



# Requiem for Bethlehem

The Company Went Broke – The Learning Was Priceless

by Marvin Weisbord

**T**he process of becoming increasingly competent amounts to an increasing understanding of a subject in what can be called systems terms. What [successful learners] become good at is not fragmented for them, not isolated from its environment, not isolated in time or in space. They know the relevant elements and their interrelations intimately. These learners have a feeling for the meaning of the subject beyond its technical details and its formal structure. They have operative knowledge about this system, which is to say they know how to get this complex something to work in the way they intend....

—Peter Vaill (1996, p. 111)

Some years ago I wrote an idiosyncratic, highly personal history of productive workplaces clear back to Frederick Taylor, the “father of scientific management” (Weisbord, 1987). I identified with Taylor, the first consulting engineer, because I had once followed in his footsteps. From 1981 to 1983, I consulted with the Bethlehem Steel Corporation on labor management, quality, and productivity concerns. This was the same company where Taylor, starting in 1898, had refined the principles of scientific management while systematizing the manufacture of steel. I have lived with a keen awareness of the secret niche that Taylorism fills in the human psyche, shaping workplaces to this day.

I characterize Taylorism as the belief there is one best way to do every job, one best person to do it, one best pay scheme to motivate productivity, and one best expert—the industrial engineer—to figure out what, who, and how much. Taylor is mistakenly identified with authoritarian supervision and hierarchical management. A Philadelphia Quaker, he believed that rationalizing work would eliminate the need for “driving” supervision. His intent, widely shared even now, was to remove conflict from labor-management relations by giving everyone a job that drew on his or her highest capability.

Taylor pioneered a revolutionary way of making products when the Industrial Revolution was sweeping the world. Peter Drucker, guru of modern management, once ranked Taylor with Marx and Freud for his impact on 20th-century society. Unfortunately, Taylor’s system placed control and coordination with those who had no hands-on responsibility. As a result, people from top to bottom in “scientifically” rationalized systems, managers and workers alike, would be forever ignorant of their own effect on the whole.

Today you find the residue of Taylorism in countless workplaces. Even in the “new economy,” alienated employees, deprived of ways to use the brains they inherited, act as cogs in a high-tech machine while management chases the next new (people-free) productivity system. You need not look far for “electronic sweatshops” that use employees’ own computers rather than stop watches to speed up the pace, control bathroom breaks, and dehumanize work (Garson, 1989).

Starting in 1981, however, Bethlehem Steel, the prototypical old-economy company, shucked the crushing yoke of Taylorism, transforming its corporate persona by involving steelworkers more fully in systems improvement. This was Taylorism turned upside down, a 20th-century acknowledgment that revolutionary work systems from a century ago no longer fit an era of nonstop change. Paradoxically, that new revolution came too late. Bethlehem filed for Chapter 11 bankruptcy in 2001, and its assets—or what remained of them—were sold to a more adaptive rival in April 2003.

## *What I learned in those years made possible a new practice theory of consulting and managing.*

### **Bethlehem’s Legacy**

Bethlehem Steel, however, left a priceless legacy to the practice of whole systems improvement. I cannot overstate the significance of the radical work practices many of us helped introduce there more than 20 years ago. What I learned in those years made possible a new practice theory of consulting and managing. I concluded that the furious rate of change had not only made Taylorism obsolete; it also had made obsolete social psychologist Kurt Lewin’s (1951) seminal concept of unfreezing, moving, and refreezing systems, the basis for organizational diagnosis and intervention since the 1950s.

Lewin, the originator of field theory in the social sciences, believed that systems, inherently resistant to change, could be “unfrozen” by introducing new or disconfirming information; “moved” by training and other activities aimed at modifying attitudes, behavior, structure, and norms; and “refrozen” into more effective patterns with support mechanisms to maintain the desired state. Force field analysis, a problem-solving tool, is one of his many legacies to the performance improvement field. As organizations began melting under environmental pressures in the 1970s, this theory became increasing more difficult to apply. Nothing stood still long enough to refreeze.

By the 1980s, effective workplace improvement called for a way of thinking and acting that would have been inconceivable in Taylor’s day. We could no longer balance the intricate, unstable connections among economics, technology, and people by rationalizing one job at a time. I described the new road map as “getting everyone improving whole systems.” That meant all functions and levels had to draw on everyone’s knowledge and experience to create collective knowledge of how to improve the whole. It was Taylorism turned upside down.

During 25 years as a manager and consultant, I had found two ways to do that. One was having the people who do the work design, coordinate, and control it. Another was interactive strategic planning with groups of 60–80 people that enabled breakthrough actions in a few days. In both cases, the key was having a dialogue between people with authority, resources, expertise, and need. Under such structures, people could not help but create effective ways of working.

These processes were grounded in systems thinking. Such methods enabled people to increase their productivity and sense of self-worth simultaneously. Most people, I found, were capable of sophisticated learning when they encountered the connections between what they did and the success of the whole. This was something no expert could do for them. The key to better workplaces was making systems thinking *experiential* rather than conceptual. Drawing arrows and squiggles on flip charts would not do it. Visiting customers and suppliers just might.

That, in a nutshell, is what I learned at Bethlehem Steel. “What’s the big deal?” you ask. Well, if you got into the managing game in the last 15 years, perhaps there isn’t much new. For those of us who chose this path 15 years before that, though, getting everybody to *experience* a system, not just talk about it, revolutionized the way we would work ever after—so too the systems with which we worked.

### **Getting Ready for Labor-Management Cooperation**

I came to Bethlehem at the invitation of an erstwhile operations researcher, the late Ben Scribner. We had met in an organizational diagnosis seminar in the 1970s. Ben, an idealistic, persistent, and doggedly effective engineer, was determined to help Bethlehem throw off the yoke of Taylorism. In mid-career he had taken up process consulting and earned a doctorate in psychology. He told me he was driven to integrate the “hard” and “soft” sides of managing and would one day invite my consulting firm—Block Petrella Weisbord (BPW)—to help. I considered this a pipe dream, given that even executives in his company until recently had punched time clocks. Therefore, I was surprised to get a phone call one spring day in 1981. “The time is now,” said Ben.

Frederick Taylor had exited Bethlehem Steel in 1901, forced out by managers whose power he usurped during three tumultuous years on the bumpy road to higher output. His spirit lived on for some time, though, in modern cost-accounting systems, doubling stamping mill production, cutting materials handling costs by half, with hourly wages 60% higher than when he arrived. When BPW got there, however, Taylor's ingenious 19th-century solutions had regressed to mindless time-and-motion studies and a tangled mess of 20th-century labor problems. The company had 11 steel plants, 14 levels of management, 3400 wage incentive plans, and 400 industrial engineers timing jobs and setting rates. Steelworkers were among the highest paid blue-collar employees anywhere, and Bethlehem's workforce averaged 130% of base pay (earned by exceeding base production quotas). Still the company was losing \$80 million a month. One estimate pegged the cost of poor quality alone at \$1 billion a year, almost exactly its losses. In addition, labor-management antagonism, a chronic problem in Taylor's day, had reached mythic proportions.

An in-depth study pinpointed cooperation between the company and its unionized workers as central to Bethlehem's survival in a global economy. After decades of labor strife, however, management simply did not know how to cooperate. BPW's task was to devise a "readiness" program. We visited the plants, met the top managers, and proposed a plan for readying people at many levels for cooperative labor relations. The strategy included teaming with line managers in each plant who would work full time to help change management assumptions and practices from authoritarian to collaborative.

Though top executives supported this idea, we, like Taylor in 1898, found skepticism everywhere. Midlevel managers believed the hierarchy impregnable. United Steelworkers of America leadership rebuffed our bid to include union members. This hot potato, they said, was management's alone. Unable to involve the union on management's behalf, we determined to ready management to do its own reaching out. Working with the designated line managers, we started programs shaped by local needs in plants across the country.

### **Sparrows Point Plate Mill, 1981**

Thus began my practical education in getting everyone to improve whole systems. Sparrows Point, Maryland, was not just a company town. It was a city unto itself, a sprawling complex of blast furnaces and finishing mills, company housing, schools, and stores. It was one of half a dozen major plants where Tony Petrella and I came in the winter of 1981 seeking openings that would enable "readiness." We soon learned that the giant plate mill would shut down early in 1982 for maintenance. Workers would be furloughed with pay for two weeks while technical crews tore down, refurbished, and reassembled the mill.

That meant that some 80 nonunion managers and staff (five levels!) could be available for some form of readiness activity. Here was a chance to influence a whole system and all its leadership. Along with BPW associate John Dupre I met with the mill managers and the internal consulting and training staffs. Several had just returned from Japan, still in shock from what they had seen. They described vividly why Japanese management had become the envy of the world—the integration of new technologies with employee participation into work systems that defined the term "world-class." We discussed what it would mean to get everybody involved in improving the plate mill.

The anxiety is what I recall most about that seminal meeting. It was palpable, bouncing off the conference room walls, a vortex of fear fueled by the possibility that we might, just might, be forced to do...something...new! The norm for training was a maximum of 20 people for a few days at a time. The human resources staff was understand-

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ably nervous at having 80 people in one room, all at once, for two full weeks. What would we do? Would hands-on supervisors and staffers used to grime, grit, and the tangible satisfactions of piling up steel plate in the yard put up with a long seminar?

Ben Scribner talked in favor. The consultants talked risks and benefits. The grizzled old mill superintendent at last threw up his hands. If top management wanted it, that's what we would do. The issue was settled. We would find out soon enough the results of involving everybody in the whole mess, the way they did in Japan. There in the plate mill, in the dark days before Christmas 1981, people had nothing to lose.

The shutdown would take place early in the new year. For the first time the staff, instead of taking a vacation, would study the whole system together. We consultants had an opportunity unprecedented since Taylor's time, *carte blanche* to use our entire experience-based consulting and

training repertoire—individual, group, and organizational activities—in one place at one time with all the key actors. Nobody could say, as we had often heard, “The wrong people are in the room!” Or “What’s all this stuff have to do with making product?” We had all the right people and ample time to connect learning with doing.

## A Two-Week Systems Workshop

The two-week workshop plan was as follows. All 80 plate mill managers—superintendent and assistants, supervisors and their assistants, and service staff—would study every aspect of plate mill operations together. The “system” was defined as relationships within and among five centers of action:

- (1) individual ways of thinking and acting
- (2) interpersonal relations with coworkers
- (3) team work
- (4) mill-wide organizational and technical problems
- (5) customers and suppliers, the mill’s “environment.”

People would work alone and in pairs, on natural work teams, on cross-functional problem solving teams, and on customer and supplier study teams. My knowledge of systems theory was then largely conceptual. I had managed “open systems planning” exercises, usually with natural work groups or task forces. I could diagram environmental demands and constraints on a flip chart until the markers ran dry. But I had never tried to facilitate learning on so many levels with so many people at once. In short, I could only imagine doing what I am about to describe. But I could not imagine what would happen. It has taken me many versions of that experience since to appreciate what power people can exert on their systems when they have access to expertise, authority, resources, customers, suppliers, and each other all at once.

### Experiencing the Whole System

Before the two-week seminar, managers and staff met to talk about what was keeping them from doing their best work. We introduced group problem solving techniques, which the steelworkers applied to a wide range of technical and systems problems. During the first week, cross-functional teams began devising solutions to implement. We then integrated group problem solving, with each person studying his or her preferred ways of doing things. Staffers filled out a “personal style” survey on their own attitudes and behavior and found out how their ways of thinking and doing affected their working together to get the job done. On other days, people met with their supervisors. They talked about the changing role of supervision, from goals imposed by management, for example, to shared goals set jointly.

Teams studied their own “process issues,” including communications, control, trust, decision making, motivation,

and the use of each other’s capabilities. This content was integrated with personal styles and problem solving. At each step people were asked to make notes alone, to share them with others in their group, and then to report out and discuss what they were learning. A typical question might be, “What do personal styles have to do with the mill problems we worked on this morning?”

At the start of week two, sales and marketing staff, who might as well have been Martians, came with overheads and spreadsheets. Everyone filed into the auditorium and saw the big picture on a large screen—the marketplace for steel plate and what was known about customer uses. In the late morning, groups of five or six got into their cars and went to visit customers within driving distance of the plant.

The next day they reported what they had learned. The room crackled with excitement as each group told its story. One veteran supervisor told a tale that raised the hairs on my neck. “This customer bought a crane,” he said. “Spent \$25,000 on it, just to turn our plates over. They said we were shipping ‘em upside down. Hell, we don’t care which side is up. We told ‘em we’d ship ‘em right side up from now on. They didn’t need that crane anymore!” That day we heard many similar stories, of changes easily made to the work system as a direct result of meeting customers face to face and seeing how the product was used.

Later that week the groups visited their raw steel suppliers, Sparrows Point’s blast furnace, and steelmaking department. Many had never been there, though it was less than a quarter mile away. Again, reports and again, revelations. “I’ve worked here 30 years,” one man said, “and I’ve never seen those guys make steel. We do a lot of complaining about what they send us. Well, I can tell you they have the same problems we do, and they are busting their butts the same way we do. We have to work with them if we’re going to keep our quality up.”

## Systems Thinking as Systems Doing

At Sparrows Point, I first became aware of what ought to be a core principle of workplace education: “Systems thinking” becomes available in workplaces only when people *experience* the whole for themselves. Drawing environmental scans on flip charts is no substitute for interacting with those who are your environment. During those two weeks, I gave up a fantasy that had haunted my consulting identity, that if only I could master systems concepts, tossing off words like “equifinality” and “negative entropy,” I would, at last, become a transformer of workplaces. Such ideas could not be acted on unless people identified systems improvement with everyday experience. They simply had to gain control of their own work. At Sparrows Point, without any big words, we expanded systems thinking into everyday experience, linking minds, hearts, and hands with making steel plate.

In the months that followed, the internal consulting staff got the “whole system in the room” repeatedly as each mill shut down for maintenance or closed temporarily for lack of work. Eventually they involved 2000 people in studying the whole and improving their own work systems. Soon, customer-supplier teams sprouted up throughout the plant. One group, for example, took on the challenge of getting raw steel from primary to finishing mills while still warm, eliminating a costly reheating process. Soon these teams became standard procedure for all cross-functional problems. Eventually, union leaders in each mill, wanting to be part of the action yet officially unable to back the effort, began attending the readiness sessions anyway.

The internal staff sought training in sociotechnical work design and began involving workers in the redesign of their own systems. Management and the United Steelworkers of America signed a local memo of agreement assuring cooperation in using new technology. For the first time, a joint labor-management team installed a new continuous caster that became one of the best producing anywhere. At Sparrows Point, “readiness” metamorphosed into effective action as managers and steelworkers implemented new forms of cooperation. Block Petrella Weisbord also developed a team training program to enable the use of Joseph Juran’s (1987) statistical process control methods of quality control. We taught it to 30 Bethlehem managers who implemented with teams in all the plants. Sparrows Point also sought help from Eli Goldratt, the Israeli engineer who had co-authored a novel called *The Goal* that elucidated a theory of constraints for systems improvement (Goldratt & Cox, 1985). They changed everything after that—new markets, new products, the works. By the end of the 1980s, Sparrows Point became what seemed an impossible dream a decade earlier. They had become a first-class steel mill.

### **Sparrows Point 15 Years Later**

In 2000, I called John (“Rocky”) Rockstroh, lead internal consultant for the Sparrows Point work. Retired now, facing cuts in health and retirement benefits because of steel industry instability, he was still glad to reminisce. “From ’81 to ’83 the culture changed,” said Rocky. “We realized the way to manage the business was to get everyone involved. We put a stake in the heart of Taylorism. We changed the role of the industrial engineer.” By the year 2000 the industrial engineers, instead of just timing jobs and setting rates, also had become process and performance improvement experts, doing post mortems on outages and other problems.

“The place was never the same after the plate mill project,” said Rocky. “It became natural to ask, ‘Who else do we need in the room to solve this problem?’” Rocky recalled how one manager, after seeing what the finishing mills had done, insisted on system-wide readiness training for the “hot”

side of Bethlehem Steel, even though it included furnaces that could never be shut down. “I was fresh from a consulting skills workshop,” Rocky recalled, “so I used words I had never said in my life. I told him that for me to help him there were certain things I wanted him to do, too.”

Rocky insisted that the manager get together people from all the operations to help solve the problem of training everyone while keeping the furnaces hot. Eventually they came up with a plan to have one-fourth of the managers in each of four workshops that would include people from operations, electrical and mechanical departments, and staff. I asked Rocky what he had learned from all this. “Always look downstream and upstream to learn the whole system,” he said without hesitation.

Today, the Sparrows Point training program seems overloaded to me. It was state of the art in about 1982. We threw in everything we knew about learning. The critical learning, however, was what the steelmakers went out and got for themselves. Today there are many large-group processes for involving everybody (Holman & Devane, 2001) and many elegant experiential learning methods. Some processes do not require new skills or self-awareness training at all before people improve their systems. Nonetheless, the general idea remains durable. Getting the whole system in the room and giving everyone, a chance to learn from everyone else is almost always a no-fail productivity enhancement strategy, no matter what procedures you use.

### **Bethlehem Steel Enters the 21st Century**

Recently I did a quick review on the Internet of the new millennium’s steel industry. While steelworkers in the United States became ever more productive, globalization had altered the economics of the business. Modern mills in Asia, Europe, and South America were making good steel with lower labor costs and shipping it around the world. Consolidations were taking place everywhere. Economists debated endlessly whether governments ought to subsidize critical industries such as steelmaking.

In the 1980s and ’90s, Bethlehem Steel closed or merged one facility after another, going from 11 plants to four. Having lost \$1.5 billion in 1982, the company started making money again. But not for long. In 1995 the erector of the Golden Gate Bridge and the Empire State Building ceased making structural steel altogether. In December 1997 the corporation announced it was closing the coke works in Bethlehem, Pennsylvania, its home town, ending 140 years of steelmaking there. The last unit of the plant where Frederick Taylor had created the world’s most efficient machine shop, invented high-speed steel, and discovered the “law of heavy laboring” was no more. From now on, the Sparrows Point blast furnace would import its coke from China and Japan. In 1998 Bethlehem bought Lukens Steel, a company with two

plate mills. The Sparrows Point plate mill, world class at the end, was shut down again, not for maintenance but for good.

In September 2001 the corporation hired a noted turnaround specialist, Robert Miller, Jr., as chair and CEO. He had his work cut out for him. The firm now supported six retirees for every active employee, a \$5 billion liability. A month later, the *New York Times* reported that Bethlehem had filed for Chapter 11 bankruptcy protection. New talks began with the United Steelworkers aimed at an unprecedented realignment of the workplace restrictions built into earlier contracts; these changes would mark the demise of Taylorism's last vestiges at Bethlehem Steel. "We need a comprehensive restructuring," said Miller, "so our employees can be part of a globally competitive steel industry in the future" (Miller, 2002).

In 2003 I got a note from Connie Fuller, who had worked with Ben Scribner years before at Bethlehem and was now a human resources manager in another company. "I think a case could be made," wrote Fuller, "that the change initiatives enabled the company as a whole, and Sparrows Point in particular, to remain viable for much longer than it would have been otherwise. I know that the work done at Bethlehem Steel changed the culture forever."

A few days later I read that the company had cut off health and insurance benefits to retirees and arranged to sell its assets to International Steel Group of Cleveland, a firm noted for innovative work systems. The major remaining facilities at Burns Harbor, Michigan, and Sparrows Point would be renamed ISG/Bethlehem (Caruso, 2003). On April 30, 2003, roughly 100 years after Frederick Taylor invented scientific management and 20 years after I had learned to increase productivity by getting the whole system in the room, the Bethlehem Steel Corporation was no more. 🏠

Note: This article is adapted from "Productivity After Taylor: Systems Learning Replaces Expert Analysis," Chapter 15 in *Productive Workplaces Revisited: Dignity, Meaning and Community in the 21st Century* (Jossey-Bass/Wiley, 2004).

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