPTER EIGHT — A CRITIQUE OF CAPITAL'S SKILL RESTRUCTURING INITIATIVES

Capital has benefited in several ways from its involvement in formal black education and industrial training programmes. For one, leading sectors of capital are now perceived by some elements in the black communities as having played an enlightened role over the last decade in terms of lobbying the state for fundamental social change in South Africa. Furthermore, the success claimed by projects such as the 6-M and the 'Need to Achieve' programmes has definitely benefited capital, with worker productivity and enthusiasm improving remarkably in some instances (1). Also, many graduate and professional black South Africans today are indebted to certain private sector educational trust funds which assisted them educationally and occupationally. Many of them are now employed by, or are effectively co-opted by the benevolence of these private sector organizations. (2)

Concrete gains have been made in the black technical education and industrial training arenas, largely as a result of meaningful state reforms in these fields. The first crucial gain for capital was the 1977 state acceptance of the need to provide for the secondary, tertiary and technical education of African workers in the 'white areas' of South Africa. This change in policy allowed capital the opportunity to proceed with the creation of an educated and skilled African workforce permanently resident in the urban industrial complexes of South Africa, which has been a major advance in its attempts to resolve labour problems and skill deficiencies in production.

There has also been a remarkable shift within the educational discourse of the state, away from the previous ideologically rigid notions of education as preserving ethnic/cultural identity, towards an educational philosophy stressing national manpower and economic developmental needs. This shift constitutes a very significant attempt to defuse the racially controversial nature of 'Bantu Education', and to accredit it with a new de-politicized and technicist image (3). This new educational approach was strongly reflected in the contents of the De Lange Commission Report of 1981. The commission, which had a

significant private sector representation on all of its research committees, stressed the need for a more technical, career-oriented system of education for all South Africans. Similarly, in 1985 the NTB report on Artisan Training was released and it strongly advocated career education. Clearly, the commitment on the part of state manpower planners towards a vocational system of education has continued to be strong, even after the central government's seemingly unfavourable reception of the De Lange Commission's broader findings. This commitment has been given effect by narrowing the mismatch between the worlds of work and learning (4). Projects such as 'Manpower 2000', which was started jointly by the Department of Manpower and the private sector in 1980/1981; the substantial involvement of the private sector in black primary and secondary schooling; the pressures on universities to orientate their admissions and research policies more closely towards the needs of capitalist economic development; the increased representation of private sector spokesmen on state educational and manpower advisory structures (for example the NMC, the NTB and Industry Artisan Training Boards); the concerted state encouragement of private sector in-service industrial training - all of these reflect the continuing and growing trend since the early 1980's towards resolving this mismatch.

Certain key proposals stemming from the NTB report need additional attention here. The advantages of modular, competency-based education contained in the De Lange report were further stressed and developed in the NTB investigation into artisan training. These recommendations were well received and supported at the five symposia for employers and trade unions organised by the NTB. In its 1986 white paper response to this report, the state accepted the majority of the NTB recommendations. The prime thrust of the state's response was to approve the introduction as soon as possible of the:

> ...largest possible measure of devolution of power and consequently of responsibility....The (proposed) Industry Artisan Training Boards should be vested with the necessary legal and other powers to take over, inter alia, the administration of the apprenticeship scheme from the Department of Manpower. (5)

The significance of these changes when they are finally implemented, is that the state is ceding to industrial employers siginificant influence in the realm of apprenticeship training. The proposed Industry Artisan Boards would be composed of representatives of employers and employees, with one nominee from the Department of Manpower. These boards in each separate industry would be responsible for the entire task of skilled labour production: that is, the implementation of a modular, performance-based system of training; the rationalization of trades; the structuring and development of training course content, syllabi, testing and certification (6). These are profound changes, for whereas in the past, the state acted in defence of skilled white worker interests (it had powerful leverage in the determination of apprenticeship training via the influence of the Minister of Manpower, the apprenticeship training Registrar and the Artisan Training Committee), this decentralization of power will now grant capital far greater leverage to pursue its onslaught against the skilled white worker. In the absence of the state, capital will be freer in particular industries to hasten the rationalization and deskilling of artisanal work where technological advances and cost/ productivity factors require it. Once these recommendations have been implemented, highly significant changes are likely, with the production of many grades of semi-skilled workers, artisan-aides, as well as the increased development of highly skilled special-grade artisans. Trades will become rationalized, and many job tasks will be more rapidly fragmented into modularized components. Obviously such major changes in the organization of the labour process will be highly beneficial to those capitals requiring such transformations.

THE WEAKNESSES INHERENT IN CAPITAL'S REFORMIST INITIATIVES

The State-Capital Alliance

The benefits obtained by capital via its interventions in the black education and training arenas, however, are far outweighed by the limitations of these initiatives. The most severe limitation is the ultimately ineffectual nature of the reformist alliance between big business and the state. Seen by capital at the time of its emergence in 1979 as a crucial vehicle for real change and the stabilization of

capitalist relations in South Africa, by the mid-1980's it had become clear that this reformist alliance was deeply troubled. Its problems stemmed primarily from the inability of the reformist wing within the Nationalist Party to attain dominance, and from the continued pressure within the party from its large rightwing constituency to maintain white privilege. As a result, government reforms in most cases generally came too late, were often still defined within the broad ambit of apartheid policy, and hence were too conservative to win widespread support and credibility. These reforms were totally unsuccessful in curbing and containing the unrest prevalent throughout the country. In fact, many of the new policy measures such as the Community Council system implemented in 1983 and the Tri-Cameral Parliamentary system implemented in 1984, served only to heighten and consolidate the struggle against apartheid.

Certain reformist elements within the private sector, particularly those representatives of large capital, became disillusioned with this slow pace of reform. The working relationship between business and government, enthusiastically established in the late 1970's, was no longer a feasible option. In the absence of fundamental state reform, many of the initiatives the private sector embarked upon were also highly constrained, tainted by the racist and repressive nature of state policy. This theme was vigorously stressed by the Project Free Enterprise report published in July 1986, which represented the views of approximately 900 business organizations throughout South Africa:

> There are certain distinct macro socio-political and socio-economic issues which would have to be addressed (by the government) in order to change worker perceptions. These issues may be viewed as the foundation upon which dissatisfaction and perceptions of discrimination rest....A lack of constructive and urgent attention to the implementation of corrective strategy around these macro issues would make it impossible to create an environment in which the worker will commit himself to the growth and development of business in a free market economy. (7)

A further development occurring alongside this decline of the reformist alliance in the early 1980's, was the emergence of community-based political organizations throughout the country. As Chapter Five outlined, these organizations, together with the well-established progressive non-racial trade union movement, were very suspicious of the state and capital's reformist initiatives. The response on the part of many business concerns was to attempt not to be so clearly identified with the activities and policies of the state, and to try and win some credibility in the eyes of community organizations. For example, the Urban Foundation warned in an internal assessment document during 1985, that the "private sector should be wary of too close an identification with the state in education if its image, which was already tainted by the free enterprise system, was not to become further tainted in education" (8). The Urban Foundation thus developed a new approach to its reform initiatives, firstly, by more assertively lobbying the state for meaningful structural change; and secondly, by implementing community projects that were not directly tied to state departments, structures and policies. Chapter Five suggested that although the initial hostility shown towards the Urban Foundation has not been substantially reduced, this changed strategy has resulted in the establishment of a number of successful working relationships with progressive black community organizations.

What these developments have highlighted is that there is no unproblematic partnership between the state and capital in these various reform programmes. Capital, inspired by its 'social responsibility' ideology, is caught within and constrained by a complex set of tensions, with an uncomprising state machinery on the one hand, and a hostile popular-democratic movement on the other.

A lack of unity and purpose within the private sector

The above mentioned problems have been made more acute by capital's internal weaknesses, as well as by its inability to rally all of its member organizations to the cause of social reform. As stressed earlier, most of the education and training reform projects implemented have been the initiatives of large capital. Small companies have lacked the financial resources to contribute to these

projects, and they have not had the same economic imperatives necessitating such interventions. As Stanley Greenberg notes in his history of the South African manufacturing sector (9), most members of the manufacturing community have always accommodated apartheid. Smaller manufacturing concerns in particular have benefited greatly from the cheap labour policies, the repressive labour control methods, and the attractive border industrial development incentives provided by the apartheid system. Consequently, they have been less than critical of state policy. They certainly have not supported liberal criticism that apartheid is a major constraint on capitalist economic development. In fact, Greenberg suggests that most of the protest emanating from the manufacturing sector against the apartheid system has occurred only at moments of heightened social and political upheaval in South Africa - 1960, 1976, 1980, and 1985/1986. During the boom period of the mid-1960s which continued into the early 1970's, industrialists were noticeably quiet about the economic constraints imposed by apartheid policy, and were more than satisfied with the economic benefits accruing to them from such a system. Jolted by the violent explosion of June 1976, and increasingly alarmed by the intensity and depth of the current phase of countrywide resistance (beginning in September 1984 with the Vaal rent boycotts, and continuing up to the present time), capital has become more vocal in its criticisms of state policy. It has been during these moments of crisis that capital has most assertively articulated the need for fundamental structural reform, the abolition of all apartheid laws, the unbanning of all banned political organisations, the release of political prisoners, and the introduction of a process of national negotiation towards a new political dispensation.

However, the reform language of capital (monopoly capitalist interests in particular) has often been very shortlived, and has lacked consistency and credibility. After initially voicing its concern for reform during these times of heightened conflict and violence, capital has subsequently fallen victim to state-propogated 'total onslaught' arguments, and in reaction to this, has severely backtracked on its earlier commitments to fundamental social reform. A disturbing example of this trend was the recent support given by Gavin Relly, Anglo American chief, to the implementation of the second national state of emergency in June of 1987. Relly argued that:

> In these circumstances, the imposition of the state of emergency last year and its recent renewal, though regrettable, were

> necessary to contain the widening cycle of senseless violence.... it would be foolish to pretend that communities exposed to violence have not benifited in terms of the security of their daily living. (10)

Relly's remarks reflect a substantial shift in the attitudes of prominent businessmen. In 1985, Relly led a delegation of businessmen to meet with the ANC in exile, and boldly suggested that the only route to an end to the violence and the establishment of peace and prosperity in South Africa was via a process of open negotiation between the state and legitimate representatives of the black community (11). This implied the opening up of political spaces, the unbanning of groups such as the ANC, and the cessation of violence on all sides - certainly not the state-of-emergency clamp down and the containment of popular struggles which Relly was to support two years later. Sampson, in a recent book on the relationship between business interests and the state in South Africa, argues that it was the escalation of ANC guerilla attacks and violence in late 1985 and throughout 1986 which led to this backtracking on the part of business leadership. However, Sampson suggests also that business found a false sense of security in the slight improvement in the economy during mid-1986. He writes:

> The declaration of the emergency had been followed by a local boom and a flurry of economic activity stimulated by the finance minister Barend du Plessis with his new package....The government used the mini-boom to show that business appreciated a tough, decisive stand, and by the end of the first week of the emergency de Kock was claiming that South Africa was now 'on top of the debt crisis'....faced with the choice of decisive police repression and an uncertain black mob, most businessmen were more concerned with their short-term security than their longer-term survival. They put some hope once again in President Botha. (12)

Related to this problem of capital's inconsistent position with regard to fundamental social reform is also the reality that what business leaders say at the level of rhetoric and ideology does not necessarily reflect what is actually happening on the ground. Most business

enterprises are still thoroughly enmeshed in and regulated by existing apartheid structures and racist work ethics, with no real commitment to changing them. The Project Free Enterprise report complained bitterly of the lack of commitment on the part of many South African companies to the reform process. On the whole, little progress has been made in terms of black advancement (refer to footnote (13)), increased management recognition of and negotiations with black trade unions, improved working conditions, better education and training opportunities, and corporate 'social responsibility' programmes. Project Free Enterprise noted:

> Management is generally still guilty of totalitarian and autocratic styles of management that negate or prevent any meaningful participation by workers in basic processes such as performance improvement, productivity enhancement and decision making....Management tends to be satisfied with broad generic statements of intent, rather than implementing specific action steps....Management pays lip-service to some important issues such as black advancement and improved incentives. (14)

The Project Free Enterprise Report has thus warned that improved productivity and a new phase of economic growth will not occur if business fails to address the real causes of bitterness and the acutely negative perceptions of work held by most black employees. It is certainly clear that the corporate 'social responsibility' programme has not succeeded in rallying large numbers of managements to the cause of social reform in South Africa. The formal educational and ideological training efforts described in earlier chapters represent only the barest minimum investment in 'social responsibility' on the part of capital as a whole. These initiatives reflect the activities primarily of large capital. As Desire' Peveritt,Training Officer for SEIFSA's Education and Training Board, acknowledged this in a interview:

> The reality of company expenditures is that they are spending less than 0.5% of their total expenditure on education and training. This is not social responsibility. This is merely responding minimally to their training needs....Approximately 1 million workers might be getting some sort of training. But we have an economically active population of about 10 million. In other words, only 10% of our workforce are getting any form of training. This is very low. (15).

The non-habituation of black workers

The ultimate constraint on the success of capital's initiatives in the area of educational reform lies in historical neglect of attempts to integrate urban blacks more fully into the capitalist system through co-optive and assimilationist policies. Capital and the state have never consistently struggled to win over the 'soul' of the African worker. Historically, as Greenberg has shown, during moments of crisis shortlived attempts at assimilation have been made - but with little success. Rather, labour control and stability in South Africa has always been established through the use of force and extra-economic compulsion.

By the 1970's, this disregard for winning over the 'soul' of the African worker had become particularly damaging for management. Excluded from many of the benefits of capitalism, African workers had developed their own working class identity, and had re-discovered the strength of their organised unity. What can be defined as a 'contested terrain' had emerged: a cultural and ideological struggle over the soul and allegiance of the African working class. In response to this, many sectors of capital and reformist elements within the state have argued since 1976 for the importance of stabilizing elements within the urban African workforce. The policies they have lobbyied for have involved granting African urban dwellers certain economic and political concessions such as permanent residence status, trade union membership rights, improved education and training facilities and political participation at local government level. The articulation of such a co-optive strategy must be viewed in relation to the emergence of an effective working class culture of defiance - a culture of restricting output, absenteeism, dodging work and trying to gain as much as possible from the world of exploitation (16). This co-optive strategy formulated by capital and the state must also be viewed in relation to the emergence of a powerful and organized trade union movement which has effectively demonstrated its ability to win over the allegiances of a large section of the urban black industrial workforce (17). This work-based culture of defiance has emerged at a time of intense community resistance and increasing trade union organisation. Thus, a resistance practice both in the factory as well as in the community has been firmly rooted in the South African social reality.

This 'contested terrain' is most usefully illustrated with reference to the position of the black supervisor in industry. In a paper on the importance of training black first-line supervisors, Nel and Rajah argue the following:

> More companies are providing training for supervisors....This is an encouraging feature as it is at this level that most of the interaction on a day-to-day basis takes place. The supervisor is the major link between the shop floor and senior management. (18)

Yet in a survey done by Sarakinsky on the East Rand, most metalwork first-line supervisors interviewed regarded themselves, and were regarded by their fellow workers, as clearly aligned with the working class. All the African supervisors interviewed were members of the COSATU-affiliated Metal and Allied Workers Union (MAWU), which on the 23 May 1987, joined with other smaller COSATU metal unions to form the National Union of Metal Workers of South Africa (NUMSA). These black supervisors have rejected the managerial status and loyalties expected of them by their superiors, and have identified themselves organizationally with the cause of the workers. A personnel manager was reported by Sarakinsky as saying:

> They (the black supervisors) don't accept that they are different from them (the workers), but we are trying to change their perception....I think they see themselves as part of the workforce rather than as part of management and this is a very big problem area. (19)

NUMSA has made a deliberate effort to win over the allegiance of these supervisors. A shop steward in a metalshop elaborated:

> The Personnel Manager wanted to divide the workforce at the company. He wanted to create a division and a conflict between supervisors and workers. So what we have done is to try and prevent this happening by telling our supervisors and workers they must respect each other. (20)

Black first-line supervisors, who are the beneficiaries of much of management's ideologically-defined training programmes, are clearly caught in the centre of this 'contested terrain'. On the one hand,

management is making a determined effort to co-opt a strata of workers in the factories into supervisory positions, hoping that they will act as management representatives, thereby encouraging workers to higher levels of productivity and shopfloor discipline. On the other hand, the progressive trade union movement is effectively maintaining the loyalties of many of these supervisory workers, and is thus thoroughly undermining management's attempts at further control of the workforce. Sarakinsky explains the success of this NUMSA strategy of winning the loyalties of the black supervisors in terms of the overwhelming impact of the common experience of racial oppression amongst all workers, and the significant barrier this represents in the attempts of a largely white management team to co-opt these black supervisory workers (21). Also, supervisory workers are exposed to forces of popular struggle in their communities which pull some of them further away from the management/ ruling-class bloc. It is the complex combination of these forms of trade union organization, exposure to and an involvement in popular resistance practices, as well as a continued experience of racial oppression amongst many African workers, that effectively constitutes a powerful oppositional tendency to management's incorporationist intentions on the shopfloor.

John Davies, in a recent article on international capital's involvement in black education, makes a similar point when he concludes that:

> The black population will be the final arbiter of the fate of educational reformism, and quite simply, the whole structural and historical weight of black social conditions and popular struggle is ranged against its success....Blacks are propelled not towards co-optation and collaboration, but squarely towards revolution. (22)

It is significant to note that a number of capital's most prominent projects in the black education and training arenas have in fact failed, becoming completely overwhelmed by the extent and depth of resistance practices prevalent throughout black society. The case of PACE College comes to mind. Built in Soweto in 1981, PACE was established by American capital for the specific purposes of creating a competent black management class (23). However, PACE's subsequent

history has been quite the opposite. On the one hand, PACE has been unable to break away from the legacy of inferior education inherited from 'Bantu Education'. With the first matric results obtained in 1986, PACE students performed dismally. Out of 131 pupils, only ten obtained exemptions and eight others received school leaving certificates. The remaining 113 students failed (24). This came as a severe blow to private sector investors and liberal educationalists who passionately believed that improved educational programmes would compensate for the bad tuition of the past. The millions of rands spent on sophisticated equipment and infrastructure had not succeeded in equipping pupils more adequately for matric exemption. Performance in the school classroom was clearly not only related to technical factors such as resources and equipment, but also had to do with the broader social (class) relations that have a great influence on the relevance, meaning, acceptance and rejection of schooling by black children in South Africa.

PACE College, however, has failed at a more directly political level. Labelled an elite institution, PACE was continuously disrupted during 1986 by student strife and boycott actions. In one incident at the school, pupils burnt the American flag as a protest against American imperialism after an address at the school by the executive director of AMCHAM, the original sponsors of the school (25). In another incident, the deputy principal, Soweto poet Oswald Mtshali, resigned from the school after having been rudely "shoved around" by three SADF soldiers occupying the school premises. Mtshali was also fetched by security policemen from his home to search the school premises "because guns were allegedly stored there with my connivance" (26). As a result of this upheaval and along with serious financial problems, AMCHAM announced in November of 1986 that it was closing the school. PACE re-opened in January of 1987 as a community college, governed by a committee comprised of Sowetan educationalists and community leaders. The new PACE College was committed to the development and implementation of People's Education curricula - a far cry from its original intention! (27)

CAPITAL AND TECHNICAL TRAINING

It is now necessary to examine more specifically capital's attempts to improve black technical training. Chapter Seven provide detailed evidence that in fact a serious commitment to this cause from capital has been lacking. For example, capital has provided minimal financial support for its own technical and industrial training initiatives. This is reflected in the reports of the state agencies involved in monitoring private sector training activities. These agencies provide financial assistance for private sector training, and are thus in an informed position to evaluate the magnitude of such training. The Department of Manpower, the overseer of all training activities and the administrator of the Manpower Development Fund (a fund recommended by the Wiehahn Commission and established in 1981), expressed certain reservations about the private sector's commitment to training:

> It is in a way disappointing that employers do not provide training or re-training for their employees on a larger scale. This state of affairs is partly borne out by the fact that the Manpower Development Fund is not fully utilized. (28)

> The conditions on which loans are granted are more favourable than other sources of finance in the private sector, but by the end of 1983 only Eight applications for loans from the fund had been received. The Department will, however, in the future have to devote more attention to methods aimed at encouraging employers to make more use of existing incentives and training facilities. The private sector will also have to make a substantial contribution in this regard. (29)

In an interview, Dr H Reynders, Chairman of the NTB, added:

> I have the impression that industry isn't doing by far what it can do in terms of the training of black artisans. They are putting up all sorts of excuses, that they can't find qualified black students....They are not going out into the market to see what is available. (30)

This low level of training commitment is also reflected in the results of a survey conducted by the NMC into in-service training in South Africa in 1980/1981. The survey noted that there was definitely a "substantial pool of employees (with the potential) to be trained into artisans" (31). Of the responding organizations in the NMC survey, 626 business organizations said they had black employees with the potential to be trained as artisans. However, only 220 organizations were actually training black artisans (32). In other words, most organizations were able to train black workers as artisans, but in fact did not do so.

Why then this low level of commitment to training? This is clearly a highly contradictory phenomenon, given the existence of certain acute skill shortages and deficiencies in industry. A number of important determining factors are considered in the following section.

The recession and low levels of training

A central factor constraining increases in black technical training is the current recession. The demand for manufactured products is very sensitive to the cyclical variations of the national economy. As was made clear in Chapter Four, capital's artisan training programme over the last 15 years has thus also been extremely cyclical and eporadic. Training initiatives generally implemented by South African managements have not been based on long-term planning and needs, but rather on short-term skilled worker vacancies. This has resulted in the recruitment for artisanal training rising greatly during the boom periods of the late-1960's/early-1970's and the 1978-1981 growth phase, but dropping drastically during the recessionary slumps of the 1974-1978 and 1981-1987 periods. There are two major consequences of this cyclical training programme. Firstly, there is a four year lag in the qualification of artisans, and hence increased numbers of apprentices are recruited during periods of boom, but qualify only four years later during recessionary periods when their services are not in such great demand. This instability heightens the shortages of artisans during boom phases, the 1979-1981 period experiencing particularly acute shortages of certain key skilled personnel.

Secondly, such cyclical instability re-inforces capital's hesitancy to invest heavily in training projects. In the absence of any long term planning, this has meant that training initiatives have remained ad-hoc, implemented when the needs have arisen, and abandoned when the economic climate has shrunk. Hence, the major theme of this thesis (being the existence in the late 1970's of very real and in some cases, very severe skill shortages and skill deficiencies) must be understood in the context of this cyclical pattern of artisanal training. In the late 1970's these shortages were acute, and training programmes flourished. By the mid-1980's these shortages had become less severe, given the contractions in manufacturing output due to the recession. The commitment to training had consequently lessened.

The skill deficiencies nonetheless still exist, albeit in a dormant and non-activated form, overlaid temporarily by the impact of the recession. Many of these shortages and skill deficiencies are structurally defined by the racially constructed nature of South Africa's education and training, as well as by industrial workplace structures. For example, as a result of the racial nature of South Africa's work environment, privileged white workers have historically had direct access to skilled technical jobs. However, this situation has resulted in low levels of educational competence and neglect of training. In fact, as was indicated in Chapters One, Three and Four, large numbers of these white workers are technically underqualified for the complex production operations required of them, and many are unable to perform the managerial/ administrative/ human relations tasks increasingly being expected of them. Furthermore, most black workers have never had the educational and training exposure to equip them satisfactorily as a readily trainable and upgradable labour force. On the ideological level, a whole range of 'correct' work ethics and values have never been effectively inculcated within the African workforce. All of these problems will re-surface again, either as a result of the growth demands of another boom phase, and/or because the magnitude of the class conflict within industry will intensify to such proportions that ideological contestation will become untenable and will necessitate urgent resolution. Such conflict will need to be rectified through the implementation of large-scale education and training progammes. For the moment, however, training, temporarily displaced by the impact of the recession, is not being perceived as an urgent priority by capital.

Neglect of manpower planning

Another problem endemic to industrial management in South Africa is the almost complete lack of any systematic manpower planning. The NMC investigation into in-service training estimated that less than 25% of firms interviewed had any manpower-need projections and training plans. Of 948 companies interviewed, only 415 had a written policy on training (33). The survey noted that the absence of any planned manpower programme increased the possibilities of poor training.

Similarly, the Project Free Enterprise Report warned that training was futile if it was not complemented by worker-participatory, improved job mobility and monetary reward schemes. This constituted effective manpower planning. There was no point in training a black worker for a particular post without the possibility for further advancement. There would be no incentive for the worker employed to increase productivity and work participation (34). These views were echoed in a NIPR report on training:

> A training programme that is not fully integrated with sound job-evaluation, remuneration and promotion plans, will soon run out of steam. To give credibility to your programme, you must reward improved performance. (35)

Another constraining factor in this regard, is the lack of information available both to employers, but particularly to black workers, on the opportunities for technical training open to them. Only 28% of the companies surveyed by the NMC investigation into in-service training indicated that they had information readily available on different types of training for their employees (36). Readily available information often serves as a catalyst for increased and improved training for companies which do not plan manpower needs.

There are also serious shortcomings in the way in which workers in many companies are selected for training and advancement. The NMC investigation into in-service training noted that bad selection criteria and recruitment methods in South African industry resulted in not enough people, especially blacks, being trained. Subjective selection methods like the opinion and recommendation of a superior

and recruitment criteria such as work experience discriminated against black employees. Most black workers probably have a white superior who would be highly threatened by any such workers potential for upward mobility obtained via training. Also, most black employees' work records reflect mainly the unskilled labour they have performed in the past, and these would not necessarily be the best entrance criteria for training and upgrading. The NMC survey concluded that selection channels were far too narrow, particularly for black workers, and constituted a limiting factor on black training (37). The National Training Board has recommended the use of more scientifically based psycho-symmetric testing which would identify intellectual capacity, physical ability, state of health, and non-cognitive qualities such as attitudes, values and interests - qualities that constitute 'the will to perform the task' (38).

White resistance to African worker training and advancement

The Wiehahn recommendations of 1979 resulted in the abolition of job reservation and the opening up of apprenticeship to black workers. However, the changes that were introduced did little to reduce the power which white trade unions have had over access to the trades. Through representation on the Apprenticeship Training Committees (now called Manpower Training Committees), they have retained much of this power. The state, employers organizations and the registered trade unions are all represented on these committees. In this way, the white skilled workers have great influence over keeping down the number of black apprentices indentured each year. White workers still constituted 80% of the apprentices recruited in 1985, with African workers forming only 6% of the intake.

However, the problem is more complex than one of white union intransigence alone. It also relates to the continuation of discriminatory practices such as the non-promotion of blacks into higher occupational categories because of the racist opposition on the shopfloor. There is great resistance to appointing a black employee hierarchically above those positions held by other white workers. Top management itself is not sufficiently committed to the task of training black employees for greater responsibilities (39). Jane Hofmeyr of the Urban Foundation identified this as a particularly serious problem:

> Management is aware that most blacks, because of their past

> deprived background, are not immediately as effective as a white employee at higher level jobs. So rather than training them up to the required standard, many of these managements will poach white skilled labour from other companies...or they'll do with less skills. They'll do any number of strategems to avoid the issue of finding sufficient numbers of blacks and training them up to satisfactory levels....Often, the top management do not have a real commitment to developing black personnel. They might make rhetorical public speeches about it, but they do not follow it through in the planning and development of their companies. And middle and lower management do not really have the power to restructure work relations in the plant. (40)

In a 1986 survey of management training undertaken by the NMC, a similar conclusion was reached. The report stated that very little training was being undertaken at all, and this was detrimental particularly to the integration of black personnel into management stuctures:

> Firstly, if the disappointing response from the business sector reflects the interest of the business community in the training of the people who have to manage its activities, this must serve as an indictment against it and at the same time be seen as indicative of one of the main causes of the generally low level of productivity that the country is experiencing. Secondly, the investigation also indicated that an alarming number of businesses, even some of the major ones, are not giving attention to the training of their managers, or are doing so only to a limited extent. This is further indication of the source of poor performance in production. (41)

Reacting to the report findings, Dr Reynders, the Chairman of the NMC, warned that South Africa would not be able to "realize its development potential if it persisted in recruiting high level manpower from whites only". He blamed white managers for the lack of black job advancement, claiming that they were often unwilling or unable to put black advancement commitments into practice. (42)

<u>The constraints of cost and the financing of technical training</u>

The NTB investigation into artisan training in South Africa gave the following figures for the costs involved in training apprentices in various industries:

TABLE 8.1: THE COST OF TRAINING ONE APPRENTICE PER ANNUM,1985.(43)

INDUSTRY	COST PER ANNUM
Metal	R10 000-R15 000
Motor	R15 000-R17 000
Building	R 6 700
Printing	R 8 000

These figures represent the total expenditure involved in the provision of artisanal training, including training centres, staff, renumeration of apprentices (constituting about 60-70% of the total cost), training aids and manuals, and training equipment. At first glance, these figures appear large, and clearly beyond the means of most average-sized companies. However, on closer observation, other factors emerge which substantially alter the final cost of artisanal training. Firstly, there is the additional cost, particularly if the training is off-the-job and institutionalized, of the lost production contribution of the apprentice worker. This production loss is extreme when the apprentice attends a technical college for theoretical training. This factor strongly influences the type of training that employers make available to their apprentices. Although they are obliged by law to provide a certain number of hours of practical training per year for each apprentice, the Manpower Act does not specify how this instruction should be given. Hence, most employers choose the cheapest option, that being to provide mimimal training on-the-job, with minimal instruction, whilst at the same time using the apprentice as a productive unit of labour. The NTB investigation into artisan training drew up the following statistics on the nature of practical training for apprentices in South Africa:

TABLE 8.2: DIFFERING FACILITIES FOR PRACTICAL TRAINING. (44)

TYPE OF PROVISION	% OF COMPANIES THAT PROVIDE SUCH TRAINING
Only in the work situation	41
In company's own training centre	35

Industry training centre	11
State established group training centre	8
A training centre run by a group of companies	5

Clearly, employers prefer the on-the-job training for apprentices where instruction can be combined with on-going production, avoiding the more expensive forms of institutionalized training. In most cases, the formal instruction of the apprentice gradually decreases after the first year, traditionally the year in which most formal training is received. In the subsequent years there seems to be a "growing use of apprentices as production units as they progress through apprenticeship" (45). A profitable arrangement thus emerges for the employer, who continues to pay the experienced apprentice a low wage, although actually providing little training whilst using the apprentice's skilled labour contributions almost continuously in production.

The total training costs of apprenticeship are obviously influenced by the extent of financial assistance obtained both from within the industry and from the state. For example, most metal companies contribute to the Industrial Council-established SEIFSA training fund, and these levies vary according to the following sliding scale - R11.70 monthly for one apprentice per 5 employees, and R46.80 monthly for one apprentice per 15 employees. These sliding scales are specifically designed to penalize those companies that don't train, and who poach skilled personnel from other organisations that do. In return for the payment of the levy, the training company will receive R6 100 for each apprentice who passes the trade test and qualifies as an artisan. It must be remembered that the failure rate at these trade tests is almost 50%, and that a number of apprentices qualify as artisans by effluxion of time. In that case, the company receives only R4 000 for each artisan. (46)

High labour turnover and the poaching of apprentices and qualified artisans represent severe costs for employers in the form of unrecoverable training expenditures. The question of a binding contractual period of employment after qualification as an artisan is being considered by the NTB to protect employers from such financial damage. (47)

After the total costs have been calculated, and the levy benefits accruing from these industry-based schemes have been deducted, the employers are able to obtain tax concessions from the state in terms of Section 11 of the Income Tax Act of 1962. The Department of Manpower explains these tax benefits in the following way:

> An employer may...deduct from his income an amount equal to...75% of the employers training expenses. This means that for every R100 an employer spends on training, he can now recover R75 in tax concessions. In the case of ...the decentralized industrial areas, the tax concession is higher. (48)

If in fact the industrialists are based in the decentralized areas (the homeland and 'border' territories), they may also claim a cash allowance amounting to 37% of their training expenses. Thus taken together with the tax concession benefits, industrialists in the decentralized areas may recover 87% of training expenses (49). These benefits clearly reflect the strong desire on the part of the state to encourage industrialists to invest in their Bantustan economic development programmes.

Employers may also apply to the Manpower Development Fund for loans made available by the state for the infrastructural development of training centres and training schemes. The loans are repayable over a period of twenty years. The following amounts have been paid out since the fund's inception in 1982:

TABLE 8.3: LOANS PAID OUT BY THE MANPOWER DEVELOPMENT FUND. (50)

YEAR	NUMBER OF CLAIMS	TOTAL AMOUNT (RANDS):
1982	2	775 000
1983	3	958 700
1984	4	3 542 550

1985	1	50 000

Many other claims are still awaiting approval from the Department of Manpower.

In a 1982 NMC report on the viability of introducing a levy system for industrial training in South Africa, it was argued that a compulsory state-imposed levy would conflict with the principle of a free market economy and would involve unnecessary administrative red tape. The private sector through its Industrial Council structures, should rather establish their own arrangements to spread the financial burden of training more evenly amongst all employers in the industry so as to eliminate the problem of poaching. Only in exceptional cases should coercive measures be used. Punitive action against those companies who fail to train would not provide the required incentives and encouragement to train. Alternatively, the report suggested the use of cash-grants to employers keen to embark upon training, but in dire need of cash flow. (51)

The cash-grant question continues to be a key factor affecting the initial management decision on whether to implement a training programme or not. The main problem facing managements (particularly small managements) with regard to apprenticeship training is a cash flow problem at the initial stages of training. In 1985, the employer required an estimated R8 000 to R17 000 per apprentice per annum at the outset of such training (52). The tax benefits are only felt at the end of each financial year. Hence, even though much of the massive training costs can be re-couped via these tax concessions, many companies do not have the initial cash flow to launch the training programmes in the first place. It is simply easier and cheaper to poach skilled labour requirements from larger firms, or to rely on a less skilled labour force. The implementation of the NTB suggestion of state cash-grants would thus facilitate the removal of a major financial hurdle to effective technical training in industry.

Poaching

Poaching for many companies, particularly the smaller enterprises operating on a tight profit margin, represents an easier alternative to the costly implementation of Apprenticeship training. Most of the poaching occurs at the expense of the public sector organizations and the large monopoly corporations who train substantial numbers of artisans. It is thus not surprising that these organizations have also experienced the most severe skill shortages. The NMC survey on in-service training confirmed this trend, stating that "the problem of piracy - avoiding, or having limited training amongst many South African companies, is high. Roughly two-thirds of all trained employees in the business sector are recruited from other companies" (53). This poaching of skilled labour is accentuated by the problem, already mentioned, of high turnover rates amongst artisans - estimated to be 32% per annum (54). High apprentice and artisanal turnover rates simply induce a higher level of poaching and a vicious circle is thus set in motion.

Alternate routes to the apprenticeship system

Much discussion in this thesis has focussed on the on-going tendency towards deskilling in South African industry, particularly in those production environments where the constraints against further mechanization have been overcome. South African employers have always been determined to reduce their dependency on costly white skilled labour, and in many production situations today, the fragmentation and deskilling of work tasks has become possible. This has enabled employers to introduce larger numbers of African operative workers into the production process. Millions of rands have been spent on the training of these African operative workers, a cost factor much lower than that of maintaining a large artisanal labour force.

Employers have also devised alternate routes for producing skilled and quasi-skilled labour, enabling them to circumvent the trade-union dominated apprenticeship system. These alternate routes include programmes such as the 'Journeymen Recognition' schemes, the ATRAMI training project, and many of the 'Workshop-Assistants' training

courses mentioned in previous chapters. The significance of all these alternate route training programmes is that they are deliberate attempts by employers to reduce their dependency on costly and powerful skilled white workers. This shift away from the apprenticeship route has also contributed to the low levels of black artisanal training, as many black workers are being trained as quasi-artisans.

Black suspicion of technical education and technical training

Up until the mid 1970's black South Africans were unable to study technical courses in any institutions in the urban industrial complexes of South Africa. Few blacks entered MLM and HLM (mostly white collar) jobs. The craft trades were dominated by highly racist white worker trade unions. It is thus not surprising that a certain degree of suspicion towards technical work has grown amongst black workers, students and teachers.

The consequences of these historical barriers to the development of black technical labour and the current suspicions held by blacks concerning technical work, has been that most black students have chosen study directions in the social sciences, teaching, clerical and administrative fields - jobs which even during the 'job reservation' era allowed blacks some occupational status and recognition of ability. In 1980, only 9% of all black school pupils received technical education, and at tertiary level, only 1.7% of black students chose technical courses (55). Technical labour, in the words of a group of African teachers in Zululand, "offers an inferior brand of education designed to produce exploitable industrial fodder" (56). Jane Hofmeyr, education consultant to the Urban Foundation elaborated on this theme:

> Unfortunately, the way that technical education is motivated by the private sector and by the state, is exactly the wrong motivation to use. They keep making this neat link between technical education, industry's urgent manpower needs, and the growth required for the country's economic development. However, so long as you motivate technical education in this kind of neat linear progression, you fuel the reservations of blacks that this is something designed in the interests of the exploitative capitalist system....I would rather motivate it as something necessary for the balanced development of the

individual and of society. You can't have merely an academic educational stream, not in today's modern technological world. (57)

FOOTNOTES

(1) See Chapter Six, Table 6.2 for management-provided figures on the impact of the 6-M Training Course on productivity and worker attitudes toward management.

(2) Data on the co-option of black graduates by private sector organisations is hard to come by, but there are indicators of certain trends. For example, The Anglo-American Cadets Scheme is specifically geared to developing company loyalty from its black trainees. These cadets are required to fulfil a certain number of years of employment in return for the scholarship. Similarly, many private sector companies employ black graduates with one particular vocation in mind - the Personnel Officer. Capital hopes that these black personnel staff will assist in diffusing industrial relations disputes. Most of these black Personnel Officers are strongly co-opted by the big salaries and company perks offered to them. For many companies, these appointments represent their total commitment to black advancement. For further discussion, see K Hofmeyr and A Human, Black Managers in South African Companies (Johannesburg, 1985). Unfortunately, most of these co-optive strategies cannot be measured quantitatively for the purposes of closer and more critical observation.

(3) See P Buckland, 'Technicism and De Lange: reflections on the process of the HSRC Investigation', in Kallaway (1984).

(4) The term 'mismatch' is widely used in Educational Sociology to describe the failure of the educational system to meet the manpower and skill requirements of the capitalist economy. See Chapter Five for further discussion of this concept.

(5) Republic of South Africa, White paper on the Joint Report of the HSRC and the NTB on the Investigation into the Training of Artisans in the RSA, with comments, standpoints and decisions of the government on the recommendations., WP 0/1986, Government Printer, Pretoria, p 3.

(6) Ibid, see papagraphs 8.13.1, 8.18.2, 9.3.1, 9.9, 9.13.1, 10.2.1, 10.4.1, 13.2, 13.3.1, 13.5.1.

(7)Final Report of Project Free Enterprise, 1986, p 54.
(8)Urban Foundation, 'The role of the private sector', unpublished document, Johannesburg, 1985, p 82.
(9)Greenberg (1980).
(10)Cape Times, 14/7/87.
(11)See Leadership, 4/3/85, particularly the feature articles covering the visit of SA business leadership to the ANC in Lusaka, September 1985.
(12)A Sampson, Black and Gold (London, 1987) pp 317, 320.
(13)The small advances that blacks have made into skilled and professional/administrative/managerial job categories over the last two decades can be observed in the various tables on the South African occupational structure contained in: NMC, High Level and Middle Level Manpower in South Africa, 1987.
(14)Final Report of Project Free Enterprise, 1986, pp 18-19.
(15)Interview, Mz. D Peveritt, 20/6/85.
(16)Sitas (1983) p 302.
(17)COSATU had by July 1987 organized a paid-up membership of 712 231. Source: SA Barometer 1 (11) 31 July 1987 p 167.
(18)Nel and Rajah (1982) p 28.
(19)M Sarakinsky, 'Black supervisors in the class structure of South Africa', University of Cape Town, unpublished Association of Southern African Sociologists Conference paper, 1985, p 5.
(20)Ibid, p 6.
(21)Ibid, p 8.
(22)J Davies (1985) p 76.
(23)Financial Mail, 4/7/80.
(24)Star, 20/6/86.
(25)Weekly Mail, 12/9/860.
(26)Ibid.
(27)Sunday Times, 7/12/86.
Sunday Times, 1/2/87.
Sowetan, 1/8/87.
(28)Department of Manpower, Report of the Director-General for ...1982, p 26. Mr R B Miller, Deputy Minister of Home Affairs made a similar criticism of the private sector as late as July 1985, well into the recessionary phase. See Argus, 2/7/85.
(29)Ibid, p 44.
(30)Interview, Dr H J Reynders, 19/6/85.
(31)NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 13.

(32) Ibid, p 153.

(33) Ibid, p 21.

(34) Final Report of Project Free Enterprise, 1986, p 89.

(35) I J Le Roux, 'Current needs of low level employees in respect of technical training' in NIPR Symposium, Development and Training of Black Employees in Industry, 1980, p 284.

(36) NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, p 13.

(37) Ibid, p 56.

(38) HSRC/NTB Investigation into the Training of Artisans in South Africa, 1985, p 148.

(39) For a detailed discussion on the constraints on black advancement industry, see Hofmeyr and Human (1985) pp 25-37.

(40) Interview, Mrs Jane Hofmeyr, 21/6/85.

(41) NMC, High Level and Middle Level Manpower in South Africa, 1987, p 72.

(42) Cape Times, 22/2/88.

(43) HSRC/NTB Investigation into the Training of Artisans 1985, p 201.

(44) Ibid, p 92.

(45) Ibid, p 93.

(46) Ibid, p 205.

(47) Ibid, p 209.

(48) Department of Manpower, Report of the Director-General for ...1982, p 57.

(49) Ibid.

(50) Department of Manpower, Report of the Director-General for ...1983, p 56; Department of Manpower, Report of the Director-General for...1985, p 75.

(51) See NMC, Report on Training in Labour Relations...., 1982.

(52) See figures contained in Table 8.1 of this Chapter.

(53) NMC, In-Service Training in the Republic of South Africa, 1980/1981, 1984, pp 2, 61.

(54) Department of Manpower, Report of the NMC for...1983, p 131. The high turnover rate amongst artisans is estimated at almost 32% per annum. This differs with Meth's figure of 58%. See Meth (1979) p 76. Nonetheless, the figure is very high.

(55) The Financial Mail, 18/7/80.

(56) Natal Mercury, 9/7/79.

(57) Interview, Mrs Jane Hofmeyr, 21/6/85.

CONCLUSION

In assessing the contribution made by this study to the understanding of why capital has engaged in black educational reform initiatives since 1976, certain limitations related to the nature of this thesis need mentioning. One of the major problems with undertaking a study of this kind has been its interdisciplinary character. The implication of this has been that the research has had to branch off into divergent fields of study: educational sociology, labour process studies, theories of the state and capital restructuring. It has been exceptionally difficult to contain all of these elements within one study, and the result has probably been to produce a broad picture at a general level, rather than a specialized insight at a particular level. The first casualty of the above mentioned problem has been that certain themes have had to be excluded, and the research topic has had to be narrowly focused. Hence the absence of any detailed examination of state reform initiatives in the black education and training arenas since 1976. This has been analytically problematic, for it has been difficult, if not impossible, to separate the state from an examination of capital's initiatives in the black educational arena.

The second difficulty has been attempting to find non-racist ways of dealing with the state's racist definitions of South African communities. This stems from the fact that because of apartheid policy, there are now no less that 15 education departments in the South African region. This study has focused on only one of these educational institutions - the Department of Education and Training. Unfortunately, this has resulted in an urban bias, as the study does not examine education for blacks in South Africa's rural areas nor the provisioning of education by the homeland authorities. Furthermore, a segmented view of the educational process is created by focusing only on the education of one race group. However, to do a complete study of education and training throughout South Africa, regardless of race and homeland boundary lines, would require immense academic and financial resources over an extended period of time.

The third problem area is the 'unheard voice' throughout this thesis. As a result of space and time constraints, it has not been possible to incorporate the views and experiences of the organised working class, particularly in the metal industry, on issues such as mechanization, deskilling, skills upgrading and in-service training. However, this area of study has been competently researched by Webster and Sitas, who have written the history of the workers and their trade unions in the P-W-V industrial complex. Similarly, the demands and aspirations of struggling black students since 1976 are not thoroughly documented in this thesis. Whilst this is a major limitation, again, many studies have been completed on the nature of student struggles since 1976. (1)

Another limiting factor of this study is that most of the insights obtained relating to industrial skills are specific to one industry alone. No comparative insight is provided, for example, of skills restructuring in the metal industry as compared with skills restructuring in the textile, chemical or motor industries of South Africa.

However, these limitations do not detract from the specific contribution made by this study: the identification of a number of contradictory phenomena concerning educational credentials and industrial skills in the South African economy. These include the increasing level of education amongst blacks (particularly in the urban areas), whilst at the same time, a rapidly expanding unemployment level amongst black secondary school leavers. This has occurred whilst many whites, currently employed in artisanal and HLM jobs, possess lower educational qualifications than many unemployed black secondary school leavers. Secondly, a simultaneous process of both job deskilling and reskilling exists within many key sectors of the manufacturing industry. Furthermore, as this study has shown in the case of the metal industry, definite skill shortages and skill deficiencies, of a technical as well as an ideological kind, have been experienced. These shortages have been most acute at the height of the boom phase of 1978-1981. As a result of these shortages, there has been a substantial investment by capital in education and training initiatives, both within formal black schooling, as well as within the non-formal industrial training sector. However, a number of factors

have emerged, particularly in the 1980's, which have acted to constrain the magnitude of capital's investment in education and training, an investment which is certainly smaller than the commitment required to resolve all of the skill shortages and deficiencies prevalent within the South African economy.

This study has attempted to account for these contradictory outcomes. Certainly, the discrepancy between lesser-educated whites in HLM and artisanal jobs, and the growing numbers of unemployed black youths with senior secondary certificates, has in the past had to do with the blatant racial exclusion of qualified blacks from various jobs. It has also had to do with the reduction in the total number of jobs available, due to mechanization in the South African economy in the 1970's and 1980's. However, as the job exclusion factor becomes less of a reality in present day South Africa, this discrepancy is more directly related to the subtle functioning of segmented labour markets which differentiate unequally the value of educational credentials between black and white labour. Hence, as urban blacks have acquired higher levels of education, so entry requirements for blacks into various jobs have risen concurrently. This occurs in order that the entry of black workers into primary market jobs, traditionally the domain of white employees, is restricted as far as is possible in the absence of formal racial exclusion. This labour market mechanism also serves as a device for providing cheap African labour in the semi-skilled and skilled categories of work.

The contradictory co-existence of job-dilution on the one hand, and skill shortages on the other, has to do with the co-existence of both deskilling and reskilling tendencies in the South African industrial sector. It needs to be recognised that skill shortages do exist in a concrete technical form in industry as a result of both reskilling as well as the persistence of jobbing forms of production. It must also be accepted that these skill shortages are emerging at the same time as other types of skilled work are being gradually deskilled. Of equal significance, however, the skill shortages rhetoric which has been so loudly voiced over the last decade, has also served as a powerful ideological tool in the hands of capital. It has acted to create the conditions whereby the power of craftworkers has been greatly diminished, and whereby skilled work has been opened up to allow for the employment of more African operative labour.

The constraints on the magnitude of capital's investment in black education and training are of a more complex character. As Chapter Eight outlined, many of these constraints stem directly from industry itself, from its internal contradictions, inconsistencies and divisions. Other constraints stem from the recession of the 1982 period onwards, which has led to a drastic cut back on industrial output, and which in turn has reduced the need for skilled personnel. However, the magnitude of training must also be seen as a function of the unfolding of class conflict between capital and labour in production: the extent to which skilled workers have maintained control over the apprenticeship system and over any modifications to the training system; the extent to which capital has used the 'need for increased training' rhetoric as an ideologically-constructed tool to fight skilled labour in the unfolding of this class conflict; the extent to which capital will be forced to resort to greater education and training initiatives in its battle for the control and ideological hegemony over the South African working class. Hence, the implementation of a fairly unsubstantial training programme by capital in the 1980's should not be read as implying the non-existence of real skill deficiencies in industry, as some writers have tended to suggest. Rather, capital's involvement in black education and training can only be correctly understood if it is analysed in terms of these complex forces, and particularly if the very real constraints on large-scale training are properly taken into account.

FOOTNOTE

(1) See B Hirson, Year of Fire, Year of Ash: The Soweto Revolt: Roots of a Revolution? (London, 1979); J Kane Berman, South Africa: The Method in the Madness (London, 1979); A Brooks and J Brickhill, Whirlwind Before the Storm (London, 1980); A Callinicos and J Rogers, Southern Africa After Soweto (London, 1977).

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