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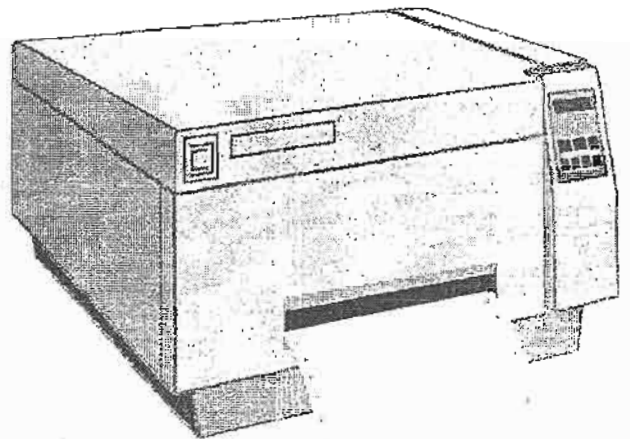
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# SECTORS, CLUSTERS and REGIONS

## Printing and Publishing in the Witwatersrand

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## FOREWORD

*The first phase of the Industrial Strategy Project commenced in 1992. The Project has its origins in the Congress of South African Trade Union's (COSATU) efforts to develop policy responses to the malaise afflicting South African manufacturing.*

*The first phase of the ISP submitted its final report in 1995. This comprised 11 sectoral studies, a number of cross-sectoral studies, and a synthesis volume that proposed an overall industrial strategy for South Africa.*

*The ISP is now in its second phase and comprises four research themes. One of these examines the relationship between industrial development and the environment, a second focuses on firm-level innovation, a third examines issues in human resource development, and the fourth is concerned with identifying mechanisms to strengthen manufacturing competitiveness at regional and local levels.*

*This paper is one of a series of five working papers that examine regional sectoral agglomerations drawing on the well-documented international experience of industrial districts. These studies, supplemented by additional research in this area, will be synthesised in an overall analysis of regional and local industrial strategies. While the first phase of the Project was cognisant of these issues they have assumed particular pertinence in the context of the new constitutional dispensation. The studies are principally, although by no means exclusively, directed at provincial and local government and non-governmental structures attempting, with few resources and little local experience, to promote industrial development in their areas of jurisdiction.*

*These are working papers intended to catalyse policy debate. They express the views of their respective authors and not necessarily of the Industrial Strategy Project.*

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## EXECUTIVE SUMMARY

### Introduction

The aim of this research project is to determine the role that institutions, including government at all levels, could play in bolstering economic performance in sectorally and geographically concentrated manufacturing firms, and to examine whether such initiatives can form part of a regional industrial policy. The research is directed at printing, publishing and allied industries in the Witwatersrand (i.e. Greater Johannesburg, the East Rand, and the West Rand). The "industrial districts model" provides the theoretical framework for an analysis of the institutional environment in which the industry functions.

### Sector Profile

The printing, publishing and allied industries sector is a highly diverse one, supplying mainly intermediate products to almost all sectors of the economy. Only one-fifth of output consists of final goods. The strong linkages the sector has to the economy as a whole is reflected in the fact that it enjoys a significant, albeit declining share of 2.5% of total manufacturing production, and employs 3.3% of the labour force.<sup>1</sup>

There are currently four issues which have implications for the sector in the short- to medium-term. First, the price of paper has increased considerably in the past year or so, both locally and internationally. Second, competitive advantages in pulp and newsprint production tend to be lost further downstream, due to various manufacturing inefficiencies such as the use of outdated capital equipment, poor economies of scale and scope, as well as

low productivity in the production process. Third, there are tensions between paper manufacturers and printers over the existing tariff structure facing the industry. Fourth, the adoption of digital technology has already begun to revolutionise the industry, heralding in an era of adaptable machinery and highly skilled labourers.

### Witwatersrand Cluster Profile

The printing and publishing sector is clustered in the PWV (Gauteng) region. Between 1972 and 1988, an average 50% of establishments, 45% of employment and 50% of gross national output in the sector could be found in this province. Moreover, the sector is clustered in the Central Witwatersrand (i.e. Johannesburg and Randburg), with an average 33% of all establishments, 35% of all employment and 42% of gross output in located in this area between 1972 and 1988.

Printing and publishing has also been important to the development of the "inner-city" of Johannesburg. In 1994, the printing and publishing sector accounted for 17.4% of all establishments in the inner-city manufacturing economy and 22.6% of industrial employment, making it the largest manufacturing sector in terms of establishments and second largest in terms of employment.<sup>2</sup>

### Applicability of the "Industrial Districts Model"

The stylised industrial districts are distinguished by a) the provision of "real" services, b) a predominance of small and medium-sized firms, c) the coexistence of co-operation and competition between firms, d) a prevalence of flexible specialisation in the organisation of production (and a consequent tendency to vertical disintegration), and e) socio-

<sup>1</sup> IDC, 1992.

<sup>2</sup> Tomlinson et al. 1995.

cultural identity and trust between firms. These are discussed in turn.

**The provision of real services.** Industrial districts require strong and independent local institutions which are able to formulate policies tailored to local needs. There is little evidence to suggest that local institutions in the Witwatersrand cluster have adapted to the specific needs of the cluster; rather, their activities represent fairly standard services provided by numerous industry federations across the country, arguably biased towards the larger printing concerns.

**Small and Medium-sized Firms.** The printing and publishing cluster in the Central Witwatersrand could perhaps qualify as a medium-firm district in the sense that the average firm size in 1988 was 29. Moreover, there has been a general decline in firm size since 1972, while the overall number of establishments has increased faster than the rate of employment over the same period. The implication is that there has been growth in small firms, probably accompanied by a decline in the size of large firms.

**Co-operation and Competition Between Firms.** The printing and publishing sector is a fiercely competitive one, and has become more so since the emergence of electronic media, the rapid growth of in-plant printing, and the globalisation of advertising. In addition, high paper prices, tariff duties on paper imports and a prolonged recession have all contributed to the squeezing of profit margins.

With respect to co-operation between firms, a general rule can probably be made that there is less co-operation between the jobbing printers (i.e. the instant print shop owner) than there is between the specialists. The fact that firms in a particular cluster *do* co-operate does not, however, provide evidence of dynamic

inter-relations among them. It is the *nature* of inter-firm linkages, and not the existence of linkages *per se*, that is crucially important to the development of a flourishing cluster.<sup>3</sup>

**Flexible Specialisation and Vertical Disintegration.** Technological advances in the sector may contribute to the shift towards flexible specialisation (by heralding in an era of adaptable machinery and highly skilled labourers), while simultaneously centralising the function of typesetting with the publishers (and that of pre-press with printing itself) through the process of vertical integration. While this appears to contradict the "industrial districts model", it could be argued that our main concern is to assert the importance for inter- and intra-regional development and policy of the existence of industrial clusters, whether flexibly organised (and perhaps vertically disintegrated) or not.<sup>4</sup>

Nor is digital technology likely to undermine the spatial concentration in the cluster. There are two important reasons for this.<sup>5</sup> First, there remain important limitations to the digital transfer of made up pages over existing telecommunications networks. Second, the 'print near the market' rule is always likely to hold, and decentralisation of this function in the past owes more to improvements in the efficiency of transport and physical distribution networks, than to advances in technology.

**Socio-cultural Identity and Trust.** In assessing whether trust relations in districts are a consequence of, or precondition for, practical co-operation among local actors, it is probably true to say that the relations of trust which develop in a cluster are

<sup>3</sup> Gordon 1994.

<sup>4</sup> Bloch, 1993.

<sup>5</sup> See, for example, Driver and Gillespie, 1992.

arguably the product of a pre-existing cultural consensus in some circumstances, and the outcome of practical co-operation and even overt conflict in others. The source of the relations of trust is less relevant than that they exist, and that they facilitate and enhance the performance of economic clusters.

### Conclusion

Perhaps the most important lesson that derives from a critical analysis of the industrial districts model is that innovative, collaborative inter-firm relations - both within and outside the region - are the driving force behind dynamic regions, and that one cannot simply deduce innovative capability from agglomeration.

In assessing the role that institutions, including government at all levels, could play in encouraging the development of innovative, collaborative inter-firm relations in the printing and publishing

sector, it is to address the problems in the entire production chain - from the manufacture of pulp and paper to the production of printed and published goods. The following recommendations are made in this regard:

- It is necessary to establish a task force which deals with "filliere-wide" issues. The task force would be empowered *inter alia* to address the paper price debate and review tariff arrangements in the sector.
- A parallel task force, focusing specifically on printing-related issues, would be established in order to investigate the impact of technological advances on skill levels, the potential for growth in small and medium-sized firms, as well as to reassess the role of the Printing College and that of the Printing Industry of South Africa's Southern Transvaal Chamber.

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## 1. INTRODUCTION

### 1.1 Background to this Report

The aim of this research project is to determine the role that institutions, including government at all levels, could play in bolstering economic performance in sectorally and geographically concentrated manufacturing firms, and to examine whether such initiatives can form part of a regional industrial policy. The focus is on the predominant patterns of interaction between firms, as well as between these firms and local institutions, government included.

This paper investigates the printing, publishing and allied industries in the Witwatersrand (i.e. Greater Johannesburg, the East Rand, and the West Rand). The regional industry is situated within its national sectoral context over time, as well as in its broader regional economic context. The impact of restructuring in the sector on patterns of inter-firm relationships and the implications for the sector's locational structure are examined.

### 1.2 Methodology

The supposed success of 'industrial districts' in achieving international competitiveness and high employment growth rates in recent years has given rise to a number of theoretical and empirical studies, as well as to a re-evaluation of traditional agglomeration literature.<sup>6</sup> Given the emphasis in this study on the patterns of interactions between sectorally and locationally clustered firms, and those between these firms and local institutions, it is appropriate to provide a brief review of the literature pertaining to the industrial

district theory in particular and agglomeration theory in general. The focus is on an assessment of the common features of industrial districts as they apply (if at all) to the printing and publishing sector in the Witwatersrand.

A further component of the secondary research entails an evaluation of the local and international literature concerned with the industry itself. Company annual reports, trade magazines, industry journals, case-studies, etc. are examined. Statistical data is further acquired from the Manufacturing Census (1972, 1982, 1988), the National Productivity Institute's (NPI) productivity statistics, as well as from industry profiles from various sources.

Finally, primary research is an important element of the study. The following in-depth interviews with a representative sample of firms, as well as discussions with officials of relevant trade unions, employer associations, and training centres were undertaken:

- Senior staff members of the two paper manufacturers, Sappi and Mondi.
- The editors of the two most important trade magazines, both of whom are former printers.
- The CEOs of three of the largest printers in the sector, and five owners of small print shops.
- The CE of the Printing Industry Federation of South Africa (Pifsa), Southern Transvaal Chamber.
- The Director and Administrator of the South African Printing College.
- The President of the Association of Paper Distributors, and the Marketing Director of a major paper merchant.
- Senior staff members of one large and one medium-sized publisher.
- The administrator of the Young Management Printers (YMP), Southern Transvaal Chamber.

<sup>6</sup> See, for example, Pyke and Sengenberger, 1992; Schmitz, 1993.

## 2. THE PRINTING AND PUBLISHING SECTOR

### 2.1 Sector Profile

The printing, publishing and allied industries sector is a highly diverse one, supplying mainly intermediate

packaging firms and other types of enterprise have developed large in-house printing facilities. These are often not included in the SIC 342 statistics, because they are considered secondary to the primary activity of these firms. It should be emphasised that in-house printing accounts for a growing portion of current printing output, its exclusion may lead to some anomalies in the data.

Table 1: Printing Sector - Standard Industrial Classification<sup>7</sup>

Division	Major Group	Sub-group	Title of category
34			Manufacture of paper and paper products; printing and publishing
	341		Manufacture of paper and paper products
	341	34110	Manufacture of pulp, paper and board Pulp, paper, paperboard and fibreboard
	341	34120	Manufacture of containers and boxes of paper, paperboard and paper substitutes
		34121	Manufacture of light packaging: non-corrugated, flexible, rigid and folding paper bags and boxes Manufacture of heavy packaging: paper sacks, balers and corrugated containers
	341	34190	Manufacture of pulp, paper and paperboard articles, not elsewhere classified
		34191	Stationery Other paper products
	342	34200	Printing, publishing and allied industries
		34201	Printing and publishing
		34202	Publishing only, as a separate business Services for printers

products to almost all sectors of the economy. Only one-fifth of output consists of final goods. The sector comprises newspaper owners; publishers; general or commercial printers; instant print shops; news agencies; graphic design and platemaking firms. Their products include printed books, magazines, studios, reprography (i.e. the copying of documents by photography), blockmaking newspapers, stamps, paper stationery, business forms, advertising leaflets, etc. While research in this paper is directed specifically at Standard Industrial Classification (SIC) 342, it is useful to note the entire chain or network (filier) within which printers and publishers function. The SIC codes for the sector as a whole is broken down in Table 1

In the last decade or so, many advertising companies, large banks, packaging divisions of manufacturers or large

The strong linkages the sector has to the economy as a whole is reflected in the fact that it enjoys a significant share of 2.5% of total manufacturing production, and employs 3.3% of the labour force.<sup>3</sup> Figures in Table 2 on the following page suggest that there has been a marginal long-term decreasing share of the sector in manufacturing.

The local market absorbs 99% of supply and exports 1%. These are destined primarily for Southern Africa. Local production meets 85% of demand. Although most finished printed goods are protected by an average 20 to 25% import tariff and some import controls, 15% of the local market's requirements were imported in 1990.<sup>9</sup> Both fixed capital and

<sup>7</sup> Census of Manufacturing 1988.

<sup>8</sup> IDC, 1992.

<sup>9</sup> Bethlehem, 1994.

employment growth lagged behind manufacturing in the seventies, but showed faster growth in the 1980s.

By the end of the 1980s the sector registered a 2.4% share of manufacturing demand, amounting to R5.4 billion in 1990. After a drop in the mid 1970s, the sector's value-added share of manufacturing rose noticeably in the early 1980s and reached 3.3% by 1990.

Labour productivity improved in the late 1970s and mid 1980s. This was matched by marginal improvements in real salaries and wages over this period. Both salaries and wages have been generally higher than the manufacturing average, an indication of the skilled nature of the labour force. Labour productivity has declined

implications for literacy rates and general economic growth, will have positive spin-offs for the sector.<sup>13</sup> In the first six months of 1995, sales and profits showed slight improvements, and there are signs that the industry is on the comeback trail.

The larger companies had mixed results in 1994. CTP Holdings, for example, did relatively well in difficult market conditions, and is re-equipping and expanding capacity to meet the expected growth in its markets. Caxton performed very well in the 1994 financial year, with an 8% increase in sales and 13% rise in profits.<sup>14</sup> Similarly, Perskor's results for 1994 were positive despite low advertising volumes and a lack of growth in magazine and newspaper sales. On the other hand, Penrose Holdings Limited reported very

Table 2: Percentage Share in Manufacturing (Constant 1990 prices)<sup>10</sup>

subsequently, but increased once again between 1992-93. Between 1978 and 1984, increases in output prices

	1972-1974	1980-1982	1988-1990
Demand	2.5	2.3	2.4
Imports	0.8	1.6	1.9
Exports	1.0	0.4	0.4
Production	2.8	2.4	2.5
Value Added	3.5	3.0	3.3
Employment	3.0	2.9	3.3
Fixed capital stock	2.0	1.2	1.2

poor results, declaring a loss of R1.6 million for 1993. Nampak also posted poor results in its printing division, with sales

were lower than comparable increases in salaries and wages per worker. This trend was however reversed in the second half of the 1980s.<sup>11</sup> Capital productivity improved substantially towards the end of the 1970s, deteriorated in the early 1980s and then staged a partial recovery.<sup>12</sup>

The printing and publishing sector suffered during the recession of 1991-93, but is likely to benefit from the more recent upswing in economic conditions. Investment in the Reconstruction and Development Programme, and its

volumes decreasing as a result of severe price competition.

It would appear too that smaller firms have had mixed results, with some experiencing growth and others decline. A printer in Norwood cites his pricing structure and turn around time as reasons for his tremendous growth over the past year. An instant print shop owner in Braamfontein claims that his turnover has trebled over

<sup>10</sup> IDC, 1992.

<sup>11</sup> IDC, 1992.

<sup>12</sup> NPI, 1995.

<sup>13</sup> Lacy, 1995.

<sup>14</sup> Caxton has a controlling interest in CTP Holdings, which is listed on the Johannesburg Stock Exchange (JSE). Argus Holdings Limited (the largest newspaper publishing group in the country) and Afmed (Pty) Ltd have been identified as the ultimate controlling shareholders of Caxton.

the past two years. A small print shop owner in Florida, on the other hand, suggests that a lack of marketing explains his fairly static results during the year.

## 2.2 Current Trends in the Sector

There are four major issues which have consequences for the printing and publishing sector in the medium- to long-term. The first is the price of paper, which has increased considerably in the past year or so, both locally and internationally. The second, and closely related to the first, is the existing tendency for competitive advantages in pulp and newsprint production to be lost further downstream, due to various manufacturing inefficiencies. The result is high paper prices relative to overseas prices. The third is the tension between the paper manufacturers and the printers over the existing tariff structure facing the industry. Finally, there are advances in technology, and in particular the adoption of digital technology, which has already begun to have implications for the restructuring of the sector.

### 2.2.1 The paper price debate

The paper price debate in South Africa can only be understood by an analysis of the sector in a global context. In the late 1980s, a number of industrialised countries moved into a period of sustained recession just as tonnes of new capacity in the paper manufacturing sector came on line. The investment in new capacity was a response to the seemingly insatiable demand for pulp, which was expected to continue to grow through the 1990s. The growth was not forthcoming, however, and the over-investment in machinery depressed prices at a time when capacity exceeded demand. The result has been a long period of low profitability and, in many cases, heavy losses. This led to the closure of a number of mills in North America and Europe, and

the loss of thousands of jobs. Paper prices were heavily discounted, and the printing industry was able to benefit from very low paper prices.

Moreover, the collapse of the communist economies in 1991/92 had a major impact on two paper-making giants, Scandinavia and Finland, to whom the East European markets had been very important. The sudden non-availability of these economies meant that these countries were forced to search for new markets, and thus were obliged to become more price competitive. As a result, what were already weak paper prices declined even further.

The paper price is directly linked to the pulp price, which had declined from a high of \$840 per ton in mid-1989 to an all-time low of \$380 per ton in the fourth quarter of 1993. Since then, pulp prices have increased by more than 100%, and reached \$820 per ton in March 1995. Some industry analysts predict a pulp price of \$1 000 a ton by the fourth quarter of 1995, while others believe it will stabilise at a slightly lower level during 1996.<sup>15</sup>

Pulp and paper demand have both increased concurrently with the strengthening of the world economy. Growth in the demand for paper in the USA and the Far East, for example, has been consistent since 1992. In the UK on the other hand, 1994 demand was up 25% over the previous year. Locally, order patterns on some of Mondi's grades have gone up by between 30-40% since 1994.<sup>16</sup>

Pulp supplies, on the other hand, remain relatively low. There are wood shortages in North America, the USA and the Iberian peninsula).<sup>17</sup> Moreover, pressure from environmental groups has led many

<sup>15</sup> Graphic Repro and Print, 1995a.

<sup>16</sup> Kelly, 1995.

<sup>17</sup> Printweek, 1994.

governments to tighten forestry practices and set aside tracts of forest as park and wildlife reserves. British Columbia, for example, is doubling the area of protected forest to 12% of its land area.<sup>18</sup> Paper mills have begun to respond to this shortage, however, and the proportion of waste paper recovered for recycling has risen in the past decade from 31-42% of global consumption.

Moreover, the threat of a possible strike by the forestry employees of British Columbia - the world's largest supplier of high quality northern bleached softwood kraft pulp - has been pre-empted by pulp price rises. It has also been argued that the increased cost of paper-making chemicals has pushed up production costs, and that some currency fluctuations have played a small part in boosting prices.<sup>19</sup>

The South African paper manufacturers ascribe the escalation in the paper price to the universal law of supply and demand. There is less consensus amongst the major paper merchants (who act as intermediaries between paper producers and printers), some of whom believe there is an element of false demand for paper. The expectation of price rises and a fear of paper shortages have led the merchants to increase inventory, which has resulted in further price rises. Others have argued that part of the increase in prices can be explained in terms of an economic recovery, profit recovery and cost recovery requirement, where the paper manufacturers are attempting to compensate for the lean years of the past).<sup>20</sup>

There are, similarly, differences of opinion among the leading printers. There are those who point to Sappi's and Mondi's monopolistic control over the local board

and paper markets, and note that in practice there are few grades of paper that both manufacture. Some have gone as far as pressing the Competition Board to consider a formal investigation into the paper industry in this country.<sup>21</sup> Others acknowledge that an upwards correction was inevitable, but complain about the frequency of increase and the terms of notification.<sup>22</sup>

### 2.2.2 Competitive advantages and manufacturing inefficiencies

Bethlehem (1994) has argued that South Africa has a natural advantage in pulp production because trees grow quickly as a result of favourable climatic conditions. This natural advantage is complemented by the availability of relatively cheap energy, which is used in the production of both pulp and paper. She notes, however, that the use of outdated capital equipment, poor economies of scale and scope, as well as low productivity in the production process, imply that the competitive advantages referred to above are lost further down the pipeline.

These manufacturing inefficiencies are explained in terms of high levels of protection in the paper sector, accompanied by import parity pricing. The net result is that while we produce pulp and newsprint almost 10% cheaper than our northern competitors, the price of pulp and paper charged to domestic buyers tends to be about 10-15% above world prices. Since the price of paper is an important component of total cost for most products in the printing and publishing sector, high paper prices are followed by price increases for printed products. This is of particular concern given the impact this is likely to have on the price of educational books and materials.

<sup>18</sup> Business Day, 1996.

<sup>19</sup> Printweek, 1994.

<sup>20</sup> Graphic Repro and Print, 1995a.

<sup>21</sup> Business Day, 1995.

<sup>22</sup> Graphic Repro and Print, 1995a.

### 2.2.3 Import tariffs

The paper manufacturers have always argued that imported paper is subject to a relatively low nominal tariff structure, not only in terms of other South African industries, but also with respect to our overseas competitors. They suggest that the 10% duty on free-on-board, applied to imported paper results in a cost of about 7.5% by the time it arrives in this country. This is below the 11.7% average for the main importing and exporting countries.<sup>23</sup> Alternate estimates, which take into account the relative value of the rand and freight costs, indicate that the effective rate of protection is considerably higher, at around 22%.<sup>24</sup> Moreover, if Brazil and Australia are excluded from the calculation of the international average; the average rate for the USA, the EC, Japan and Sweden falls to 4.3%. On this basis, South Africa's nominal 10% duty is well above the international average.<sup>25</sup>

The tension over import tariffs follows a proposal in 1994 by the National Economic Forum (NEF) to cut tariffs on paper and board to 5% by the year 2005, starting from 2000, while recommending an immediate 2% per annual tariff reduction on printed goods, from the present 20%.<sup>26</sup> The Printing Industries Federation (Pifsa) believes that tariff protection for the two industries should at least come down in tandem, pointing out that Sappi and Mondi are huge international players who no longer require protection. Pifsa points to Sappi's ownership of Hannover Papier (Germany) and its recent acquisition of SD Warren, a US based coated wood-free paper maker, as an indication of its international stature.

<sup>23</sup> Graphic Repro and Print, 1995a.

<sup>24</sup> Lacy, 1992.

<sup>25</sup> Bethlehem, 1994.

<sup>26</sup> Business Day, 1994.

The response by the manufacturers has been that protection is justified in the context of a high capital-investment industry with an historically low return on assets, and in the present situation where the sectors that supply the paper industry with raw materials enjoy protection of up to 30%. Moreover, they suggest that neither importers nor printers are likely to pass on cost advantages to their customers.

With respect to publishing, there is a confusing tariff system whereby a South African publisher who print overseas and then imports the publication back into the country does so without facing any import duty. If, however, this same publisher publishes locally but uses imported paper, he/she faces duty charges. While such tariff structures have lowered the cost of printing local educational books abroad they clearly penalise local printers, who are obliged to pay higher prices for locally produced paper.

### 2.2.4 Technological advances<sup>27</sup>

Table 3 provides a review of the evolution of technical change over the years. The first half of the 20<sup>th</sup> century saw a whole range of radical and incremental developments in the press and pre-press stages, built upon electrical, photographic and chemical advances. Since the 1950s, developments in solid-state physics, as well as advances in photographic techniques and optical engineering ensured that press speeds were improved, make-ready times reduced, and multi-press units more widely

<sup>27</sup> This section focuses on the development of printing technology, and the implications of this on employment and skills levels in the sector in an international context. The impact of the latest technological advances on existing spatial arrangements, as well as for intra- and inter-organisational relationships, is discussed in more detail in Section 4.1 Flexible Specialisation and Vertical Disintegration.

Table 3: Development of Printing Technology

Phase	Innovation	Outcome
Manual (15 <sup>th</sup> - 18 <sup>th</sup> century)	Metal type Iron press	Established man/machine relationship Increased labour productivity
Mechanical (19 <sup>th</sup> century)	Large steam-driven units Mass produced plates	Increased capital intensity Cut capital cost
Electro-mechanical and electro-chemical (late 19 <sup>th</sup> - early 20 <sup>th</sup> century)	Semi-automatic casting Photo-lithography Photogravure; process camera Better paper, inks, plates Small electric motors, typed text Independent machine power	Increased capital cost Increased labour productivity New specialised methods Better quality work Small flexible units
Electronics (1950s and 1960s)	Colour scanners; VDUs Photo typesetting Computer typesetting	Increased labour productivity Changed capital costs Altered man/machine relations
Digital (1970s to mid-1980s)	Full-page make-up Laser electro-photography Automatic page composition	Increased integration of production phases Reduced materials and lead times
Integrated digital (1984 onwards)	Integrated text and graphics	Fully integrated photo-composition Destroyed job demarcation

adopted. During the 1960s/1970s, the development and use of photo-typesetting and computer technology generated the integration of functional phases at the front end of the pre-press stage.<sup>28</sup>

In the 1970s and 1980s, developments in information technology catapulted the pre-press stages into a unified, integrated digital-based form of production. The adoption of digital technology has revolutionised conventional methods and structures in the printing and publishing sector, enabling it to come as close as possible to 'just-in-time' operation. Digitalisation for the print industry involves the computer on-line to the press, with data transferred direct from computer to press. Thus, pre-press and print are converging, increasing compatibility making it easier to transfer data from one stage to another.<sup>29</sup> Moreover, script

production has moved from the print-shop to the customer through the use of word processing systems and desktop publishing. Text, and sometimes even pictures, are supplied to the printer in digitalised form. The expected casualty in all this computer-to-print activity is film, although predictions for its replacement by the end of the millennium are premature.<sup>30</sup>

International studies would appear to suggest that there has not been massive reduction in employment in response to the introduction of micro-technology. A Council of Europe study (1987), for example, has argued that in most European countries, "the labour replacement promised by many vendors turned out to be unrealistically assessed, leading only to a reduction in apprentices. New machinery made new products possible, and customer

<sup>28</sup> ILO, 1990.

<sup>29</sup> Graphix, 1995.

<sup>30</sup> Graphic Repro and Print, 1995b.

demand increased both in terms of quantity and quality". Similarly, an ILO study (1990) noted that in the USA, Japan and Denmark, the employment-creating effects of new technology appear to have outweighed the labour-saving effects.

While the new technology may not have brought about substantial reductions in employment, it has generated significant changes in the composition of the work force. The use of increasingly efficient and cheaper technologies that allow cost-effective de-scaling has resulted in the proliferation of small quick-printing shops in many countries. This employment growth in quick-printing has, to an extent, involved a substitution of women working with sophisticated photocopying equipment for men working in printing presses. In the United States, for example, the women's proportion of employment rose from about 25% in the 1960s to 33% in the 1980s; in Denmark, women's share increased from 26% to 33% over the same period.<sup>31</sup> Employees in quick-printing tend to be less unionised and less well paid.

A less clear picture emerges with regard to skills and qualifications. On the one hand, there has been a rapid decline in the demand for craftsmanship previously required; on the other, there is increased demand for new forms of broader and more flexible qualifications. Thus, one finds evidence in a number of countries of deskilling, polarisation of the workforce, and domination of higher skills.<sup>32</sup>

While the percentage of skilled craftsmen in the sector has declined, the distinction

between "blue" and "white" collar work is becoming increasingly blurred and simple craft notions of skill are being challenged. In commercial printing, for example, there is a growing integration of certain aspects of production and marketing. In some cases this involves a vertical integration of skills, with workers undertaking tasks of higher competence; more common, however, has been a horizontal integration of skills, involving tasks at similar levels of competence.<sup>33</sup>

In South Africa, industry players believe that local technology is state-of-the-art, although one did admit that we are more likely to be 18 months to two years behind the most recent innovations.<sup>34</sup> The National Printing Company (TNPC), for example, which is responsible for virtually all the printing needs of the Argus Group, The Sowetan, and Times Media Limited in Johannesburg, has modern imported machinery with a replacement value of R400 million.<sup>35</sup> Similarly, KNL, a large commercial printer, has recently invested R15-20 million in upgrading its printing capacity.<sup>36</sup> Despite these investments, a more accurate description of the industry would probably acknowledge that South African printers are in line with international trends at the lower end of the market. At the higher end, however, the equipment used to print multi-colour, high value goods is probably outdated.<sup>37</sup> The impact of technology on the organisation of work and security of employment in a South African context is dealt with in Section 4 below.

<sup>31</sup> ILO, 1990.

<sup>32</sup> Council of Europe, 1987.

<sup>33</sup> ILO, 1990.

<sup>34</sup> Lacy, 1995.

<sup>35</sup> Briggs, 1995

<sup>36</sup> Blumberg, 1995.

<sup>37</sup> Bethlehem, 1994.

### 3. AGGLOMERATION THEORY AND INDUSTRIAL DISTRICTS

#### 3.1 The Industrial Districts Model

The most important contribution of the industrial districts theorists to the agglomeration literature has been their tendency to shift the emphasis away from a narrow 'economic' understanding of sectorally and geographically concentrated manufacturing firms. In their system, agglomeration is seen as an economic, political and cultural process, and the dynamics of agglomerations are influenced by social and political factors and practices.<sup>38</sup> Harrison (1991) has argued that the industrial districts prototypes involve more than simply a reassertion of agglomeration economies, suggesting that:

..... agglomeration theory and transaction cost economics follow standard neo-classical logic in conceptualising local economics as collections of atomistic competitors, formally aware of one another solely through the intermediation of price/cost signals, embodied in contracts of varying completeness. By contrast, contemporary industrial district theory emphasises the contextual significance of communal non-economic institutions and the importance of relations of 'trust' in reproducing sustained collaboration among economic actors within the districts (P.469)

It is the development and nurturing of these "non-economic" institutions and the promotion of trust that is assumed to account for the high levels of international competitiveness and high employment growth rates which have been achieved in the districts in recent years. Thus, the industrial district "model" provides a framework for an analysis of the institutional environment in which sectorally and locationally clustered firms function, as well as an opportunity to investigate how the institutions which appear to facilitate industrial performance can be supported and strengthened.

#### 3.2 The Features of the Industrial Districts "Model"

Different theorists have alluded to various features which are assumed to characterise stylised industrial districts.<sup>39</sup> Among these, five appear to be the most relevant. First, industrial districts are distinguished by the provision of "real" services by private and public institutions. Second, there is a predominance of small and medium-sized firms. Third, districts are characterised by the coexistence of co-operation and competition between firms. Fourth, there is a prevalence of flexible specialisation in the organisation of production and a consequent tendency to vertical disintegration. Finally, districts embrace a socio-cultural identity which facilitates trust between firms and between employers and skilled workers. The relevance of these features to the printing and publishing sector in the Witwatersrand is discussed in detail below.

<sup>38</sup> Bloch, 1993.

<sup>39</sup> See, for example, Pyke and Sengenberger, 1992. Schmitz and Musyck, 1993.

#### 4. PRINTING AND PUBLISHING<sup>40</sup> IN THE WITWATERSRAND - AN INDUSTRIAL DISTRICT?

##### 4.1 The Historical Pattern of Location in the Sector

Pre-digital technology has imposed a relatively high degree of spatial concentration in the sector, particularly between publishers and pre-press firms. Under traditional pre-press technologies, journalists made up copy on typewriters, which was then passed onto typesetters, who input the copy on a phototypesetter. The copy was then returned to the publisher in the form of proofs, which were edited before being

into final pages. Pictures were sent separately to a repro house, where they were developed to the right size, and then the text, with the picture inserted, was photographed, and the final film sent to the printer for plate making and finally printing. The spatial dynamics of printing, on the other hand, has been the result of a complex balancing act between the cost of print, the time sensitivity of the product being printed (e.g. newspaper or magazine) and the distribution of consumer demand.<sup>43</sup>

The factors above would help to explain why the printing and publishing sector is spatially concentrated in the large metropolises. Table 4 below indicates that the sector is clustered in the PWV (Gauteng) region.<sup>44</sup> Between 1972 - 1988, an average 50% of establishments in the sector could be found in this province. Furthermore, an average 45% of

Table 4: No. of Establishments, Employment and Output - National % Share<sup>41</sup>

Region	No. of Establishments			Employment			Gross Output		
	1972	1982	1988	1972	1982	1988	1972	1982	1988
PWV	46	52	51	43	46	46	50	51	49
Central Wits <sup>42</sup>	33	37	33	35	33	33	42	39	38
East Rand	5	6	7	3	3	3	2	3	3
West Rand	1	2	3	1	n/a	2	1	2	2

returned to the typesetter to be made up

<sup>40</sup> It should be noted that most of the analysis that follows focuses on the printing industry. While all general publishers have their head offices in Gauteng, educational publishers are based primarily in Cape Town, and academic publishers are situated near to the main universities (McCullum, K, 1995). Editorial activities are located where the publisher's head office is, or in the Western Cape. The reason for this is primarily historic, in that the Cape has been the point of off-loading for the book trade. For similar reasons, the Western Cape is the centre of the book printing industry. The Western Cape accounts for almost two-thirds of all employment in the publishing sector.

<sup>41</sup> Manufacturing Census (1972, 1982, 1988)

<sup>42</sup> The Central Witwatersrand includes the Johannesburg and Randburg magisterial districts. Roodepoort is considered as part of the West Rand, given its former categorisation in Census statistics.

employment and 50% of gross output in the sector derived from Gauteng during this same period.

Moreover, the table suggests that the sector is clustered in the Central Witwatersrand (i.e. Johannesburg and Randburg). In 1972, 33% of all establishments, 35% of all employment and 42% of gross output in the sector derived from this area. The figures for 1982 and 1988 suggest that these ratios have remained fairly static over time.

<sup>43</sup> Driver and Gillespie, 1992.

<sup>44</sup> The censuses of manufacturing do not provide separate data for printing and publishing. It has already been suggested in Footnote 3 above that while there is a fairly strong publishing sector in Gauteng, it predominates in the Western Cape.

Table 5 examines how the number of firms and employment figures have changed over time in the Central Witwatersrand cluster. It can be seen that the number of firms

international studies, in which the adoption of new technology has simultaneously induced labour-saving effects (primarily among large printers), and employment-

Table 5: No. of Firms and Employment - Central Witwatersrand Cluster<sup>45</sup>

Central Witwatersrand	1972	1982	1988
Number of establishments	280	483	529
Employment	11 692	15 079	15 226

increased at a faster rate than employment between 1972 - 1982, and between 1982 - 1988. More importantly, employment was virtually static over the latter period. This finding is similar to that for the industry as a whole, where the average annual growth rate of employment has been declining since the 1970s.<sup>46</sup>

The interviews undertaken would appear to suggest that there has been a reduction in the labour force of the larger printers in the cluster. One acknowledged that his company had reduced its work force by almost 25% over the past 16 months.<sup>47</sup> This tendency to save on labour has been explained by the Director of Pifsa's Southern Transvaal Chamber in the following way:

labour-intensive growth is not really viable if the industry is to be internationally competitive. Investment in new technology, with faster and more quality-conscious standards also results in greater reliance on automation. Furthermore, entrepreneurs are reluctant to embrace the labour relations problems which invariably result from a large workforce.<sup>48</sup>

In contrast, it is interesting to note that the smaller printers have expanded over the period under review. This finding would appear to confirm the evidence in the

creating effects through the proliferation of small instant-printing concerns.

The paucity of reliable sector-level data makes it difficult to arrive at any firm conclusions with respect to the impact of technology on the composition and skill level of the work force. The interviews, for example, do not point to a dramatic substitution of women for men in the work environment. Even the instant print shops were staffed primarily by male employees. Perhaps this is a particularly South African phenomenon. While gender has been an important feature of management attempts to reduce wages in the sector in many countries, race has been the predominant one in a South African context. In other words, it has in all likelihood, not been necessary to employ women in order to keep wages low in the sector.

With regard to skill level, one could assume that, in a South African context, there is evidence of the international trend towards a declining demand for craftsmanship. The fact that the South African Printing College (SAPC) in Roodepoort allocates some of its resources to the retraining of journeymen who have been made redundant by the changing technology would suggest that deskilling has taken place. On the other hand, there is evidence too of the need for new forms of flexible qualifications. The large printers point to the increased demand for operators skilled in electronics. Much in-house training takes place, and artisans are

<sup>45</sup> Manufacturing Census (1972, 1982, 1988).

<sup>46</sup> NPI, 1995.

<sup>47</sup> Blumberg, 1995.

<sup>48</sup> Lacy, 1995.

expected to develop competence in a broader range of skills than was previously the case.<sup>49</sup>

#### 4.1.1 The sector in the 'inner-city' of Johannesburg

In assessing the historical pattern of location in the sector, it is interesting to

sector in terms of establishments and second largest in terms of employment (see Table 6).

It is also interesting to examine the spatial distribution of the printing cluster within the inner-city of Johannesburg. Thirty percent of all printing and publishing in the inner-city is located in the CBD sub-zone.

Table 6: The Structure of the Inner-city Manufacturing Economy, 1994.<sup>50</sup>

Sector	Establishments		Employment	
	Number	Percentage	Number	Percentage
Printing and publishing	138	17.4	8 910	22.6
Clothing	131	16.6	9 212	23.3
Jewellery; diamond cutting	110	13.9	2 724	6.9
Fabricated metals	64	8.1	2 423	6.1
Textiles	52	6.6	3 121	7.9
Food	46	5.8	2 471	6.3
Other				
<b>Total</b>	<b>791</b>	<b>100</b>	<b>39 486</b>	<b>100</b>

note the importance of printing and publishing in the 'inner-city' of Johannesburg, and how this has changed over time. The 'inner-city' is defined, here, as including the following areas: the CBD, Marshalltown, Ferreirasdorp, Braamfontein, Doornfontein, New Doornfontein, Selby, Fordsburg, Newtown, New Centre, Village Main, Wemmer, City and Suburban, and Salisbury Claims.<sup>51</sup> In 1994, the printing and publishing sector accounted for 17.4% of all establishments in the inner-city manufacturing economy, and 22.6% of industrial employment. A comparison with other sectors suggests that printing and publishing was the largest manufacturing

Moreover, New Doornfontein, Selby and Doornfontein account for 14%, 16.5% and 16.6% of the inner-city cluster respectively. There is no sector activity in Ferreirasdorp and Wemmer, and relatively minimal activity in Salisbury Claims, Newtown and Braamfontein.

Table 7 indicates the relative shares of a number of manufacturing sectors in the inner-city relative to that for Johannesburg as a whole.<sup>52</sup> It can be seen that three sectors, namely printing and publishing, clothing and textiles, are strongly represented in the inner-city, while fabricated metals and food are weakly represented. The printing sector is 13.2% more represented in the inner-city than it is for Johannesburg as a whole, and is the most 'strongly-represented' sector of the group.

Finally, it is worth examining how inner-city employment and the number of establishments in the printing and publishing sector has changed between

<sup>49</sup> Briggs, 1995.

<sup>50</sup> Source: Tomlinson et al (1995)

<sup>51</sup> All data on the inner-city of Johannesburg derives from Tomlinson et al, *Johannesburg Inner-City Strategic Development Framework: Economic Analysis*, 1995.

<sup>52</sup> Tomlinson et al point out that, given a lack of data, it has been necessary to compare the 1988 industrial census (the findings of which were only released in 1994) with the median 1989 employment data for the inner-city.

1980 and 1994, and how this compares with overall manufacturing economy trends over the same period. Figure 1 indicates that there is an overall downward trend in the number of manufacturing establishments in the inner-city of Johannesburg between 1980-1994.<sup>53</sup> This is true also for the printing cluster, which consisted of 198, 177 and 138 establishments in 1980, 1989 and 1994 respectively. Figure 2 suggests that a

similar overall trend existed with respect to employment in the inner-city manufacturing economy. In the printing sector, however, employment increased between 1980 and 1989, but decreased thereafter. The decrease in employment in the printing cluster between 1989-1994 can perhaps be explained by the fact that while 18 new establishments developed during this period, another 47 existing ones died.

Table 7: The Relative Size of Various Sectors in the Inner-city Compared to that of Johannesburg as a Whole.<sup>54</sup>

Sector	Establishments - Jhb -	Employment - Jhb -	% Jhb	% Inner-city	% Diff.
Printing and publishing	529	15 226	9.4	22.6	+ 13.2
Clothing	242	16 714	10.3	23.3	+ 13.0
Fabricated metals	551	16 781	10.4	6.1	- 4.3
Textiles	140	5 942	3.7	7.9	+ 4.2
Food	207	17 023	10.5	6.3	- 4.2

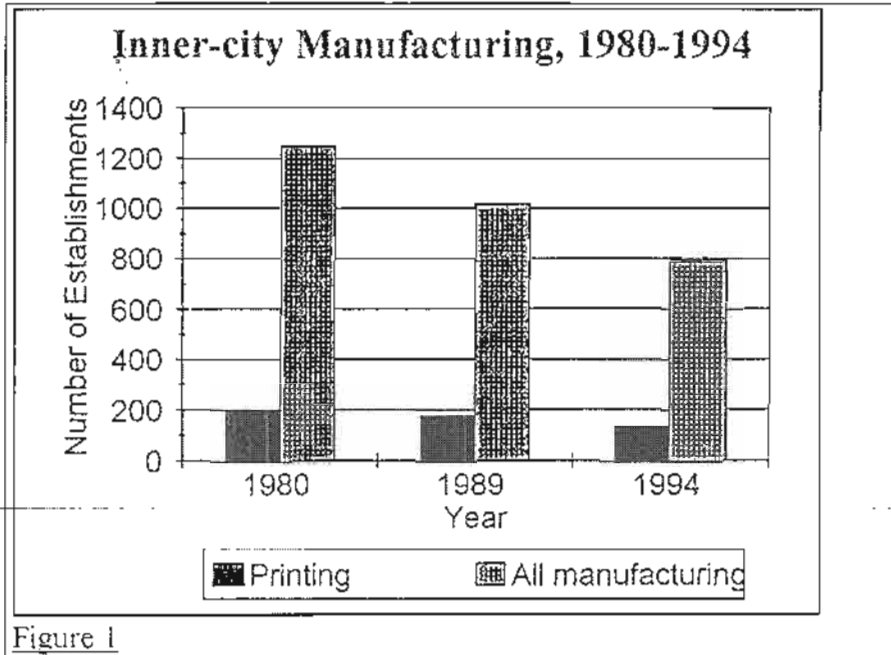
<sup>53</sup> Tomlinson et al, 1995 has estimated that between 1980-94 the inner-city manufacturing economy shed at least 16 000 and perhaps as much as 20 000 industrial jobs, and that the decline set in at a much earlier period than that for Johannesburg as a whole.

<sup>54</sup> Tomlinson et al (1995).

#### 4.2 The Provision of Real Services

Alfred Marshall was the first economist to develop the notion of an industrial district in his theorising on a self-reliant local economy. Marshall argued that in some

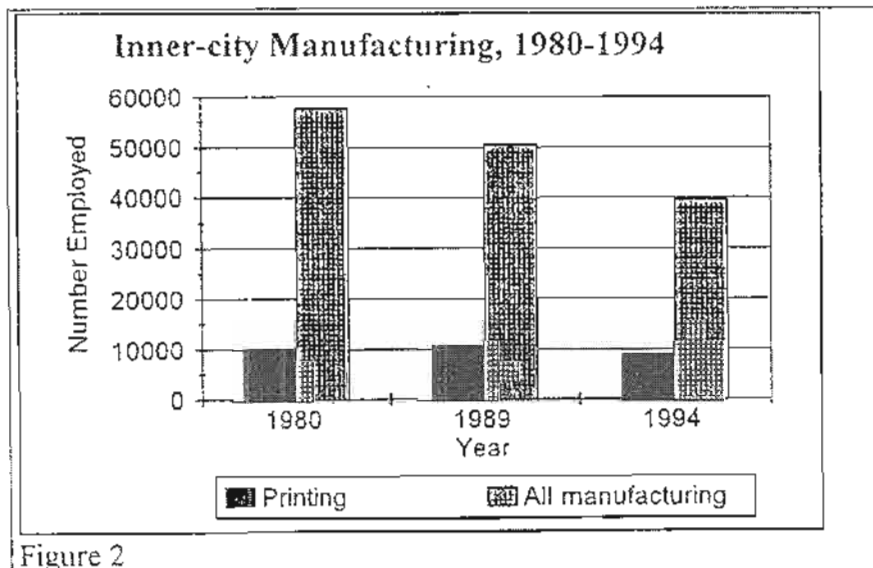
atmosphere" to represent "institutional thickness," which they define as a comprehensive network of institutions whose function it is to represent, mediate conflicts, and collaborate with each other.



settings internal economies of scale could be supplemented by external economies, which derived from the "industrial atmosphere" of particular places, "yield (ing) gratis to the manufacturers ... great advantages that are not easily to be had elsewhere". Amin and Thrift interpret Marshall's notion of "industrial

More recently, attempts have been made to elaborate on and redefine Marshall's notion of "industrial atmosphere," and theorists now speak of the provision of "real" services as an important feature of locationally clustered firms.

For Brusco (1992), the idea is:



to prioritise "real services" as against financial incentives, and to offer companies the services they need rather than the money to purchase those services on the market. The contrast is between meeting the needs of the companies directly and giving firms financial incentives to buy what they need... the real services centre is basically an agency for the transfer of technologies (P. 186, 191).

He cites as examples of real services the provision of information regarding the technical standards enforced by law in various foreign countries, the testing of manufacturers' inputs, and the supply of software firms require in order to design and manufacture their products. Given that information has in some respects the nature of a public good, he argues that real services must be supplied by public bodies rather than by private enterprise.

There are those who suggest, however, that real services have rarely been provided by the public sector itself, and that successful interventions have generally been carried out by private sector institutions or by joint private/public sector initiatives.<sup>55</sup> Others have argued that while local government agencies can be effective in the creation of specialised industrial parks, the establishment of real service centres, and the introduction of adequate financial and educational services, that these services are best provided through joint public/private ventures.<sup>56</sup> For these theorists, the most appropriate role for local government is the establishment of a legal and regulatory framework relevant to the organisational needs of the local economy.

<sup>55</sup> See, for example, Schmitz and Musyck, 1993; Schmitz, 1993.

<sup>56</sup> Pyke and Sengenberger, 1992.

#### 4.2.1 Private institutions in the cluster

There are a number of private sector institutions which support the printing and publishing sector. From a printing perspective, the most important is Pifsa, which was formed 80 years ago, and has eight regional offices across the country. Nationally, the Federation claims to represent 80% of all printers, who account for between 95-99% of turnover. Membership has remained relatively static over the last ten years.

The Southern Transvaal Chamber is situated in Honeydew, where it shares premises with the South African Printing College.<sup>57</sup> A large proportion of its members are based in the Witwatersrand. Membership is open to any company involved in the production of multiple images on any substrate, and thus ranges from large printers, manufacturers of corrugated packages to instant print shops. The Chamber has taken up membership of the Johannesburg Chamber of Commerce and the South African Chamber of Business (Sacob).

The Southern Transvaal Chamber provides a number of services for its members. The most important of these include:

- Negotiations with the unions. Given that some of its members (usually the smaller firms) do not have the necessary capacity or expertise, the Chamber undertakes wage negotiations, recognition agreement negotiations, dispute resolution procedures, etc. on their behalf. A series of wage negotiations seminars are also held throughout the year.
- A comprehensive medical aid society.

<sup>57</sup> In the context of the new political dispensation, Pifsa has recognised the need to review the areas of jurisdiction of the different Chambers as well as the names of Chambers existing at present (Pifsa, 1994).

- Regular industrial relations forum meetings. More recently, the Chamber has provided a series of debriefings on the latest developments in labour legislation, and its implications for the industry.
- A bad debtors list, which is revised and reviewed on a regular basis.
- An estimating course, which is now recognised by all Technikons as being creditable towards the National Diploma in Printing Management.

In addition to the services mentioned above, the Southern Transvaal Chamber is responsible for the administration of the Southern African Institute of Printing, and plays an important role in the functions of the Printing, Newspaper and Packaging Industry Training Board (PNPITB). The main activities of the former include the provision of technical knowledge and the production of the printing processes manual; the latter sets training standards in the sector, and is affiliated to the City and Guilds of London Institute.

It is no coincidence that the South African Printing College is situated in the Witwatersrand, given the spatial concentration of the sector in this area. The College is owned and run by Pifsa, and opened in 1991 in response to detailed research which indicated that there was a need to improve and update training methods. Until then training had generally been done in-house.<sup>58</sup> The annual in-take is between 200-220 students, and while the College's courses are available to printing apprentices across the country, in reality the vast majority of its students are from Gauteng.<sup>59</sup> There is an average drop-out rate of 12-15%, but the College has managed to place 100% of its graduates

since its inception.<sup>60</sup> In addition to providing training to new entrants into the industry, the SAPC also offers courses for the retraining of journeyman in electronic origination where they have become redundant due to changing technology.<sup>61</sup>

The printing sector is serviced by two trade magazines. The first was launched in 1985 as the South African version of a LTK pre-press magazine.<sup>62</sup> It now focuses on the whole spectrum in the industry, and is aimed at senior management. The magazine is supportive of Pifsa, which has an open invitation to use the magazine's pages to express its views. The second magazine is as concerned with the personalities in the industry as it is with the latest trends in technology. Its joint publisher played an important role in establishing the Young Management Printers (YMP) and founded the Desktop Publishers Association.<sup>63</sup> It also provides an insert which advertises second-hand machinery free of charge for its subscribers. Both magazines gave considerable coverage to the paper price debate. For both magazines, almost half of their readership reside in Gauteng, a third in the Witwatersrand.

In considering whether these various activities represent the provision of "real" services, one should heed the warning of Bloch (1993), who has argued that the existence of localised divisions and structures within national institutions does not necessarily translate into specific institutions for guiding or enhancing the performance of a cluster. In other words, industrial districts require strong and independent local institutions which are able to formulate policies tailored to local

<sup>58</sup> Uys, 1995.

<sup>61</sup> Pifsa, 1993.

<sup>62</sup> Hilton, 1995.

<sup>63</sup> YMP is open to all managers in the sector. It is discussed in more detail in Section 4. 6 Socio-cultural Identity and Trust.

<sup>58</sup> SAPC, 1994.

<sup>59</sup> Last year there were almost 4 000 applications for placement at the College.

needs. More importantly, in assessing "institutional thickness" and the provision of "real services", it is necessary, following Gordon's (1995) lead, to analyse the role of institutions in creating new understandings in the region and enhancing innovative capability in the cluster.<sup>64</sup>

Despite the regional orientation of the national institutions referred to above, there is little evidence to suggest that they have adapted to the specific needs of the cluster. One could argue, for example, that the services provided by the Southern Transvaal Chamber of Pifsa do not in any way reflect the uniqueness of the Gauteng or Witwatersrand cluster. Rather, they represent fairly standard services provided by numerous industry federations across the country, arguably biased towards the larger printing concerns. Nor does the provision of these services suggest that the institutions have responded to the organisational restructuring that is taking place in the cluster.

One of the characteristics of restructuring has been the growth in quick-printing shops and the concomitant down-sizing in the larger firms. It is interesting to note in this regard that the strongest support for the Federation (and the College) would appear to come from the large printers, who often recruit their apprentices from this source. The smaller printers were less enthusiastic about the Federation, and those that were members did not feel that they had benefited as a result of their membership.

<sup>64</sup> This last point is explored in more detail in Section 5 - The limits of the stylised industrial district model.

#### 4.2.2 Public institutions in the cluster

State incentives do not as yet play a significant role in the sector. Although categories 3 and 4 of the General Export Incentive Scheme (GEIS) are applicable, it has been mentioned above that exports account for only 1% of industry output.<sup>65</sup> Moreover, while investment incentives have been important in the development of South Africa's two largest mills, printers and publishers have received little help from the State. However, given the emphasis in the Reconstruction and Development Programme (RDP) on improving literacy rates, more direct State assistance may be forthcoming.

Whether the above translates into regional strategies for the printing and publishing sector is merely conjecture at this time. What is clear is that there is mistrust of government among some players in the industry, a sentiment which was not helped by the decision to print the national election ballot papers abroad. In a similar vein, the SAPC has decided to turn to the industry itself rather than to government to subsidise the cost of students who cannot afford to pay for their studies, on the presumption that government money has strings attached.<sup>66</sup>

#### 4.3 Small and Medium-sized Firms

The characterisation of industrial districts as strong networks of predominantly small firms is compatible with the idea that the industrialised countries are moving away from Fordism as the dominant competitive strategy of capital, and are approaching - if they have not yet arrived at - a new regime of 'flexible accumulation'.<sup>67</sup> In the small-firm districts, firms specialise in one or

<sup>65</sup> The GEIS is however currently being phased out.

<sup>66</sup> Uys, 1995.

<sup>67</sup> Harrison, 1994.

more stages of a complete production process. Accompanied by subcontracting, specialisation is assumed to promote collective capability, and economies of scale and scope are the result.<sup>68</sup> In the industrial districts of the Third Italy, the average firm size is 5.5 workers and the average industrial district comprises over 1 000 mainly small firms.

In several advanced countries, there has been a decrease in the average size of commercial printing companies as measured by the number of employees per firm.<sup>69</sup> This is partly because the diffusion of advanced technology makes it possible for the same number of (or fewer) workers to produce more output, but also as a result of the growth in instant print shops. Interestingly, there has also been an increase in the number of mergers and acquisitions.

probably accompanied by a decline in the size of large firms.

Tomlinson et al (1995) note that, for the immediate future, "Johannesburg inner-city may fulfil an important incubator function for the birth and nurturing of new, mainly African small-scale enterprise, much as is the case in terms of the employment dynamics in other cities of the developing world." Given that the printing and publishing sector was found to be strongly represented in this location, it can be assumed that the inner-city of Johannesburg is likely to play a similar incubator role for small enterprise development in the printing sector.

The size of Pifsa member firms in the Gauteng printing industry at 1995 is given in Table 9. The table suggests that about one-third of the firms can be described as small, and as many as medium-sized. Lacy

Table 3: Average Firm Size<sup>70</sup>

Region	Average Firm Size		
	1972	1982	1988
PWV	37	30	26
Central Witwatersrand	42	31	29
East Rand	22	19	14
West Rand	23	n/a	24

The printing and publishing cluster in the Central Witwatersrand could perhaps qualify as a medium-firm district in the sense that the average firm size in 1988 was 29. This is indicated in Table 8. Moreover, it is interesting to note that there has been a general decline in firm size since 1972, while the overall number of establishments has increased faster than the rate of employment over the same period (refer to Table 5). The implication is that there has been growth in small firms,

(1995) remarks that although there are no historical records, anecdotal evidence suggests that the proportions will not have changed much in the past 30 years. The evidence in Table 8 would appear to dispute this, and it is more likely that there has been a decline in firm size over time. It should also be noted that not all firms in the sector have taken out membership with the Federation. Moreover, since the Federation claims to represent 80% of the industry but 95-99% of turnover, it is reasonable to assume that the non-represented firms are primarily small concerns. Thus, it is possible that as many as 40-45% of all firms can be considered as small.

<sup>68</sup> Pyke and Sengenberger, 1992.

<sup>69</sup> ILO, 1990.

<sup>70</sup> Source: Manufacturing Census (1972, 1982, 1988).

Table 9: Current Firm Size: Gauteng Printing Industry (1995)<sup>71</sup>

Firm Size (no. of employees)	No. of Firms	Percentage of Firms
1 - 5	200	31
6 - 19	205	32
20 - 99	193	31
100 +	37	6
<b>Total</b>	<b>635</b>	<b>100</b>

It has already been mentioned that a study of the inner-city of Johannesburg (refer to section 4.1.1 above) found that the printing and publishing sector is an important part of the inner-city manufacturing economy, both in terms of number of establishments and employment. The study noted, too, that inner-city manufacturing activity is 'primarily a focus for small and medium sized production rather than large manufacturing establishments'.<sup>72</sup> It can therefore be assumed that small and medium sized firms predominate in the inner-city printing and publishing cluster.

#### 4.4 Co-operation and Competition Between Firms

This seemingly contradictory behaviour of firms, namely that they simultaneously compete and co-operate, is explained in the industrial district literature in the following way. Firms are assumed to relate to each other by interpenetrating one another's formal organisational boundaries. They plan together, bid on contracts together and receive technical, financial and other services from the 'commons' together. At the same time, owner-managers in the district continue to compete aggressively with one another, and with other firms located outside the district.<sup>73</sup> Thus, co-operation in one sphere facilitates and enhances competition in another. The sharing of information might be carried out informally at a personal level or more

formally through specially established institutions.

There is no doubt that the printing and publishing sector is a fiercely competitive one, and has become more so over time. Internationally, increased competition has been the single most important development to affect practically all segments of printing and allied industries.<sup>74</sup> At the lower end of the market, the technological changes that have created new business opportunities for small printing shops have as easily driven them out of the market. The emergence of electronic media, the rapid growth of in-plant printing, and the globalisation of advertising are further reasons for increased competition in printing services.

Locally, in addition to the factors already mentioned, high paper prices, tariff duties on paper imports and a prolonged recession have all contributed to the squeezing of profit margins. Moreover, in the smaller firms, machinery is sometimes leased, and thus huge capital outlays do not impose a major barrier to entry into the industry. As the economy has moved out of the recession, the demand for printed material has grown, and one can expect an increase in the number of firms in the cluster. Two of the smaller firms interviewed had already experienced phenomenal growth in the past year, and were looking either to expand their existing premises or purchase an additional business.

<sup>71</sup> Source: Pifsa - Southern Transvaal Chamber, 1995.

<sup>72</sup> Tomlinson et al, 1995.

<sup>73</sup> Harrison, 1991.

<sup>74</sup> ILO, 1990.

It is difficult to determine the exact extent to which firms co-operate in the Witwatersrand cluster. On the one hand, there is clear and open evidence of co-operation and sharing of information. On the other, there is a denial of any co-operative arrangement. Both scenarios will be discussed in turn.

As a general rule, there is probably less co-operation between the jobbing printers (i.e. the instant print shop owner) than there is between the specialists. The latter have often created a niche for themselves and are prepared to bail each other out where necessary.<sup>75</sup> For example, one of the large newspaper printers - associated with the Argus, Sowetan and Times Media groups - is willing to share its technical expertise with its competitors, and has on occasion lent spares to Beeld and Caxton.<sup>76</sup>

Similarly, a Florida (Roodepoort) printer describes an unwritten code that exists between the various printers in the area which works in the following way: Printer A is approached to provide a quotation for some work for a prospective client, who is known by the printer to have had a long-standing relationship with printer B. Printer A will inform printer B of the situation, in a sense seeking permission to go ahead with the deal. The proliferation of franchises in the sector is a further example of this duality. While franchisers are willing to bail each other out in times of trouble, they are also competing for a share of the same market.

It should be noted that while it is often difficult to elicit responses that recognise the extent of inter-firm co-operation, this does not mean that it does not exist. As Sabel (1992) has suggested, asking proprietors who *do* co-operate whether they in fact do is like "asking members of a

loving family whether they commit incest. They are so offended by the question that it is almost impossible to discern amidst the expostulations their offhand references to collaboration - which they take as self-evidently compatible with complete autonomy". Perhaps an example can be used to illustrate the point. It was mentioned above that Pifsa conducted a series of wage negotiations seminars for the Witwatersrand cluster, which were attended by in excess of 80 representatives of printing companies. It is clear that they shared their experiences with each other during those meetings. It is doubtful, on the other hand, whether they would all describe their relationship with each other as co-operative.

The fact that firms in a particular cluster *do* co-operate does not, however, provide evidence of dynamic inter-relations among them, and it is the *nature* of inter-firm linkages, and not the existence of linkages per se, that is crucially important to the development of a flourishing cluster. As Gordon (1994) has remarked, in numerous studies there is a tendency to divorce the relationships observed between firms within a localised territorial environment from any analysis of the totality of innovation linkages for these same firms, the latter remaining completely unexamined. He is suggesting here that an analysis of regional economic development must be based on an explicit theory of innovation, which enables the theorist to develop a 'non-reductionist' typology of linkages. In this typology, the interesting linkages from a policy point of view are those that enhance innovative capability within a particular cluster.

#### 4.5 Flexible Specialisation and Vertical Disintegration

The industrial district is assumed to evolve out of the shift in the advanced economies

<sup>75</sup> Stickland, 1995.

<sup>76</sup> Briggs, 1995.

away from Fordist mass production towards a less rigid form of industrial organisation. This is referred to as 'flexible specialisation', defined as the manufacture of a wide and changing array of customised products using flexible, general purpose machinery and skilled, adaptable workers.<sup>77</sup> In the large firm variant, firms decentralise internally and adopt new organisational techniques. In the small firm variant, flexible specialisation results from the clustering of firms and a deep inter-firm division of labour.<sup>78</sup> Concomitant with the change in industrial organisation is the presumed tendency to vertical disintegration. The shift to small, independent units is assumed to arise out of a reaction to economic slump, as well as to a sectoral shift of economic activities from industry to the service sector.

#### 4.5.1 Digital technology and its implications for flexible specialisation

Prior to the development of digital technology, different firms in the printing and publishing sector often specialised in one or more phase of the production process, and the machinery being utilised was invariably dedicated to specific tasks. The advent of digital technology has revolutionised the industry, and has heralded in an era of adaptable machinery and highly skilled labourers. Thus, the new technology promotes a more flexible production process. However, it also reduces the need for specialist pre-press and repro houses, in that it allows publishers to bring all the functions of page make-up in-house and deal direct with the printers, therefore bypassing the pre-press sector. It is interesting to note that in this process of technological change, the pre-press sector has begun to re-position itself, and there are some firms who have

responded by investing in printing machinery.<sup>79</sup>

It is possible to conclude from the above that technological advances in the sector may contribute to the shift towards flexible specialisation, while simultaneously centralising the function of typesetting with the publishers (and that of pre-press with printing itself) through the process of vertical integration. This finding is contrary to the stylised industrial district, in which flexible specialisation and vertical *disintegration* go hand in hand.

This finding begs the question, are industrial districts necessary conditions for flexible specialisation? Similar questions can be posed about the tendency to vertical disintegration. Historically, vertical integration has been a feature of much of South African manufacturing and the printing and publishing sector is no exception. Nampak, for example, which is owned by Barlow Rand, has a significant share of the paper packaging and printing industries in the Southern African region. CTP holdings has interests which include printing and packaging, newspaper and magazine publishing, and ink manufacture. Caxton, a major printer and publisher, has a controlling share in CTP, and is itself owned by Argus Holdings.

Does the above pose a problem for the industrial district 'model'? Following Bloch (1993), it could be argued that:

the adoption of flexible production methods may increase the probability of industrial plants clustering in space..... But flexible production techniques should not be our main concern. ...the prior analytical step is being taken of asserting the importance for inter- and intra-regional development and policy of the existence of industrial clusters, whether flexibly

<sup>77</sup> Zeitlin, 1992.

<sup>78</sup> Schmitz, 1993.

<sup>79</sup> Hedenskog, 1995.

organised [and perhaps vertically disintegrated] or not (P.39).

This then is the appropriate approach to an analysis of industrial districts. Rather than limit ourselves to the canonical model of the Marshallian industrial district, we must begin to recognise and understand the diversity displayed by the newly-identified districts. We return to this issue in Section 5 - The limits of the stylised industrial district model.

#### 4.5.2 Digital technology and its implications for spatial concentration

Under traditional pre-press technologies, i.e. pre-digitization, the preparation of pages (page make-up) involved a constant two-way flow between publishers and the pre-press firms. In simple terms, journalists made up copy on typewriters, which was then passed onto typesetters, who input the copy on a phototypesetter. The copy was then returned to publisher in the form of galley proofs, which were edited and pasted onto layout boards before being returned to the typesetter to be made up into final pages. Pictures were sent separately to a repro house, where they were developed to the right size, and then the text, with the pictures inserted, was photographed, and the final film (separations) sent to the printer for plate making and finally printing.

The complexity of the relationship between publishers and pre-press firms in the pre-digitisation era thus promoted a spatial concentration of firms in the printing and publishing sector. Editorial staff wanted their "pre-press firms to be, sometimes quite literally, round the corner".<sup>80</sup>

If pre-digital technology encourages the spatial concentration of the printing and publishing sector, can it be argued that the advent of digitalisation will bring about its dispersion? With the capture of pictures and text in digital form, it is technically feasible for publishers to transmit pages on-line to remote printing sites. Marshall (1983) made this point, suggesting that:

..... digitisation and facsimile transmission will be vital elements in an information network which promises to stand current ideas of production and distribution on their heads. In the process, it will completely overturn the organisation of the printing industry as it exists. In the future, it will be information rather than materials which will move across countries and continents (P.71).

There are a number of reasons why the advent of digital technology has not, and is unlikely to lead to spatial decentralisation in the sector. Driver and Gillespie (1992), for example, point to the fact that there remain important limitations to the digital transfer of made-up pages over existing telecommunications networks. In most notable countries the public switched (analogue) telephone network is not yet adequate, either in terms of speed of transmission or in quality of transmission. In other words, the intermediate digital technologies currently in use have not freed publishers from the need to send a physical object to typesetters.

However, as technical change brings forward the possibility for the publisher to pass raw text direct to the typesetter, so it removes the need for physical movements of paper, people and film, as well as the need for spatial proximity between publishers and the pre-press sector. The new technology simultaneously undermines the position of the independent typesetting sector. Thus, as has been argued above, while digital technology offers the

<sup>80</sup> Driver and Gillespie, 1992.

possibility of the spatial decentralisation of typesetting, it also serves to centralise the function of typesetting with the publishers through the process of vertical integration. 'Typesetting therefore remains in the cluster, but in the publishers' offices rather than in an independent typesetting sector'.<sup>81</sup>

Moreover, the 'print near the market' rule is always likely to hold, and decentralisation of this function in the past owes more to improvements in the efficiency of transport and physical distribution networks, than to advances in technology. While digital interfaces will allow publishers to send fully made-up pages down a line to the printer, there is still the problem of actually getting time-sensitive publications distributed.

The arguments above would appear to suggest that while pre-digital technology encouraged spatial proximity in the printing and publishing sector, it is not necessarily the case that the advent of digitalization will bring about spatial deconcentration. In fact, there are sufficient reasons to believe that the new technology may have the opposite effect, namely that it results in consolidation of the cluster. While the printing sector in a South African context is still a long way away from full adoption of digital technology, it would appear that the initial impact of digitisation has not lead to spatial decentralisation in the Witwatersrand sector (see Table 3).

#### 4.6 Socio-cultural Identity and Trust

It has already been mentioned that a distinguishing feature of industrial districts is that the relationships between players in the cluster are not purely economic, but are assumed to have deep social and cultural dimensions. One explanation of the origins

of trust focuses on the relation between pre-industrial land-tenure patterns and traditions of artisanal by-employments with their connections to world markets.<sup>82</sup> This model is assumed to explain why the successful districts have tended to specialise in traditional industries which are technologically compatible with the small-scale family structure of most local firms.<sup>83</sup>

The small-holder, family agriculture model is, however, not very useful in explaining the rise of numerous districts which have not specialised in traditional industries, such as the entertainment industry in Los Angeles, industrial automation in Turin, mini-computers in Route 128, etc.<sup>84</sup> Here, trust is assumed to be established through common educational, social and professional experiences. Entrepreneurs, for example, who are competing over market share, are in regular contact with each other through their social clubs, churches, and on the advisory boards of local co-operatives and regional government agencies.<sup>85</sup> Workers are not excluded from this social milieu, where competitive success arises from innovation rather than lowering of wages.

Others have suggested that it is doubtful whether trust relations are the product of a pre-existing cultural consensus, since if they were, how would one explain why successful districts have not always developed in towns with strong cultural identities? Moreover, evidence suggests that overt conflict, has, at times, been a feature of industrial districts. Zeitlin (1992) concludes that given these discoveries, trust relations in industrial districts appear more a consequence than a precondition of practical co-operation among local actors, and social consensus

<sup>81</sup> Driver and Gillespie, 1992.

<sup>82</sup> Sabel, 1992.

<sup>83</sup> Schmitz and Musyck, 1993.

<sup>84</sup> Sabel, 1992.

<sup>85</sup> Harrison, 1991.

less an antithesis of conflict than an outcome of its successful resolution. It could be argued that the two contrasting approaches above are not necessarily incompatible. The relations of trust which develop in a cluster are arguably the product of a pre-existing cultural consensus in some circumstances, and the outcome of practical co-operation and even overt conflict in others. It is a moot point, for example, whether the printers in Florida referred to above co-operate with each other due to some underlying social and

cultural dimension to their relationship, or whether they develop trust for each other out of their need to co-operate. Similarly, it would be difficult to determine with any degree of certainty whether the Young Management Printers (YMP) exists as an expression of pre-existing cultural consensus or as a concerted attempt by management to engender trust within the sector.<sup>86</sup> The source of the relations of trust is less relevant than that they exist, and that they facilitate and enhance the performance of economic clusters.

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<sup>86</sup> The YMP is a club for managers and potential managers in the printing industry, and has branches in Southern Transvaal (Gauteng), the Western Cape and KwaZulu/Natal. The YMP started the Southern Transvaal Chamber in 1958, and today has 100 members representing 70 companies. Its membership derives from a mix of small and larger firms. The Chamber's social activities in 1995 included a Saint Valentine's Day party, a Golf Day and charity events to raise money for Our Children's Home. The Chamber also holds two annual weekend seminars to discuss industry-specific issues. The Winter Seminar discussed Drupa (i.e. the industry's international trade show, held in Düsseldorf in 1995), while the Spring Seminar focused on customer relations.

## 5. LIMITS OF THE STYLISED INDUSTRIAL DISTRICT MODEL

Pointing to the empirical evidence, a number of social scientists have noted that the industrial district model that developed (essentially) out of the particular experience of the Third Italy has not been able to accommodate in a meaningful way the diversity displayed by contemporary districts. This should not be surprising, given that it is not an analytical model but merely a list of stylised facts, thereby limiting its ability to explain changes over time. Zeitlin (1992), for example, has observed that:

these newly-identified districts display a diversity in economic performance, internal organisation and social complexión. Some are world-renowned centres of technological innovation with commanding export positions, while others are still struggling to establish their position in domestic and international markets. Small and medium-sized family firms overwhelmingly predominate in some cases, while large-scale enterprises and external capital play a more significant role in others. Some districts have formalised co-operation among local actors through a variety of collective institutions, while others have experienced greater difficulty in forging common interests among competing firms and social groups (P.283).

Others have focused on the theory underlying the model. Storper (1994) suggests that the most important criticism of the flexible specialisation (industrial district) model has been that it failed to define, in analytical terms, precisely what it was that distinguished a 'technologically dynamic, territorially based cluster of firms from those systems of firms that did not

share these characteristics, but still appeared to be flexible and specialised.'

Gordon (1994) makes a similar point, arguing that a fundamental flaw in these approaches is that they lack an explicit theory of innovation. In elucidating such a theory, he cites six factors which play a specific individual role in structuring regional innovation processes. First, there is the critical role of state action. Second, industrial structure exerts an important independent influence on the possibilities for innovation. Third, the governance structure of inter-firm relations is a factor of autonomous strategic importance, independent of industrial structure per se. Fourth, the form in which a region's innovation system is integrated into relationships beyond the region is a crucial aspect of territorial innovation. Fifth, different types of innovation logic entail both different institutional assumptions and different implications for industrial competitiveness. And sixth, regional systems of innovation are not autonomous.

Central to this approach is the theoretical notion of the milieu, essentially a context for development, which empowers and guides innovative agents to be able to innovate and co-ordinate with other innovating agents. Conceptually, it is a territorial version of Granovetter's "embeddedness" of social and economic processes (in Storper, 1994). Suggesting that the milieux school does not go far enough in specifying the potential mechanisms and processes by which milieux function, Storper grounds his theory of innovation in evolutionary economics, describing the region 'as a nexus of untraded interdependencies' (1994). Here, technological change is an endogenous property of economic systems that is 'not the result of allocational adjustments but rather of interdependencies that are untraded, where the latter include labour markets, public institutions, and

“conventions” or common languages and rules for developing, communicating and

interpreting knowledge.’

## 6. CONCLUSION

Perhaps the most important lesson that derives from a critical analysis of the industrial district model is that innovative, collaborative inter-firm relations - both within and outside the region - are the driving force behind dynamic regions, and that one cannot simply deduce innovative capability from agglomeration. In proposing a new approach to regional industrial analysis and development policy in South Africa, Bloch (1993) makes this point, suggesting that:

rather than merely hypostasising such agglomerations as networks of small- and medium-sized firms, greater attention will have to be paid to the elaborate patterns of production organisation within such clusters, as for example the shifting balances between the vertical integration and disintegration of production processes in plants of different sizes (P. 46).

Since technological innovation is increasingly a product of social innovation, the kinds of linkages central to perpetual innovation require "deliberate co-ordination as the region seeks solutions beyond those ordained by prevailing allocations systems and cumulative technological trajectories".<sup>87</sup> There is thus a need for policy to produce new types of public goods that are "specific to technological-economic spaces".<sup>88</sup> In other words, while it is necessary to continue to develop public goods such as industry-specific labour skills and training, technologies and industry- or region-specific assistance to firms, it is much more important for policy to facilitate "conventions which make possible certain capacities for collective action and co-ordination" (P. 25).

<sup>87</sup> Gordon, P. 32.

<sup>88</sup> Storper, 1994.

What remains now is an assessment of the role that institutions, including government at all levels, could play in encouraging the development of innovative, collaborative inter-firm relations in the printing and publishing sector. A necessary starting point in this regard is a *filie* approach to the sector. In other words, any restructuring in the sector must address the problems in the entire production chain, from the manufacture of pulp and paper to the production of printed and published goods. It is thus recommended that industry task forces, consisting of government officials and industry stakeholders, be established. Stakeholders would include representatives from a) pulp and paper makers; b) paper merchants; c) Pifsa, SAPC and the trade magazines; d) trade unions; e) printers, publishers, pre-press and repro houses; and f) industry analysts and academics.

While it is necessary to establish a task force which deals with "filie-wide" issues, it should be borne in mind that there are a number of issues which are pertinent to the printing cluster alone. It is therefore important to have a task force which focuses specifically on printing sector issues. It should be mentioned, too, that a first stage in the formation of such task forces will necessarily involve attempts to overcome the feelings of mistrust of government which exist in the printing sector, particularly since the controversy surrounding the printing of ballot papers for the national election in May 1994.

The "industry-wide" task force would be empowered *inter alia* to address the following issues.

- The paper price debate

There is a need to analyse in more detail the reasons why South Africa produces pulp and newsprint almost 10% cheaper than its northern competitors, yet charges

domestic paper buyers about 10-15% more than world prices. It will need to be assessed whether paper prices reflect simply the laws of supply and demand, or if manufacturing inefficiencies, poor productivity levels and/or relatively high tariffs distort paper prices in the sector.

- A review of tariff arrangements in the sector

It has been mentioned that there are differing views with respect to tariff structures in the sector, and that this has created tension between paper makers on the one hand and printers and publishers on the other. There is clearly a need to investigate in more detail the impact of current tariff arrangements on the various stakeholders. Recommendations in this regard can then be put to national government structures.

The "cluster-specific" task force would be empowered inter alia to address the following issues:

- The impact of technological advances on skill levels

It has been suggested that, with the advent of digital technology, there is evidence of deskilling, polarisation of the workforce, and domination of higher skills in the printing and publishing sector. Moreover, it was noted that the SAPC has responded by allocating some of its resources to the training of journeymen who have been made redundant by advances in technology. There is clearly a role here for government to provide resources to the Printing College for the training of a more flexible workforce.

- The growth in small- and medium-sized firms in the cluster

There is evidence that the Witwatersrand cluster has experienced significant growth

in small- and medium-sized firms over the past decade. If the international experience is anything to go by, this trend is likely to continue, particular since the use of increasingly efficient and cheaper technologies that allow cost-effective descaling has resulted in the proliferation of small instant-print shops in a number of countries. The support (credit, training, information) of small firms by the industry and government is likely to give a boost to black empowerment initiatives.

The role of government in supporting the development of small, medium and micro enterprises (SMMEs) has been spelt out in a Department of Trade and Industry White Paper, and will not be repeated here. It is sufficient to note that the formation of local service centres should provide an opportunity for emerging entrepreneurs to access information on market opportunities in the sector. Moreover, emerging black entrepreneurs could benefit from credit facilities and training programmes made available through the local service centres.

The industry itself should not, however, expect government to provide all the support required by small emerging businesses. It has been noted that the strongest support for the Federation (and the College) comes from the large printers, and that the smaller printers did not feel that they had benefited as a result of their membership. There is a need for Pifsa to place more emphasis on the needs of its smaller members. In this regard, the Federation, which raises its funds by charging members a joining fee (the fee is on a sliding scale and increases with firm size), should make some of these resources available to emerging small businesses. Moreover, given its intimate knowledge of the industry, Pifsa is better suited to create an information centre (perhaps in tandem or partially funded by government), which would begin to provide "real services" to

the industry, and particular in support of small firms.

- The role of the Printing College  
There is similarly a role for the Printing College in supporting the growth of small and medium sized firms. This would require that the College extend its training programme beyond the provision of technically orientated courses. The College should begin to initiate training programmes that focus on the development of financial management and business skills which are relevant to the industry.

- The role of Pifsa's Southern Transvaal Chamber.

It has been argued that the services provided by the Southern Transvaal Chamber ought to reflect more the uniqueness of the Witwatersrand cluster. One particular characteristic of the cluster is that it is strongly represented in the inner-city of Johannesburg, an area which is likely to play an important incubator role for small enterprise development. The Chamber should begin to consider the role it can play, together with provincial and local government stakeholders, in promoting small scale business development in the printing sector in the inner-city of Johannesburg.

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