

## **The Human Factor in Technological Change at Stelco:**

### **A Union Leader's Perspective**

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### **Introduction**

Labour-saving technology has increasingly become a powerful tool facilitating greater management control and cost reduction in the steel industry. Our purpose for this paper is to examine the relationship between technological change and labour processes involved in steelmaking. We make no claims that the critical observations provided are representative of all steelmaking operations. Rather, our interests focus the changes that have taken place at Stelco's Hilton Works in Hamilton, Ontario. Our discussion provides a voice that gives prominence to the standpoint of workers and the impact on their work lives including the dramatic employment dislocation that occurred as Hilton Works shed about 75 percent of its workforce and redesigned the workplace to maximize management control over steelmaking processes.

*Of all people, workers in the steel industry understand the technological imperative of remaining competitive in world markets. I mean, if you don't make a profit you don't exist right? Barb and I looked over some photographs of early steelmaking, and I thought, wow, those guys, they had it tough. Some of those jobs, like lifting steel ingots with huge tongs - those guys had to be tough. I wouldn't have survived a steel plant back in those early days. So, you implement technology like continuous casting and you're not making ingots anymore. You're casting directly to slabs or blooms or billets. And you've taken a lot of people out of the process. It's all computer-controlled now.*

*People have asked me before about my opinion on new technology and what it means to the working class (Smith, 1999) and I don't think my impressions have changed much after watching Stelco's performance in recent years. Stelco has invested millions in new technology at Hilton Works, like the plate mill (which has just been dismantled), and over time, the loss of jobs has been huge. With each new phase of technology, from open hearth furnaces to basic oxygen [furnaces], from ingot casting to continuous casting, the workforce has been cut. Hell, it's been slashed to about one quarter of the size it was back in 1981. So yes, Hilton Works is back in business [after a two-year restructuring process under the Companies' Creditors Arrangement Act] and we know that a lot of the*

*equipment is already much less efficient than the newest stuff at NUCOR. It's a vicious cycle of trying to keep up with the competition. And, a lot of steelworkers...well they're not steelworkers anymore are they?*

## **Making History Making Steel**

There's a strong tradition of pride among steelworkers. Historically man's work, tough, hot, and dirty. The scale of operations was huge and the product, itself, weighed in tons. Companies like the US Steel Corporation and the Steel Company of Canada were powerhouses, driving the Industrial Revolution, literally shaping the economies of North American societies (Gordon, 2006). Through 150 years of steelmaking and a continuous pursuit of productivity and quality improvements, reconfigurations of capital and labour have transformed steel work, and unions like Local 1005 at Stelco's Hilton Works have strived to protect their livelihood.

In 1856, in England, Henry Bessemer developed the Bessemer process for making steel, the first process for mass producing steel (BBC, 2006). Just a few years later, the more efficient open-hearth method was developed and became the predominant steelmaking technique for most of the twentieth century. Abundant rich iron ore and coal deposits and cheap water transportation spurred the development on America's steel industry in the Great Lake States and in Hamilton, Ontario. Between 1880 and the turn of the century, U. S. steel production grew to over 10 million tons, and more than doubled by 1910 to 24 million tons (Gordon, 2006, p. 2). In 1901, the United States Steel Corporation was created as the largest industrial corporation in the world, the first to be capitalized with over \$1 billion. This single company controlled 60 percent of the entire American steel market (Gordon, 2006, p. 2) Most of its capacity was established with open hearth furnace technology.

Three major integrated steel makers established in Canada, Stelco, Dofasco, and Algoma, which together account for over 60 percent of all steel made in the country (Industry Canada, 2002, p. 2). The Steel Company of Canada (Stelco) was formed in 1910 with the merger of five companies and \$25 million from outside investors (Government of Canada, 2004, p. 1). Following WWII, several countries including Japan, Germany, and Korea grew their steel industries using Basic Oxygen Furnace (BOF) and continuous casting technologies. These more efficient and cost effective processes contributed to a more global, competitive arena for steelmaking (D'Costa, 1999). Most integrated steel mills in North America have now replaced their Open Hearth process with BOF technology.

*I worked in Utilities [at Hilton Works] and with the old open hearth technology all the waste heat went through the boilers. Because of all the impurities going through them, the boilers had to be cleaned regularly, every shift and with basic oxygen technology all of those jobs disappeared. They were gone. The people on the floor charging the furnace*

*- I think it was probably a 3 or 4 to 1 ratio for the open hearth furnace compared to Basic Oxygen. Open hearth was much more labour-intensive. Where you're producing a heat [a cast] a lot faster and I think that improvements in metallurgy made it a lot easier for them too.*

Continuous casting is a relatively new process that began to gain widespread use in steelmaking in the mid 1960s and is now used to produce over 90 percent of steel in the world (Thomas, 2001, p. 1). It is the most efficient method for casting large volumes of steel into various shapes with significant savings in energy and labour.

*This is all computer-controlled now. They go into this slowly cooled water jacket so you have a continuous slab coming out the bottom that's being cut off at regular intervals by a natural gas torch. The crane picks them up, they stack them. They cool. The truck comes and picks them up and they move them on. So, the process is pretty automatic...The loss of jobs was huge. It was huge in that situation [with the introduction of continuous casting].*

Modern mini-mills are highly-automated, continuous operations, and much less expensive to run than integrated steel mills. They require less capital investment, energy and labour. On average, they are four to five times more energy efficient than integrated mills that use virgin iron (Steel Manufacturers Association, 200?). Mini-mills feed recycled steel scrap from automobiles and other steel containing products into electric arc furnaces to re-process it into finished steel. Integrated processors are still predominant in world steel production: 63 percent of steel is produced using this method. Mini-mills produce 33.8 percent (International Iron and Steel Institute, 2005, p. 6). In North America, production volume in mini-mills has surpassed integrated operations.

According to D'Costa (1999, p. 4), technological innovations in the steel industry have been driven by "commercial motives" and aimed primarily at reducing costs, improving quality and providing cheaper raw materials. The steel industry is very capital intensive, especially the integrated mills, and investments in new technology can require millions of dollars and represent substantial risk.

*It's capitalism. I mean, like the plate mill right. All this new equipment was acquired and installed specifically to produce this new standard of steel plate which was going to be demanded for this new pipeline. We were going to be ahead of the market. And the shit didn't work. Think about this. They borrowed over \$80 million to do the upgrade of our plate mill. They were doing this upgrade specifically to be able to produce plate to a new international standard because they believed the big oil pipeline from Mackenzie Delta*

*was going to be built....It's a storage facility. And what does that have to do with technology?*

The plate mill assets at Hilton Works were sold in June, 2005 with gross proceeds of \$25 million (Stelco, 2005, p. 13).

Centralized co-ordination of production through consolidation and the globalization of production are powerful forces that interact within a complex market system, collectively and incessantly seeking the technological means to reshape labour processes. Between 1999 and 2005, more than 40 North American steel makers entered bankruptcy protection (Surma, 2006, p.4). Stelco was among those filing in Canada and emerged in 2006 from a two-year restructuring process. Bankruptcy cleared the way for intensified concentration of wealth and power, enabling companies like U.S. Steel to gobble up the assets of distressed companies, spurring the resurrection of monopoly capital.

World crude steel production almost doubled from 595.4 million metric tons (MMT) in 1970 to 1,057 MMT in 2004 (IISI, 2006). In 2004, the top steel producing countries were China, Japan, United States, Russia and South Korea, in that order. China produced 25.8 percent of world steel, more than double the amount produced by NAFTA countries (IISI, 2005, p. 3).

As steel companies navigate this world-wide, industry-wide restructuring, radical changes are taking place in both the nature of work and the organization of work. Most of the jobs in North American steel mills are classified as operators, maintenance and repair workers, transportation and material moving occupations, and supervisors and managers. Some hourly work has shifted to salaried occupations and in some instances, self-managed work teams have established (Rifkin, 2004). Engineers, chemists and computer specialists are playing a larger role in steel mills (U.S. Department of Labor, 2006).

### **Stelco's Jobless Recovery**

The 1980s proved to be a difficult period for the North American steel industry in general. Following a strike at Stelco in 1981, significant lay offs occurred as part of the cost-cutting and restructuring efforts. Stelco shed almost two thirds of its workforce, reducing employment from over 25,000 in 1980 to 8,536 in 2004. Local 1005 bargaining unit jobs declined from 13,025 in 1980 to 3066 in 2004, a reduction of 76.5 percent. Relative to 1981, the most substantial reductions have occurred in maintenance and service occupations and jobs in the finishing mills (Livingstone et al, forthcoming).

Production per worker increased from 167 tons per employee in 1960 to 243 tons per employee in 1980, an increase of 46 percent. During the next twenty year period from 1980 to 2000, productivity increased by 113 percent to 517 tons per employee. Between 2000 and 2004, including two years of

extensive restructuring under CCAA, productivity increased an additional 22 percent to 633 tons per employee (Livingstone, in press).

Based on the company's strategy to achieve job compression and a more flexible workforce, many of the trades people at Hilton Works are now expected to become multi-crafters. Multi-crafting was introduced to promote more generalized trades that require fewer specialized skills. Conceptual and design functions have become more highly concentrated among engineers and management. In recent years, a significant number of tradespeople have retired, and more are scheduled to leave. Learning that was once passed on from worker to worker, mostly informally on the job, has been devalued and intergenerational knowledge continues to diminish.

*Every time there was a combination of jobs, there was subsequent training to follow. These people required new skills so that the same person could actually do these two things. The company repeatedly failed on that stuff and years later, unwound those jobs. [They] never recreated the jobs that were eliminated, but cut the guys' wages who had got the increase on the job combination, saying yes, we didn't follow through on the training, but God bless you, we're not paying you that rate any more because you're not doing everything that you were supposed to be doing. Completely unwound some shit.*

The absence of labour force renewal is a serious issue for Hilton Works, particularly because of its aging work force. The average age of Local 1005 members is 50.7 years (Livingstone, in press). Approximately 45 percent of the hourly workforce at Stelco's Hamilton operations was eligible to retire in 2005 and a further 46 percent could retire in the next five years (Stelco, 2005).

A substantial amount of work, and increasingly skilled trades work, is contracted out. The practice of contracting out leads to job losses for Local 1005 member, erodes workers' talents, and breeds a climate of mistrust between the union and management, particularly if outsourced work is not accounted for in productivity measurements. Contracting out and job security have been among Local 1005's top priorities for bargaining for several contracts.

Under a persistent cloud of corporate restructuring, Local 1005 workers have endured the threat of job loss through lay offs, and in recent years, possible plant closure. A huge reduction in the labour force has been achieved through technological advancements, job compression, contracting out, retirements and layoffs. Increasingly, work processes have been redistributed to engineers, supervisors and other salaried positions. While Stelco was laying off bargaining unit employees throughout the 1980s and 1990s, the absolute number of salaried workers at Stelco was also cut in half; however, as a proportion of total employment, salaried workers increased from 13.6 percent in 1980 to 24.1 percent (forecasted) in 2004 (Livingstone et al, forthcoming).

The unrelenting challenges of the past few decades continue to invite further industry and corporate restructuring. In response, steel companies will continue to develop new technologies and new materials to drive the future of steel work and ensure increasing management control. Considerable investments are needed for research and development, workforce development, and labour force renewal. A successful strategy must also build on the strong foundation of experience, knowledge and skills among the workforce that has enabled North American steel to endure its history. At this crossroad lies the path to the way forward.

*Restructuring. Technology. It's all about cost cutting. It's about taking the worker out of the mix. The workers didn't get trained. They got laid off. Let's work a person overtime rather than training a second person. Let's even induce a person to work through his vacation. There's so much overtime, a couple of years ago there were janitors making \$100,000 a year.*

*It's about control – automation - computer controls - this new process – this new process – this new process. Look at it. It's the devil's workshop. It's the devil's job to put us out of work.*

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