LABOR PRODUCTIVITY

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THE PROMISE VERSUS THE HISTORY OF PRODUCTIVITY

The essence of productivity is an increase in economic production for each worker employed. In many industrial societies, the argument has increasingly been made that, with increased productivity, new social problems will be solved. In theory, it is argued that higher productivity and profitability *permit* more savings and investments in social and environmental programs. During the last quarter century, even more economic policy has been mobilized to argue that companies and economies without growing productivity are doomed to be displaced by firms and countries where productivity is higher. As international trade has increased, and manufacturing has shifted to lower-wage societies, productivity has become labelled as the key component of "competitiveness".

Yet in practice, the historical *processes* by which productivity gains have actually been achieved give the lie to this argument. Productivity tends to be a solution primarily for investors and *some* managers (many of them also become some of the downsized workers). For workers, their communities, and the natural world in which they are embedded, this has become one of the most egregious bait-and-switch social policies.

THE PERSPECTIVE OF CORPORATE INVESTORS & MANAGERS:

The greater the productivity of an organization, the greater is its profitability, according to modern economics. If I am able to raise the *amount of production accomplished by each of my workers each day,* my costs of production are reduced. I am then able to sell this commodity at a somewhat lower price than my competitors, and thereby increase my share of the market for this product.

When this happens over some time period, my profits tend to rise, for two reasons:

(1) while I may lower my price somewhat, I generally do not lower it as much as my savings on wages, and so I increase my profit on every item I sell; and

(2) as I compete more effectively over my competitors, I make additional profits because of the increased number of items I am selling. The first of these effects is often defined as my profit margin per item I sell [revenue minus costs], and the second is my profit ratio [total revenue divided by total cost]. These processes vary within countries, and they also across the global economy. For the productive company, they are uniformly desirable outcomes; for the less productive ones, they are often fatal ones. In modern economic

analysis and journalism, and modern politics, though, the focus is on the "winners" and not the "losers", in what can be seen as a kind of economic Darwinism.

Yet this is a very selective view of "productivity". Productivity typically has negative effects on the social fabric of a society, and the ecological sustainability of its natural environment. To understand this, let's first look more realistically of how productivity is increased. Measurement of actual worker productivity is complex, since it requires holding constant a variety of efficiency components in production, to separate out the effects of the workers themselves.

Generally, managers fall back on a simplified calculus: if I can do the same job with fewer workers, then workers' productivity has increased. Some of this is achieved by reorganizing production technologies. But it often generates greater pressure on workers to work harder, longer, and with more workplace tension than they faced previously. Managers can unilaterally decide to "downsize" a workforce – that is, to lay off some significant portion of their workers – and have been doing so in western economies for decades now.

Yet in order for this to increase productivity, the remaining workers must be willing and/or able to compensate for the production foregone of those who were downsized. Their *willingness* can be induced by coercive and/or seductive measures: “work more or we’ll fire you”, and/or “work harder and we’ll pay you some additional bonus payments”. The first is effective where workers have few other job opportunities. But the coercive strategy carries with it new potential threats of slowdowns, sabotage, and higher worker turnover in response to the rising stress of the workplace. The seductive is more effective when the firm has more control of its other costs than its competitors. Its effectiveness dwindles when the total of new worker payments begin to approximate the prior payroll levels.

In addition to their willingness to increase their labor efforts, though, workers must also have the *capacity* to do so. Reducing the labor force by only a modest proportion of workers may be designed to increase the workload of the remaining workers. From a managerial perspective, this creates more efficiencies and enhances both productivity and profits. In recent decades, though, mass layoffs are associated with other managerial strategies:

(1) Investing in new production technologies, involving more electronic and mechanical equipment, within existing workplaces.

This was the essential strategy used by corn growers, described above.

(2) Relocating plants domestically, to areas with cheaper workers. For some decades after the 1960s, US manufacturers shifted production from “rustbelt” communities (eastern, northern and midwestern)-- where workers were unionized. Plants were shifted to “sunbelt” communities (southern and western), where state law, work shortages, and managerial threats and inducements inhibited worker unions from forming. Industries such as textiles were shifted almost completely from rustbelt states.

Many of the sunbelt communities, in their quest for new employment and taxation, simultaneously offered little enforcement of environmental protection. This afforded higher rates of productivity for employers, since corporate expenses for some raw materials (including water) and for much of their waste disposal, were lower than they had been in somewhat more regulated rustbelt communities

(3) “Outsourcing”, or moving production away from Northern industrial economies and into less-developed Southern ones. This has been the most common pattern of recent decades. This shift has primarily been due to the search for higher productivity and profits, both for cheaper labor and lowered waste disposal costs. Ironically,

whereas some of the earlier movement of capital to less developed areas involved less-sophisticated technologies, movement has been accelerated even in production (and servicing) of high-technology products, such as electronics. While the labor component of total production costs is not small, a large portion of the costs of production involve larger energy and chemical applications to production. The most notable of these shifts has been in the production of silicon computer chips, the ultimate in high-value products. Part of the movement of "silicon" from Silicon Valley in California appears to have been the highly toxic production processes, and the growing concerns of local environmental movement groups and worker organizations (Smith, Pellow and Sonnenfeld 2006). Much of the investment in the underdeveloped countries – ranging from China to Mexico, involves heightened workplace pollution and local air and water pollution. In each case, the host government has colluded with foreign investors, trading these social and ecological costs to provide more job opportunities (often for displaced agricultural workers) and higher tax revenues. These interests coalesce with those of investors in countries like the United States, who are seeking greater returns on their investments (directly tied in the modern economy to higher productivity and profits.)

1. CHANGING PRODUCTION TECHNOLOGIES

Most of the changes in 20th century production systems after 1945 consisted of some combination of new energy applications and new chemical processes, generating much less labor-intensive forms of production. Corn production changes as noted in the following section, exemplify this process in agriculture. Rising chemical pollution emerged in both workplaces (including corn fields) and communities (rivers and streams near corn fields). Parallel changes occurred in much manufacturing, where the materials and processes by which products were formed moved away from the hands of workers, and into mechanical and electronic machinery.

The modern environmental movement in the 1960s arose in great degree in response to new fears of chemical pollution, exemplified by Rachel Carson's *Silent Spring,* which argued for the widespread reproductive effects of DDT. an early and powerful pesticide. In the 1970s, some environmental movement attention moved to *shortages* of fossil fuels, due to changes in the concentration of oil production overseas, and the decline of U.S. production. More recently, three decades of scientific research has affirmed that the *use* of fossil fuels has increased carbon dioxide and other 'greenhouse gases'. These have been correlated with

rising atmospheric and oceanic temperatures, altering climate and water distribution and threatening even more disruptions of social and economic life, as well as of ecosystems. Although the modern environmental movement was initiated in the US, the aggregate pollution and depletion (of both energy sources and natural habitats) actually *rose* in the US during the period of organized environmental movements, and much greater movement resistance has become embedded within other European Union societies.

1. The case of corn

One of the most detailed examples is Michael Pollan's history of corn production (2006). Maize was a very old plant in America. It was generally harvested by hand, and even among early cultivators in Latin America, some manual pollination was done to create new varieties of corn. Corn became essentially an industrialized crop in the U.S., especially after 1945. Ever-growing levels of fertilizers, pesticides, and herbicides were utilized to increased the yield of corn per acre. Gradually, corn production has become essentially a plantation operation, with growing sizes of landholdings, and replacement of the labor of planting, harvesting and storing the grain with mechanized equipment. Likewise, with the large capital investments involved, planters wanted more predictable crops, to cover their loans for the new equipment. Additional equipment was purchased to irrigate cornfields.

And the demand for high-yield hybrid corn seeds rose, as planters sought to further reduce their risks of pests and water shortages.

The scale of capital investment in corn production rose substantially, and the successful planters bought out the land of smaller and "less productive" farmers. In addition, the debt burden for even large landholders became unsustainable, and many abandoned corn productioon. Overall, there were substantial increases in the levels of corn production. At first blush, this seemed served the economic interests of large landholders quite well. There were a number of social and ecological costs, however. As corn production was industrialized, rural labor forces were eliminated, communities contracted, and local enterprises collapsed because of a lack of wage income and consumer spending.

Moreover, agricultural wastes from corn fields increasingly became toxic, and with growing irrigation there was an increased runoff of chemical pesticides and herbicides into local streams and rivers. And the fossil fuel demands per bushel of corn produced rose substantially. From a standpoint of energy efficiency, the energy inputs involved in corn production vastly exceeded the caloric value of the corn produced.

Despite these social and ecological problems, corn production in the U.S. has increased substantially. While this seemed to reward "productive" corn planters, thought, it also created new cross-pressures on them. The first

problem with rising corn production was that there was too limited a market for all the corn produced. One of the hidden vulnerabilities of increased productivity is that rising production must be sold. Productive organizations that lack sufficient markets will find their profits reduced eventually, and investors will move their capital elsewhere. Corn planters responded to this challenge in several ways. Paradoxically, as corn surpluses grew and prices fell, corn producers actually increased their acreage and planting, selling more corn at lower prices, to hold onto their equipment and land. This created still more corn surpluses, further dropping prices and threatening the revenues of corn planters.

Two additional strategies were developed. The first was to widen the use of corn, both in foodstuffs and as animal feed. Pollan outlines grass-fed beef and other food animals became transformed into corn-fed animals. For livestock owners, this eventually led to enclosures for animals, since there was no longer any necessity for grazing. The factory cornfield eventually led to the factory farm, with diminished freedom of movement for all livestock.

Because this enclosed corn feed regimen raised the threat of communicable diseases among densely settled animals, corn feeds were reformulated to include antibiotics and other organic chemicals, designed to both reduce disease and hasten the growth of the animals. The end result of

this has been an increase in the chemical levels of corn and meat of all kinds, eventually entering into the human food chain and the land and waters near both cornfields and factory farms.

As corn prices dropped further, research into the use of corn as a synthetic food component rose, because the price of corn products was competitive with many other natural food sources. Yet even this expansion of the market did not sufficiently cushion the income of corn planters. They began an extensive and successful lobbying campaign to argue for federal price supports for corn. Part of the campaign was to portray corn producers as just "farmers" living in small towns, who needed protection from the vagaries of weather and markets.

In the current political climate, moreover, corn producers have scored yet another victory. After the crisis of terrorism in 9/11/01. a new drive to increase "energy security" in the U.S. was put on the national agenda. One of the most direct and least politicized strategies that emerged was the federal support for a vastly expanded production of ethanol, produced from fermented corn. So successful has this been for corn planters over the past decade, that the market for corn is no longer saturated, and corn prices have begun to rise. This means that corn, a 'renewable' resource, has become a core element of both food and transportation. The fact that producing corn is energy-inefficient in both domains has been essentially ignored by most

analysts

2. Is corn's history representative of other productivity processes?

The details of productivity changes for corn overlap to a considerable extent with other commodities. While it is true that agricultural production entails more uncertainties than factory production, many of the historical processes outlined above hold for many industries. Where the role of human labor has been reduced in the production process, the alternative technology is often a mixture of increased fossil fuel energy and increased application of synthetic chemicals. Waste has always been a by-product of all manufacturing processes. But when machines replace human labor, they offer new capacities for managers and investors, but also have new challenges. Purchase of new equipment generally entails both capital outlays and debt, and the result is increased managerial pressure to recoup the investment with increased production and sales.

Just as water power replaced some human workers, and steam replaced water power, fossil fuels and electricity replaced steam as a driving force of production. This was true not only in the actual production machinery, but in the materials used in products. Wood was replaced by metals, and metals by plastics and other man-made materials. Many of these new processes and products entail toxic chemicals (Pellow and Park

2002).

While some new forms of pollution control were added to production systems, and even some forms of energy efficiency achieved, aggregate production and its ecological externalities increased. In some ways, contemporary environmental regulation required producers to negotiate some *qualitative* controls over their production systems. In turn, though, no governments sought to exercise *quantitative* limits of the volume of production and profits.

Some of this involved direct political struggles between "shareholders" (investors and managers) and "stakeholders" (workers and community residents). But much of this economic expansion was built into the logic of a newly capitalized production apparatus. Once an enterprise laid out financial capital for a new set of production machinery, there was an increasing motive to recoup this investment and raise profits by increasing

the volume of production and net revenues. Workers could be downsized – but it was less economically and politically acceptable for managers to downsize newer capital equipment. Indeed, in fields such as information technology, growing capital outlays were increasingly necessary to sustain profits, let alone increase them, in the face of growing technological competition.

In part because of this disparity between workers and physical production investment, ecological pressures on habitats were both directly and indirectly increased. The indirect pressures arose precisely because the ratio of physical capital to workers grew substantially, and the capacity of managing physical capital to generate profits outstripped managerial controls of workers. In order for employment to remain stable, workers had to join in efforts to ensure that firms were encouraged to invest still more, because this was the way in which replacement jobs were generated.

An earlier form of *pressure* involved mobilizing the firm's workers to reject governments' environmental regulation. This sometimes meant that workers in industrial communities accepted living in a highly toxic environment, because their employment seemed dependent on maintaining existing production forces. And government agencies likewise avoided threatening these sources of jobs.

But the new form of *inducements* was even *more* powerful in

shifting the alignment of workers with investors' and managers' interests. Despite this "common front", though, growth profits and wealth of the economic elite outstripped the wages of workers – initially blue collar workers, and then increasingly middle-class and professional workers. This often led to workers voting for tax reductions for corporations, as well as diminished environmental and public health protection, to help sustain "competitiveness" in the national and global markets.

This coalition for productivity and competitiveness also leads to a disjuncture between rising social needs of displaced and reduced-wage workers, on the one hand, and workers' support for lower taxation of corporations and investors. Moreover, there seems to be diminished community support for mainstream environmental movements. Environmental enforcement can raise the costs of corporations, and often require larger regulatory expenditures by government agencies. In effect, then, one benefit of choreographing rising productivity by investors and managers is that it mutes the voices raised in opposition to the social and environmental outcomes.

2. RELOCATION AND "OUTSOURCING"

The concept of outsourcing is deceptively simple: if local workers cost too much, firms should find cheaper workers elsewhere. In the U.S.,

this initially meant moving away from unionized workers. As unions declined in US membership, lowered union resistance facilitated a global search for new production locations for investor. Historically, this tendency had been restrained by the friction of space, the complexities of communications, and the unpredictable systems of national control over foreign investors.

With the rise of electronic communications, rapid airplane travel, and the increasing global pressures to “open free markets”, many of these frictions were reduced. A faster pace of technological research and development made previous investments depreciate much faster (and were often accelerated with depreciation allowances in taxes paid to the government). Indeed, the pace of increased capitalization of production and the rise of large profits and corporate mergers made many such costs relatively small, in the face of new opportunities for investment and profits.

Ecologically, this search for cheaper workers and workplace locations expanded the range of habitats that were becoming disrupted to make room for factories, mines, natural resource processing facilities. New workers often lived in the midst of corporate structures that seemed modern, and communities that were among the most despoiled in modern human history. Both China and Mexico exemplify such recent trends, although Mexico was far more directly pressured by foreign investors. The health and ecological

costs are substantial in both countries. Acceptance of these conditions by both workers and their governments supports the productivity-based model of “competitiveness”.

Among the most recent of these processes is the outsourcing of white collar service work – built around the availability of both more powerful computers and advanced telecommunications systems. The direct effect of these new office systems on the environment is primarily in energy intensification of overseas service work. But the rising toxic problems of both computer chip production and computer scrapping may also predict other health hazards for humans and habitats.

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1. There are other kinds of productivity goals that are possible: for instance, an increase in production per dollar invested in technology, or the increase in production generated by the application of energy. Neither of these is treated as a social goal in the way that labor productivity has been over the last quarter-century. Ironically, in an era focused on labor productivity, the ratio of financial packages offered for chief executive officers as compared to the wages of the average workers has increased exponentially, regardless of whether the corporation itself has increased in profits.
2. Freudenburg (1991) has argued that, in reality, "good" business climate ratings actually correlate with worse economic outcomes; the states named as having "bad" business climates actually had better economic performance (growth in jobs and incomes) over subsequent five- and ten-year periods
3. Problems with ethanol production from corn has led some researchers to search for more energy-efficient (and cost-effective) feedstocks for ethanol, such as saw-grasses.