Henry Ford's Managerial Mindset

Moral of the story: Don't hang on to a fading dream.

Robert W. Hall

Despite his own writing, plus volumes written about him, Henry Ford's complex contradictions are hard to fathom. Many, including Taiichi Ohno, the leader of Toyota's development of the Toyota Production System, have cited the development of his Model T as the cradle of ideas for lean manufacturing. Henry's story is not as simple as thumbnail versions depict, so it is worth review, in three sections; design, development of the Ford System, and his leadership, with lessons still relevant in a Web 2.0 age.

In Brief

The sharp contrasts between "Fordism" and its younger cousin, lean thinking, meet in the mindset of Henry Ford I. Now, even lean systems as we practiced them are apt to be insufficient for the performance necessary in the new era of global financial uncertainty. First of a series.

Design of the Model T

Several people tried automotive assembly lines before the Model T, notably Ransom Olds; low volumes and poor parts fit caused a few problems, but the Curved Dash Olds is acknowledged to be the first mass-produced car. (Mass production of watches and other items was old news, but the car was a big leap.) Henry's vision of an assembly line was foggy, but he — among about a hundred other entrepreneurs — was determined to design a "car for the masses." Low-end vehicles then sold in the $400 to $900 range, but nobody gained enough margin on them to draw the capital to go big time. Upper-end cars went for $2000 to $4000. So Henry was on a mission; bring cars to the masses.

From 1903 until birth of the Model T in1908, The Ford Motor Company was like a development lab that sold cars. The T was the successor to Models A, B, C, F, K, N, R, and S, skipping the prototypes never sold. Determined to make the 1908 T design a breakthrough, Ford combined the best ideas he could find to improve performance for the customer in a simple package: the

best materials, best men to be hired, and simplest, lightest design that could be devised.

Ford was intrigued with vanadium alloy steel, lighter and stronger than carbon alloys. It had been used for specialty parts, but producing it in quantity for a mass produced vehicle was another matter. Henry gambled and went for it.

The engine block for four cylinders was cast as one piece, with a detachable head, unusual at the time. It had fewer parts, and they were simpler to cast and machine. By mounting the engine at only three points, the frame could twist on the rough roads without breaking a mount, also a problem with cars of the period, whose frames were heavy and rigid rather than light and flexible. And the T's ten-inch road clearance helped avoid bellying down in mud or bellying up on a tree stump.

The two-speed planetary gear transmission wasn't novel, but was kept because it was easy for novice drivers to master. The master-stroke was integrating the magneto (designed by Spider Huff, an outside consultant) with the engine and transmission into a single unit that could be installed at final assembly, and all using the same oil.

The 1200-pound curb weight of the whole package gave it a horsepower-to-weight ratio equal to expensively engineered performance cars of the day, but easy to fabricate and assemble. (The author once participated in a college prank of disassembling one and reassembling it in the hapless owner's dorm room.) And this base design let Ford adapt it to many purposes: town cars; runabouts; trucks; panel trucks. That all Model Ts looked alike is a legend; Ford morphed it into many configurations during its 20-year run, but all those modifications toted up a lifetime parts list of less than 30,000 part numbers.

Best, the design unleashed creativity among owners converting Model Ts into campers, portable sawmills, and towing vehicles. (An uncle made one into a bush hog.) This was a big factor launching automotive aftermarket businesses — and a good many others. For example, the first UPS delivery truck was a modified Model T.

Figure 1. Ford Model T motor car, 1916. The Ford Model T was introduced by Henry Ford (1863-1947) in 1908.

This design coup let Ford cream the market with an $850 price tag and start rolling in cash to build a huge integrated production system, only part of which was the assembly line. Henry needed no accountants wielding sharp pencils; he just did it. As the volume went up, the price eventually dropped under $300 for the basic touring car, less than four month's pay for the average worker. Cash also let Ford pursue all kinds of innovative ideas, for example, uses for soybeans, which turned it into a popular Mid-Western crop. In 1941, he exhibited a "soybean car," with a body partly derived from soybeans, although nobody knows exactly how it was done. Ford also believed that eventually petroleum scarcity would make biofuels necessary, so he experimented off and on with ethanol as a fuel. During Prohibition, he proposed turning idle distilleries into ethanol factories.

But this coup also fixated Henry on continuously improving the Model T years after road conditions improved and its design potential was exhausted. In the 1920s, just as his system to build Model Ts reached its peak (and he was writing books about it) competitors forced him to give up on the Model T and go to the Model A.

The Ford System

Because few details of Ford's methods were precisely codified, much can only be surmised. But Ford's global vision, then called "Fordism," was that mass production would bring a higher standard of living to the entire world, thus assuring universal health and world peace because of its superior methods and technology, and paying people above average. Without question he always meant well. Fordism, as Henry summarized it in 1926 was:

1. "Do the job in the most direct fashion without bothering with red tape or any of the ordinary divisions of authority.
2. Pay every man well — not less than six dollars a day — and see that he is employed all the time through 48 hours a week and no longer.
3. Put all machinery in the best possible condition, keep it that way, and insist upon absolute cleanliness everywhere in order that a man may learn to respect his tools, his surroundings, and himself."[1]

That's Henry explaining how Ford was turning around a decrepit railroad line, not an auto factory. He deemed his principles — distilled from his experience developing technology as well as production systems — applicable to hospitals, farms, or any organized work.

"Do the job in the most direct fashion" encapsulated Ford's distaste for any waste as he saw it — government regulations, financial covenants, accounting systems, and management meetings. He wanted his managers to work hands-on, unfettered by any kind of bureaucratic folderol. Ford's obsession for using every scrap of material productively became legendary, and he wanted workers always to be busy.

Although Henry's role developing the assembly line itself was limited, that didn't limit his acceptance of credit for it. He was busy elsewhere developing farm tractors and opening markets in foreign lands. The Model T's simple design and expensive precision tooling assured easy assembly, so organizing a flow of production from ore in the ground to finished vehicle seemed to be straight industrial engineering. However, it wasn't a snap. Not until 1913, five years later, did photographers have much to snap, but by 1914, time to assemble a Model T had dropped from 12.5 hours to 1.5 hours.

Charlie Sorenson, one of only a few men personally involved, recalls the assembly line evolving by persistent trial and error. The other experimenters included "Pa" Klann, who came back full of ideas after visiting a slaughterhouse "disassembly line" in Chicago. But the final assembly line was just one stage in creating a monstrous integrated system to make nearly all the parts in a Model T. Ford and his men wanted to understand and control every element of the process.

Once the first assembly line was developed, others could be replicated everywhere from England to Indonesia. Henry Ford's grand system, including ore boats from Minnesota docking at the Rouge and rubber plantations in South America, didn't all come together until the 1920s. In the first ten years of Model T production, slightly more than two million were built. In the last ten years, another 13 million were built. At the apex of this run-up, circa 1927, Ford claimed that ore docking in Dearborn left as a finished Model T engine only 41 hours later. Ninety percent of all vehicles in the world were Fords.[2]

And yes, from 1914 until 1926, Model Ts came only in black because only black paint dried fast enough to fit the system. But competitors soon learned to design assembly lines too, and in 1923, one of Charlie Kettering's first projects at General Motors was fast-drying paint in multiple colors. Henry's obsession with churning out Model Ts started to let Ford be "out-featured" by GM and other competitors.

Henry Ford's Leadership

Although a born mechanic, Henry Ford did little hands-on work when developing a prototype. Instead he directed others to do it under his "tutelage." Much like his friend Thomas Edison, Ford's gift was articulating a vision to others who often had skills he lacked, inspiring them to realize that vision.

Figure 2. Ford Motor Company River Rouge plant, Dearborn, air view 1927.
Image by the Library of Congress, Prints and Photographs Division, Detroit Publishing Company Collection.

David Bell, who often assisted Henry in his early years, noted that he "never saw Mr. Ford make anything. He was always doing the directing." And like Edison, a born promoter, Ford enjoyed plumping his projects to the press.[3]

Ford's leadership characteristics served him well leading a development team, but not when leading a big company. His paternalism nearly wrecked the company. Ford sought men of technical accomplishment who could help him realize his visions. Skilled men and "John Wayne" managers he respected; others stood in need of his improvement. In 1914 Ford assembly labor turnover was 380 percent per year; by doubling wages to $5 for an eight-hour day, he cut it to about 17 percent. During World War I, inflation eroded the purchasing power of the $5 day, and turnover began creeping up. In 1919 Ford opened plant commissaries selling everything from food to fuel at a discount, plus $100 certificates guaranteed to return six percent a year. But workers wanted to shove this job because of Henry's secret side enforcing the fine print.

Only those with more than six months longevity, stable, married, etc. were eligible for the $5 day (cleaned out the ne'er-do-wells). By regarding $2.66 of his $5-a-day wage as profit sharing (he deemed $2.34 per day a fair wage), Ford rationalized prying into workers' personal lives. Since it was really his money, his grateful workers should use it to lift up themselves and their living standards. He formed a "Sociological Department" to tail workers off-hours, nosing into living quarters, diets, cleanliness, and recreation (Detroit's 500 licensed whorehouses were major no-nos). Those insufficiently circumspect fell off the $5-a-day gravy train. Ford acknowledged the Sociological Department in later writing — barely — as a practice given up when no longer needed, but its secrecy poisoned trust in him.

Henry held that most workers did not have to think. Honest work was engineered for them, and doing it improved character and self-discipline. Work rules forbade smoking, sitting, squatting, whistling, leaning against machines, or even talking on the job. Workers communicating without moving the lips took on what became known as a "Fordized Face." "Spotters" (spies) reporting violations could get you fired. How intrusive they could be is revealed by a work rule at Willow Run as late as World War II, after unionization: "Anyone caught sitting on a toilet with his pants on will be fired on the spot." A Ford plant was also a fear factory.

On the other hand, Ford was a benevolent cuss hailed as the Emancipator of the Common Man. Among other things, he founded the Henry Ford Hospital, which become one of the best in the nation, and the Henry Ford Trade School for poor youth to learn by doing. He hired thousands of handicapped people and ex-convicts, convinced that working at Ford would improve their character, but like all other employers, Henry laid workers on and laid them off at will. On one hand he regarded workers as economic commodities; on the other as children in need of parental guidance. A critic in 1932 noted that almost everyone

who had never worked for Henry Ford revered him, but almost everyone who had, hated him.

Fordism was a disaster when first exported to a rubber plantation in Brazil called Fordlandia. It was a model community begun in 1928 to supply rubber to Ford and improve the lives of those who worked there. People flocked in for the high pay; plus free food, housing, schooling, and medical care. Quinine and enforced sanitation (like wearing shoes) eradicated malaria and hookworm. But workers complained of housing built so low to the ground that critters crept in, the Northern diet, and weird customs like square dancing. And they detested working in the heat, preferring to work before dawn and after sunset. The "Dearborn" work rules on top of the culture clash provoked most to leave after a short stint. However, Ford persisted, learned from mistakes, and within five years stabilized operations.[4]

In the 1920s, Ford lost market share; then entered the depression era. By 1932 the workforce had shrunk by two-thirds; weak car companies had failed; unionization loomed. Although other companies' work rules weren't quite as onerous, all used spotters to ferret out union organizers. However, Harry Bennett, heading Ford's Service Department and its spotters with toughness and Mafia ties, became the most notorious. After 1928, he gradually became the closest confidant of a Henry Ford increasingly fearful of losing *his* company — to anybody. After a decade of strife, Ford finally "fell" to the United Auto Workers in May 1941. Seventy percent of the workers voted for shop stewards and UAW negotiators (and some thugs) over Henry Ford's paternalism and Bennett's thugs — or maybe they just hoped a little civility would ameliorate the secrecy and warring factions. But even before he had a stroke and entered senility, Henry never "got it." He always meant well.

Today, complex products and rigorous quality requirements require people to think on the job, even if it is highly repetitive, but we suffer from legacy drag.

Fast Forward

The Toyota Production System borrowed ideas from Fordism. Since neither Henry Ford nor Taiicho Ohno were Mr. Charming with employees, what were their differences? Ford was an entrepreneur in the starring role; Ohno was not. He demanded that everyone think *on the job*, taking little personal credit for anything, a tough-minded servant leader. The power of *all* employees using disciplined thinking was the only way Toyota could compete in the first decades after World War II, and lean systems promote it. This difference magnifies into very different ways to regard employees.

Henry Ford would have insisted that nothing more could be done to develop people. After all, the company provided opportunities for training and development and pressed employees to take advantage of them. Consequently, Henry's programs were enlightened; his practices were not. As for Ohno's methods; they form a good base, but now they must step up to fast change and innovation.

Henry Ford's managerial mind was set by his obsessive pursuit of his vision, coupled with a conviction that to deserve a better life people should first prove themselves. Many progressive, but paternalistic industrialists of the time were like-minded. Some founded utopian company towns (which failed); those who endowed institutions to better life in their communities fared better. Most saw no conflict between regarding their employees as people in their communities, but as commodity labor on the job, subject to dismissal. Their legacies linger, embodied in everything from direct versus indirect labor to an instinct to direct workers and engineer their work for them, instead of developing them to design it themselves.

Today, complex products and rigorous quality requirements require people to think on the job, even if it is highly repetitive, but we suffer from legacy drag. We train people, but don't necessarily mentor them to use lean tools or any others to think all the time — and expect them to do it. That's a different kind of development,

with a different kind of leadership, and we are at long last beginning to get into it.

But now we seem to be entering a period eerily like the 1930s. Optimism when starting lean says that it will decrease cost and boost sales. If that happens, promises of job security are easy to keep, but as the auto industry indicates, lean factories do not assure endless growth. Even Honda and Toyota's hardest tests are still ahead. But managerial instinct is to unknowingly sow fear and distrust, if not quite as dramatically as old, paranoid Henry Ford I hanging on to a faded dream.

Suppose what we are seeing now is the beginning of a new "normal?" Then what? Leadership for this era has to be of the people, not trusteeship for the investor. Many of us will be like the auto industry, forced to develop products with radically-improved performance to deploy in radically-changed markets using a different kind of business model. For this, lean is just an entry requirement. It's been 100 years since the Model T; time for a new vision with a new leadership mindset. Restoring manufacturing as it was is, of course, a faded dream. It has to become a part of something that addresses the bigger challenges of the 21st century.

Robert W. Hall is Editor Emeritus of Target and a founder of AME.

Footnotes:

1. Henry Ford (in collaboration with Sam Crowther), *The Great To-Day and Greater Future,* originally from Cornstalk, 1926; reprinted by Cosimo Classics, 2006.
2. The 41-hour estimated time from ore to engine is from p. 17 of *The Ford Industries*, a fact book issued by Ford in 1925. However, Ford historians note that such books were composed by marketing people eager to cast facts in the best possible way.
3. According to Robert H. Casey, "The Model T Turns 100," *Invention & Technology*, Winter 2009.
4. From the Benson Ford Research Center: www.thehenryford.org/research/rubberPlantations.aspx