

Productivity: the case of SAPPI's Ngodwana Paper Mill



This article is based on research conducted by LAEL BETHLEHEM at Ngodwana Paper Mill in 1990.*

*Lael Bethlehem is a Masters student in Industrial Sociology at Wits, and a regular contributor to the Labour Bulletin. She expresses thanks to Avril Joffe and Eddie Webster for their assistance with the project, and to PPWAWU and SAPPI Ltd for making the study possible.

Driving out of Waterval Boven, in the North Eastern Transvaal, towards Nelspruit at night, you pass a thousand shining lights - a giant paper factory, the Ngodwana Mill. While the lights shine, men and women work. Pulp and paper production in sophisticated process plants makes no allowance for the night, or Christmas, or June 16th, or anything else for that matter - including, sometimes, the market ... And on a clear day, from ten kilometres away, you will be suddenly confronted by the plumes of smoke and steam and the spirals of fumes - this is your first glimpse of Ngodwana. It is a Titanic structure, and its sight and smell fill the atmosphere. As you get closer it takes on the form of a giant, science fiction stage set: all pipes and towers and cylinders, a massive image of smoke and steel.*

Ngodwana, owned by the South African Pulp and Paper Industry (SAPPI), was first built as a small pulp mill, employing a mechanical process, in 1963. In 1981, SAPPI began to convert it into a major production unit. This required the injection of some R1.6 billion, making it the largest single private sector investment in the country's history. The mill became operational in 1985, and raised SAPPI's capacity to 800 000 tons of chemical pulp and over 900 000 tons of paper per annum.

* This paragraph is based on two passages of Nicholas and Beyson's *Living with Capitalism*, 1977, Routledge and Kegan Paul, London

The mill produces three basic products:

- * Bleached and unbleached pulp for use in the mill itself, in other SAPPI mills such as Enstra, and for the local and export market. Ngodwana has the capacity to produce 600 tons of bleached and 450 tons of unbleached pulp per day.
- * Kraft Liner Board – a thick brown paper used for packaging. The Kraft machines can produce 500 tons of liner board daily.
- * Newsprint for the local and export newspaper industry. It is produced at a rate of 1 050 metres per minute, or 63 kilometres per hour.

This level of production requires a massive amount of timber as raw material. Seven thousand tons of wood are processed every day, delivered in 500 truckloads daily.

Ngodwana Mill employs 1 633 people, many of whom are members of COSATU's Paper Printing Wood and Allied Workers' Union (PPWAWU). This figure excludes those workers who are employed by the various sub-contractors at the plant.

Management's problems at Ngodwana have included low productivity, conflict, difficulty in maintaining the quality of the product, problems with creating a variety of products according to the demands of the market, and a shortage of skilled workers. Workers' problems at the Mill have included compound-style housing, racism, authoritarian bosses and relatively low wages.

Workers sought a solution



Ngodwana

Photo: SAPPI

to their problems by going on a strike in early 1990. The strike was determined and militant, and lasted for nine weeks. But eventually workers were forced to return to work, without having won any of their demands.

The strike added to management's problems, but it also taught them new approaches. Some of these suggest that their strategies are beginning to shift from simply controlling and repressing workers, to trying to build some kind of a co-operation with workers. This presented new possibilities but also new problems for PPWAWU at Ngodwana.

Problems at Ngodwana

Like most South African factories, Ngodwana Mill faces problems in the production process. One problem is that productivity is very low, compared to that of paper mills in other countries. Last year SAPPI conducted a

study which showed that productivity is up to three times higher in comparable paper mills in countries like Canada and Japan. One reason for this is the relatively high incidence in South Africa of industrial action in the form of strikes, stayaways and go-slows. Another reason, however, is that the production process itself, and the way in which workers' abilities are used, is inefficient.

One of the senior managers of a large paper company recently said: "In a bad year (1987), only 0.4 % of the total number of work days were lost to strikes. Are the reasons for our notoriously low productivity to be found in that 0,4% – or in the 99,6% of days spent at work? ...Some of the answers to national productivity, labour relations and political stability need to be sought in the 99,6% of workdays when employees are present at work, in body

if not always in spirit.”*

There *are* other production problems at the mill. One of these is the quality and variability of the product. The mill was extremely expensive to build, and costs an enormous amount to maintain. It was designed to produce massive volumes of pulp and paper. The mill is only really profitable when it is producing to full capacity. This is easiest to achieve when it is not necessary to interrupt the process in order to make changes to the type or quality of product which is being produced. Changing the type or quality of the product means interrupting the process in order to make adjustments to the machinery and this is a long and costly process.

In order to avoid this, it is often necessary to make compromise. One of these is the mills' ability to vary the type of paper and pulp which is being produced. For example, the mill needs to produce various kind of pulp, which differ in their cleanness and brightness. The cleanest and brightest pulp contains more chemicals and bleach and goes through a longer labour process. It is therefore more expensive to produce. For example, export grade pulp (which requires the maximum cleaning and bleaching) is more expensive to produce than the pulp

needed to make newsprint, which requires the least cleaning and the least brightness. But, because it is so difficult for the mill to vary its product, and because it is so difficult to produce according to plan, Ngodwana simply *tries to produce export grade pulp all the time*, knowing that most of the time it will fail, and the lower quality pulp which is produced will simply have to be used for lower grades, even though they fetch very different prices!

Another problem which is related to the mill's all-consuming need to produce at maximum volume, is that the quality of the final product is not always good enough. At present, the mill is producing approximately 30% more defective material than management believes it should.

Beyond the obvious: the roots of production problems

The roots of the low productivity and other production problems at Ngodwana are to be found in the way in which the production is organised and by the social context of producing paper in South Africa.

1. One aspect of this is the level and flexibility of workers' skills. Because 'racial fordism' [see box on p 53] produces on the basis of a mass of unskilled, easily expendable cheap black

labour, most South African workers are poorly educated or illiterate. This is also true of Ngodwana. But because Ngodwana's production process uses sophisticated technology and a complex process, this lack of skills has become a severe problem. Workers who are not formally trained in mechanics and physics are not in a position to solve mechanical problems which crop up in the course of production, to adjust easily to new processes, or to identify and address problems.

This has an impact on the efficiency of the mill. One of the Ngodwana managers complained: "In other countries you've got university graduates doing jobs which illiterate workers do here. It's so difficult to operate efficiently - it gives us a lot of hassles...."

Workers' skills also tend to be very inflexible. A worker will usually be given a job on a particular grade, with a very specific job description. This doesn't allow for the uncertainties of producing paper in a high-tech factory, or for changes in what is expected of workers as the technology changes, or as the product changes.

2. A second problem is that workers' tacit knowledge, is not utilised by management to the full. 95% of workers surveyed at the mill felt that

* Dr Brian Lucas, *Mondi Paper* 'The social dynamics of Labour Relations : their management and government in a new South Africa October 1990

they would be in a position to improve production, because they are the ones who know the machinery, and see the problems as they arise. Managers however are not used to taking advice from workers, and in effect discourage workers from contributing meaningfully to production. A worker at the mill said that it would not be easy to suggest changes to production, even when the changes would serve management's interests: "My foreman would find it hard to accept that some of my intelligence is improving production."

The issue of workers' tacit knowledge of production was vividly highlighted during the 1990 strike. In the liner board section of the mill, a part of a particular workers' job was to check the machine temperature on an indicator, and to adjust it when necessary, using a valve. Prior to the strike, management was unaware that the indicator was located on the bottom floor of the factory, and the valve was on the second floor, some four flights of stairs up. For six years, the worker had been checking the temperature, climbing the stairs and adjusting the valve, climbing down to see if his adjustment had had the required effect, climbing back up to readjust the valve and so on, until the correct temperature was reached. The worker was involved in a frustrating, time consuming and unproductive exercise. Both management and workers



Working for SAPPI

Photo: Lael Bethlehem

should have benefited from a simple change, but under the conflictual conditions of the mill, there was no mechanism for even this simple communication.

3. This relates to a third source of Ngondwana's ongoing problems: conflict. The mill, like most South African workplaces, is racially divided, economically polarised and politically tense. This general South African trend is perhaps more intense in an area such as the Eastern Transvaal. The mill is situated in the heart of this area, close to the town of Nelspruit. The Nelspruit Town Council is controlled by the extreme right wing Conservative Party, and many of the white line managers and artisans are highly conservative in their outlook. One of the managers admitted that "because the workers belong to a union, most of the whites think there's a conspiracy going on. And when workers speak in black

languages, some whites think they are talking about them."

Although no formal segregation of the mill's facilities is enforced, segregation in fact occurs. In the power provision section for example, workers reported that they used different toilets from the whites. Although there were no "Whites Only" signs, workers felt there was a clear taboo on their use of the whites toilets.

The sense of racial tension and general conflict is felt strongly by union members and shop stewards. One of the shop stewards commented: "You will find that we black workers are badly treated. We have discrimination, and some jobs seem to be reserved for whites. There are no African foremen, they are all Boers ... and if you are partaking in PPWAWU, you will not get promoted."

SAPPI officially opposes racism. "SAPPI believes in promoting people with ability and is not afraid to put black

people in senior positions," says the 1989 annual report. But racial tension and conflict, though discouraged by senior management, is part of the structure of life at the mill. It is entrenched in job hierarchies, wage differentials, hostel life, assumptions about the role and abilities of workers, and deeply seated attitudes.

Management responses

The existence of poor worker education, racial conflict, hostel-style housing, lack of communication, and assumptions that workers are unable to make a conceptual contribution to production, are a direct result of a 'racial fordist' conception of the workplace. All are a result of state policies, managerial strategies and racial attitudes consciously created by apartheid. But in the high-tech world of Ngodwana Mill, these conditions are no longer contributing to economic growth. They are now the roots of serious production problems.

Ngodwana management are aware of these dynamics, and they have begun to adopt a wider range of strategies and tactics.

Repressive strategies

Soon after the 1990 strike, management retrenched 280 workers. "During the course of the strike," explained a manager, "we had to keep the mill running with much

less personnel. And what we discovered, is that we could manage with much fewer workers. We came to the conclusion that the mill was overstaffed."

The retrenchments had a major impact on life at Ngodwana. 280 workers lost their jobs, and those who were left found that management was using two methods to make up for the smaller number of workers. The first was that workers' jobs were intensified, and they found themselves working much harder than before. The second was sub-contracting. Suddenly, work which was previously done by PPWAWU-organised SAPPI workers, was being sub-contracted to other companies. One of the jobs contracted out was security. The new security workers were not unionised, were housed separately from the other workers, and earned over R200 less than the previous SAPPI workers.

As well as this additional sub-contracting, existing contract firms were used in new and surprising ways. One example of this is that workers with the garden maintenance contractor were brought to work in the mill. They were used for manual tasks such as moving rolls of paper, and removing waste production. The workers who had performed these tasks before (and who had been retrenched) had been earning in the region of R900 per month, as well as various benefits. The sub-contracted

workers who had been brought in from the garden work were earning R400 per month. They had no union, and enjoyed no benefits such as pensions or medical aid.

'Co-operative' strategies

At the same time, Ngodwana management recognised that productivity could not be raised without a reduction in industrial action, and some increase in worker satisfaction, and without an improvement of communication and skills. As a result, they adopted strategies designed to meet certain key worker demands, and designed to increase skills and communication.

Soon after the strike, management decided to meet a long standing worker demand for family housing rather than hostel-style single sex housing at the company compound. The scheme proposed that the company would assist workers in buying houses in an adjacent township. Workers would then commute to work. The union believed that the company was trying to increase stability by meeting one of workers' key demands, but was also trying to prevent the intensive organisation of workers in the hostel, which had been an important factor in the strike.

A second development in the mill is the provision of literacy training to workers. Management have hired a literacy company which offers a programme called JOLT - Job Oriented Literacy

Training. The course offers to provide literacy skills as well as "cultural enlightenment." Management hopes that the programme will increase basic skills among workers and enable them to run future training courses. The "cultural enlightenment" of workers could be seen as an attempt to make an ideological impact on workers' thinking.

Another skills-related development is the

'Repairman Project.' The project aims to skill some workers in routine machine maintenance. This will upgrade the skills of a section of workers to allow them to repair machines and solve some mechanical problems. This would allow the formally trained artisans to engage in problem solving, and to anticipate and address production difficulties. The workers who are trained as repairmen are not given any formal

certification, but their skills are upgraded and extended.

Perhaps the most interesting of these innovations is the 'Green Areas' project. The Green Areas idea originated with the Nissan Company in Japan. The idea behind the concept is to increase communication between workers and management, and to enable management to draw on workers' perceptions and working knowledge. This is done through a meeting which

The South African paper industry

South Africa has a large and relatively prosperous paper industry. It relies on local forests for the production of wood, the basic raw material of paper products. Some factories in this sector produce pulp (which is a crude form of paper consisting of "pulped" wood with the addition of chemicals and bleaches), as well as various forms of paper. Pulp is often sold and exported in its raw form. It is then converted into paper products of various kinds. So the paper industry produces not only paper, but also pulp, and wood.

The industry has grown enormously in the last decade. It is performing exceptionally well in the current economic climate. The 1980s have seen a substantial increase in the amount of capital invested in the industry. Unlike most industrial sectors, large amounts of money were invested in new factories over the past decade. Much of the new production was directed at overseas markets. Employment figures in the industry have also risen sharply: in the SAPPI group for example, the number of employees almost doubled between 1980 and 1990.

Along with increases in output has come a dramatic rise in the profit levels of the major companies in the industry. SAPPI's net income rose from R46,3 million in 1980

to R605 million in 1990. This represents a compound annual growth of 37% per year.

These sharp increases in investment, output, assets and employment are in sharp contrast to the performance of the South African economy as a whole, and the manufacturing sector in particular, in the 1980s.

The paper industry is now a key industry in the South African economy. The industry comprises 15.9% of South Africa's manufacturing Gross Domestic Product, and exports more of its annual product than any other manufacturing sector.

The Association of Pulp, Paper and Board Manufacturers estimates that the industry will grow at a rate of 5.5% per year over the next ten years. This would mean the investment of over R7 billion, and the creation of some 40 000 new jobs.

The growth in the industry in the past ten years has been facilitated partly by the building of factories which use sophisticated technology, and which cater primarily for the needs of the international market. But the introduction of this technology into the repressive, conflictual, unskilled climate of the South African workplace, has resulted in its own problems. One of these has been that productivity (the output of product per worker) and efficiency have been very low. This has concerned paper managers more and more in the past few years. ♦

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lasts for 20 minutes, and is designed to take place in a relaxed and open atmosphere. A special area is designated on the factory floor for this purpose, and is painted green.

The meetings are also designed to introduce a move away from strict authority towards a more participatory management style. The Green Areas concept is one which acknowledges the workers' knowledge and *de facto* control of the process. It has the potential to allow management to tap in to workers' perceptions, and to address the extreme communication problems exposed during the strike.

However, at Ngodwana Mill the Green Areas do not achieve their potential. Rather they operate as top-down management briefing sessions, and intensify management power and leverage.

In an interview conducted with a shift superintendent and oreman in the paper mill, it was evident that the views of line management differ significantly from those of the senior managers. The foreman said that he thought that the Green Areas are "a good idea...I tell them what's our target, and what we've achieved and lost. Then I tell them what they have to do next."

Asked if workers raise problems and suggestions at the meetings, he replied, "Well, at first they thought it was a bitching session where they could just raise any problem other than what's

happening in the section. But I soon put them right." He seemed unaware that the Green Areas meetings were also designed to facilitate workers' suggestions to improve production.

These indications of the Green Areas as top-down briefing sessions were strongly confirmed by the shop stewards. They said: "Well, they are trying to prepare for the new South Africa by giving us some-thing, but I can say that for us its useless. We tell them our problems, like that we want upgrading of skills, but they don't attend to them. Management treats it as a platform to preach to the workers. They tell us whether or not we have been working hard enough, and how hard we must work."

The effects of these changes

Ngodwana management attempted to introduce piecemeal reforms in a mill which retains all the major traditional structures of apartheid style production. It is unlikely that productivity will improve until the skills problem is addressed systematically, and in consultation with workers. It is also unlikely to improve until workers share and use their tacit knowledge of production. And that is unlikely to occur until racist practises and hierarchies have been removed, workers are paid a living wage, and their inputs structured into a re-organised process of production.

In the meantime, what the

changes have meant is increasing stress for workers in the form of the intensification of work, and increasing polarisation in the form of a growing divide between different sections of workers. There has always been a divide between the 'core' workers in the mill itself, and their fellow union members in the nearby SAPPI Forests. Workers in the mill earn between R900 and R1600 per month, and workers in the forests earn between R200 and R800. This core/periphery divide has been intensified by the changes at the mill, as a gap opens up between core workers and sub-contracted employees.

What do these changes mean?

It is clear that Ngodwana management is feeling the effects of the ongoing crisis in the mill. The traditional methods of controlling and deskilling workers are no longer effective. It is also clear that management is looking for new strategies. They have not succeeded in designing a thorough restructuring programme, which would take workplace relations onto a new path. But the attempt to find such a path has clearly begun.

South African managers still use repressive forms of workplace organisation, but they seem to be prepared to adapt their strategies, where necessary, to serve their interests in the future. In a factory like the Ngodwana

Mill, the sophisticated technology, and the high level of worker organisation suggest that co-operative strategies (or probably a mixture of co-operative and repressive strategies) will be followed by management.

Responding to new managerial strategies is clearly a challenge for the union. But in the current climate and the future, trade unions may wish to go beyond responding to management. The importance of the paper industry in our economy, and the flux in paper mills themselves, could mean that workers, and PPWAWU in particular, may wish to become involved in restructuring the industry, and the workplace. In considering such an involvement, the union and its members would have to consider a number of issues:

- Under what conditions, if any, would workers agree to help increase productivity?
- How could workers influence what happens to any additional profits made through increased productivity?
- Could workers' strategic position, and/or workplace conditions improve through participation in co-operative programmes such as the Green Areas concept?
- How could the divide between 'core' mill workers, and 'peripheralised' forest and contract workers be avoided?
- How could the structure

of the paper industry as a whole be transformed within new economic development strategies in a post-apartheid society? There is little doubt that the current crisis in

manufacturing, and the emerging managerial and union responses, will raise these important questions for workers in industries like the paper and pulp sector. ☆

'Racial fordism'

Fordism is a concept that has been used to describe the system of mass production and mass consumption that developed in the advanced capitalist economies in the 20th century. The word derives from the Ford motorcar factories which pioneered this system of mass production in the early years of the century. The 'fordist' system mass produces endless quantities of identical products. It is based on deskilling workers, repetitive tasks, assembly line production, and authoritarian management.

Since the 1970s a new system of capitalist production has been emerging in many companies and countries, which many thinkers call 'post-fordism'. Post-fordism is based on new technology which allows much more flexibility in production and a varied range of better-quality products. It is based on multi-skilling, flexible production, and some kinds of 'participative management'. 'Post-fordism' tries to use the knowledge and ideas of workers to improve production. This is the reverse of fordism, which tries to deny the worker any role in thinking about or improving production (see Dave Kaplan, "New technology..." in *SA Labour Bulletin* Vol 15 No 8).

Some writers have characterised the system of capitalist production which developed in SA under apartheid as 'racial fordism'. They argue that 'racial fordism' has many similar features to 'fordism', but has been distorted by apartheid. For example, the system of mass production has been stunted by the fact that black workers are paid so little they cannot afford to buy the products. In the workplace, management is racist and even more authoritarian than in 'fordism'.

Under the system of 'racial fordism' capitalism was very profitable and expanded rapidly in SA. But 'racial fordism' has now entered a crisis of low productivity and militant worker resistance, as well as general economic crisis. Some companies in SA are beginning to try to implement some 'post-fordist' management techniques to combat these problems. The case study of Sappi's Ngodwana mill shows that the racism, paternalism and authoritarianism in SA workplaces tends to sabotage such attempts. ♦



The unveiling of the Madibamobile: a phenomenal production time cut of 700%

Photo: T J Lemon/Southlight

Worker Motivation and Productivity

In April 1990 workers at the Mercedes Benz factory in East London completed the production of the "Madibamobile" - a car built for Nelson Mandela at the request of the NUMSA workers at the plant. The car was built during through voluntary work after normal working hours. It was completed without the help of "non-workers" (ie engineers, technicians, managers), in the equivalent of four days of labour time. It usually takes twenty eight days to construct this model. Production time was thus cut by seven hundred percent.

This experience has enormous implications for South African factories. Imagine if productivity rose by 700% in all factories every day because workers felt motivated to work! Imagine if it were no longer necessary to hire line managers because workers managed themselves and their workplace effectively!

The Madibamobile experience, and other experiences internationally suggest that workers could in fact be managements' best friends. And managers internationally and increasingly in South Africa are beginning to realise that if they can build a co-operative and trusting relationship with their workers, they may in fact be the beneficiaries. It may sound like a far cry for South African management, famous for union busting, strike breaking, low wages, racism and lock-outs to suddenly embark on a program to build an alliance with their workforce and its union...!

And what would be the response of militant union members if the management decided to abolish restrictive wage grades and job descriptions, raise wages, give workers greater autonomy and less supervision, and have meetings with them to consult them as to how production should be improved...?

These issues have arisen for some workers in Australia, Italy and America. And they are beginning to confront workers in Nelspruit... Johannesburg... Durban... ♦