Engineering Ethics and Corporate America:
The Case of Ford Motor Company

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Introduction

Henry Ford. The name conjures up elements of the American dream: the quintessential self-made man, who pulled himself up by his bootstraps to found what has become an American institution. Henry Ford is Horatio Alger incarnate, a man of rural origins who became a millionaire and revolutionized manufacturing in the United States and, indeed, the world. In the textbooks of America’s schoolchildren, Henry Ford is described as a hero.

Henry Ford and the Ford Motor Company, however, have a darker side: FMC has engaged in some fairly spectacular ethical breaches. Most of us are probably familiar with the Pinto exploding gas tank fiasco in the 1970s, which featured people roasting to death when the Pinto’s gas tank burst in rear-end collisions; or, more recently, the Explorer roll-over debacle that resulted in the largest tire recall in history and the dissolution of a century-long partnership with Firestone Tires. But prior to these well-publicized events, Ford and his company engaged in very questionable practices.

This paper examines the past life of Ford and his company, focusing on anti-Semitism and collusion with the Third Reich; Fordlandia, Ford’s failed Brazilian rubber plantation; and FMC’s paint sludge dump in Ringwood, New Jersey, that is poisoning the land and its inhabitants.

An examination of these three situations reveals a very different side of Ford and his company, one that shows contempt for workers, a deficiency of social responsibility, and a corporate reluctance to accept responsibility for actions that have resulted in great harm, both to humans and the environment. All of these yield vibrant classroom discussions of ethics, corporate social responsibility, and accountability.

Background

Ford was born in 1863 to Irish immigrants on a modestly prosperous farm in Wayne County, Michigan, the same year that the Emancipation Proclamation was unveiled. At an early age, he showed an aptitude for what we now call mechanical engineering technology; a family story relates that at the tender age of 13, his father gave him a pocket watch, which the young Henry promptly dis- and re-assembled, leading to a flurry of requests from neighbors for watch repair (Henry Ford, 2014). At age 16, armed with an eighth-grade education, Ford left the farm and went to Detroit, where he worked at a variety of jobs, including a machinist apprenticeship. He returned to the family farm for a brief time, and in 1891, now married, he went back to Detroit and was hired at Edison Illuminating Company, eventually achieving the status of chief engineer.

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Five years later, he built his first gas-powered vehicle, dubbed the Quadricycle (Henry Ford and the Model T, 2014).

Edison encouraged Ford’s aspirations, telling him, “Keep on with your engine. If you can get what you are after, I can see a great future” (Ford-Edison, 2013). This was the beginning of a close personal friendship, which included other luminaries of the time. Tire magnate Harvey Firestone, nature writer John Burroughs, Ford, and Edison, who collectively called themselves the “Vagabonds,” embarked on a decade-long series of annual camping trips, (Onion, 2014) occasionally joined by botanist Luther Burbank, President Warren G. Harding, and assorted others. While the four traveled to rural areas, they were accompanied by a substantial support staff; in one notable trip in 1919, the entourage was 50 cars long and included special dining facilities, which Burroughs dubbed “the Waldorf-Astoria on wheels.” Firestone would bring his butler, and Harding, when included, would arrive with some three dozen personnel, including the Secret Service (Klein, 2013).

After a number of false starts, in 1903 Ford opened the Ford Motor Company in Detroit and a few months later began producing the Model A. But work was slow, with two to three workers laboriously assembling each car by hand. In 1908, Ford introduced the Model T, which became an instant success; within a decade, about 50% of US cars were Model Ts. Within two decades, 15 million Model Ts dotted the international landscape (Henry Ford and the Model T, 2014). By this time, Ford had several plants in Detroit (Highland Park being the largest), Europe, and South America, meeting his goal of “democratizing the automobile” by producing inexpensive and efficient transportation (Boorstin, 1973, p. 422).

The introduction of the assembly line process in 1913, based on the model of meat-packing plants, allowed increased production up to 1,000 Model Ts a day, a long-time Ford goal, and trimmed assembly time from 13 hours to 93 minutes. Further fine-tuning of the process cut production time drastically: a new Model T rolled off the line every 24 seconds (Henry Ford and the Model T, 2014).

However, attrition at the Highland Park plant was high; Ford had to hire 1,000 workers to retain 100 (PBS, 2013). The high turnover rate is attributed to the “simplified, monotonous, and degraded work” (Meyer, n.d.); standing at the same station and repeating the same task for 9 hours per day was absolutely stultifying, and workers simply left. To combat the “crippling” turnover rate (The Henry Ford, 2014), Ford reduced the workday to 8 hours and introduced a $5 per day wage as a part of a profit-sharing incentive, provided that workers toed the Ford line, both at work and at home (Ford Motor Company, 2014).

Plagued by legal quandaries at Highland Park, Ford bought out all shareholders and in 1927 moved operations to the massive River Rouge plant, which housed not only production facilities but also ancillary necessities. In a move towards self-sufficiency, Ford bought coal mines, forest lands, iron mines, blast and gas furnaces—everything required for an automobile, except rubber (Grandin, 2009).

Something about Ford’s unique combination of self-taught engineering skills and business acumen caught the imagination of Americans, and he became one of the most revered people in
the country, with the funds to back his vision. As Ford extended his efforts to the international
arena, his reputation as a businessman also went global. At one point, notes historian Charles
Higham, “Henry Ford was once ranked in popular polls as the third greatest man in history: just
below Napoleon and Jesus Christ” (1983, p. 154).

School Textbooks

Our elementary school children learn that Ford is an American folk hero. He has been profiled,
along with Thomas Edison and Benjamin Franklin, in Time for Kids, (El Nabli, 2008) and
featured as a Scholastic Press book (Roop, 2004). The “Step into Reading” program has
produced a level-3 book, Eat My Dust: Henry Ford’s First Race (Kulling, 2004), and The Ford
Foundation has created an “Educator DigiKit” entitled You Can Be an Inventor... Like Henry
Ford to provide teaching materials devoted to inspiring young children to “imagine, take risks
and persevere as Henry Ford did” (Ford Foundation, 2010). Lesson plans, quizzes, and
assessments are conveniently mapped to state and national standards for social studies and
language arts. Overall, grade school texts present Ford as a gifted inventor and, more
importantly, a brilliant entrepreneur.

Ford’s Philosophy

Examining the actions of Ford requires understanding his view of work and life. He was a self-
made man who learned by doing, and he expected others to follow his example. In his 1923
autobiography, he expresses disdain for expert opinion:

None of our men are “experts.” We have most unfortunately found it necessary to get rid
of a man as soon as he thinks himself an expert because no one ever considers himself expert if he really knows his job. A man who knows a job sees so much more to be done
than he has done, that he is always pressing forward and never gives up an instant of
thought to how good and how efficient he is. Thinking always ahead, thinking always of
trying to do more, brings a state of mind in which nothing is impossible. The moment one
gets into the “expert” state of mind a great number of things become impossible (p. 86).

He rarely read books because “they muss up my mind” (Black, 2009, p. 4), and his lack of
education leaked out in curious ways. For example, Ford was painfully thin, partly because he
refused to eat sugar, fearing that the crystals’ sharp edges would injure his stomach. After an
FMC chemist showed him how quickly sugar dissolved in liquid and hence posed no threat, Ford
quit speaking to him for weeks (Black, 2009). Henry Ford had no use for book learning.

For Ford, hard work, not knowledge, was the key to success. Ironically, this view of authority
would return to haunt him at his Brazilian rubber plantation, whose demise was, in part, the
result of not seeking expert opinion.

Control

As an aggressive businessman, Ford exerted control not only over the work environment but his
individual workers’ lives as well. FMC’s “Sociological Department” conducted home visits to
verify whether or not employees were living up to Ford’s all-American values, including abstention from alcohol, smoking, and domestic squabbling; maintenance of a savings account; a commitment to children’s education: “Investigators made unannounced visits to employee’s homes and evaluated the cleanliness of the home, noted if the family had renters, checked with school attendance offices to determine if children were attending school and monitored bank records to verify that employees made regular deposits” (Benson, 2014a). Employees who did not follow corporate behavioral expectations were no longer eligible for the $5 per day profit-sharing and were subject to dismissal if they did not reform during a six-month grace period (Meyer, 1980).

In addition, Ford wanted to ensure that his immigrant workers, who comprised a major portion of the workforce, were properly Americanized. Non-native speakers of English could receive free English lessons at the company “English School,” and their dress and mannerisms were closely monitored in and out of the workplace, as was their diet.

While the language lessons were very beneficial to immigrant workers and set a model for other companies, they were laced with nationalistic propaganda via Helpful Hints, a series of pamphlets that gave advice for integrating into the American lifestyle. Below are excerpts for living the good life in America (all quotes are from Meyer, 1980):

Living conditions: “Employees should live in clean, well conducted homes in rooms that are well lighted and ventilated. Avoid congested parts of the city. The company will not approve, as profit sharers, men who herd themselves into overcrowded boarding houses which are menaces to their health . . .” (p. 70).

Sleeping arrangements: “Do not occupy a room in which one other person sleeps, as the company is anxious to have its employees live comfortably, and under conditions that make for cleanliness, good manhood, and good citizenship” (p. 71).

Cleanliness: “Employees should use plenty of soap and water in the home, and upon their children, bathing frequently. Nothing makes for right living and health so much as cleanliness. Notice that the most advanced people are the cleanest” (p. 71).

Living space for children: “Choose a home where ample room, good wholesome surroundings, will enable the children to get the greatest benefit possible from play, under conditions that will tend to clean helpful ideas, rather than those likely to be formed in the streets and alleys of the city. Particularly in adolescence, young men and women should be guarded well, and not allowed to contract habits and vices injurious to their welfare and health” (p. 71).

Company publications routinely preached the doctrine of Americanism. For example, Ford Times, the company’s monthly magazine, offered this 1908 New Year’s resolution for employees:

To exalt the Gospel of Work, and get action here and now. To keep head, heart, and hand so busy that I won't have time to think about my troubles.
Because idleness is a disgrace, low aim is criminal, and work minus its spiritual quality becomes drudgery (Meyer, 1980, p. 68).

The assumptions underlying the company’s “helpful hints,” however, are that immigrants are dirty, live a licentious life, do not appropriately attend to their offspring, and have a lax work ethic. But a fine line exists between paternalism and coercion, between nationalism and xenophobia. The fact is that Ford attempted to exert control of all aspects of his workers’ lives, all day, every day. Offering free English lessons is a paternalistic gesture, but tying language fluency and hygienic habits to wages smacks of coercion.

Possibly, Ford was simply subscribing to the xenophobic “no hyphenated American” philosophy espoused by well-known political figures. During that great immigration surge, as some 18 million new people swarmed into East Coast port cities in a mere 30 years (Booth, 1998), assimilation was a major concern, coupled with fears of “the other.” In a 1915 speech addressed to new US citizens in Philadelphia’s Convention Hall, Woodrow Wilson explained,

You cannot dedicate yourself to America unless you become in every respect and with every purpose of your will thorough Americans. You cannot become thorough Americans if you think of yourselves in groups. America does not consist of groups. A man who thinks of himself as belonging to a particular national group in America has not yet become an American, and the man who goes among you to trade upon your nationality is no worthy son to live under the Stars and Stripes (Blegen, 1947, p. 103).

Five months later, Theodore Roosevelt added his voice to the growing concern about immigrants highjacking US identity, telling an audience of the Knights of Columbus in New York City,

The one absolutely certain way of bringing this nation to ruin, of preventing all possibility of its continuing to be a nation at all, would be to permit it to become a tangle of squabbling nationalities, an intricate knot of German-Americans, Irish-Americans, English-Americans, French-Americans, Scandinavian-Americans, or Italian-Americans, each preserving its separate nationality, each at heart feeling more sympathy with Europeans of that nationality than with the other citizens of the American Republic. The men who do not become Americans and nothing else are hyphenated Americans; and there ought to be no room for them in this country (Blegen, 1947, p. 25).

Both of these comments reflect the popular notion of the United States as a “melting pot,” where the process of democratization more or less erases national identity and replaces it with a singular “American” identity. Essentially, immigrants were encouraged to replace their traditions and languages with an unknown—to forget who they were. That Ford, himself a scion of immigrants and born in the year of the Emancipation Proclamation, so wholeheartedly subscribed to this philosophy is the height of irony.

Anti-Semitism

Ford was a committed anti-Semitic. Most biographers indicate that he was influenced by a conversation he heard during his stint on the “Peace Ship,” a group of Ford-financed pacifists.
who sailed to Europe in 1915 hoping to end the war, which was the fault of “the German-Jewish bankers” (Black, 2009, p. 6). Three years later, Ford bought the failing Dearborn Independent newspaper and used it as a mouthpiece for his anti-Jewish writings, first publishing the notorious “Protocols of the Learned Elders of Zion.” The Protocols is an acknowledged forgery that purportedly details Jewish leaders’ plans for world domination (Heiden, 2012). Ford fell for it hook, line, and sinker.

Over the next two years, Ford published a series of 91 anti-Semitic tracts, each one introduced by a Protocol, blaming the Jews for virtually all of the world’s ills, from control of Wall Street to a scandal in baseball (Ford, 1920-1922). Ford’s newspaper had the largest circulations in the country, eclipsing even The New York Daily News, since all Ford dealerships were required to subscribe and disseminate it (Logsdon II, 1999). For a time, each new Ford that rolled off the assembly line had a copy of the paper tucked in its glovebox (Guardado, Gutterman, & Moché, 2000).

In the mid-1920s, Ford’s writings were collected and published as a four-volume work, The International Jew, garnering a readership of more than two million (Baldwin, 2001). When the work was translated into German as The Eternal Jew (and subsequently made into a feature-length propaganda film by Josef Göbbels), leaders of the fledgling Nazi Party were captivated by Ford’s philosophy; Ford actually bestowed a credibility on the Nazis with his ideological compatibility, backed by his considerable reputation. Hitler, in particular, was moved by Ford’s understanding of the great Zionist conspiracy and graced his Munich office with a life-sized portrait of Ford, stating that he was “my inspiration.” Heinrich Himmler, who would head the SS, was similarly impressed, and Baldur von Schirach, leader of the Hitler Jugend, enthusiastically declared, “You have no idea what a great influence this book had on the thinking of German youth” (Patterson, 2002).

In 1938, on his 75th birthday, Ford was the first of three American businessmen who received the Grand Service Cross of the Supreme Order of the German Eagle, a special medal reserved for “distinguished foreigners” who had given “special service” to the Reich (Baldwin, 2001). Even though advised to the contrary, Ford embraced it with open arms in a special ceremony in Detroit.

Although Ford was forced to recant his views by an outraged public and a lawsuit, in 1927 and again in 1942, in his heart he remained anti-Semitic to his dying day. Felled by a cerebral hemorrhage in 1947 (Baldwin, 2001), on his deathbed Ford declared to a reporter, “I’ll take my factory down brick by brick before I’ll let any of the Jew speculators get stock in the company” (Logsdon, VI, 1999).

An American National Socialist?

While many American firms, such as IBM, GM, Coca Cola, and Bayer, had business dealings with the Third Reich, few did so with the fervent zeal of Henry Ford. He established an office in Berlin in 1925 and factories in Cologne (1931), Berlin (1935), and smaller communities, such as Dusseldorf (Pauwels, 2014). All told, FMC’s German arm, Ford Werke, produced about 30% of light military trucks used by the Wehrmacht during World War II; US soldiers noticed trucks
bearing the Ford logo in German supply lines or came to on the battlefield with Ford trucks looming over them. It is important to note that even after the US entered the war and Germany was an official enemy, Dearborn still controlled 52% of FMC stock, and Ford Werke technically remained an American company (Silverstein, 2000). There was, in fact, a concerted effort to avoid branding Ford Werke as an enemy operation (Wallace, 2003), due to Hitler’s fondness for “Heinrich” Ford (Baldwin, 2001).

While Ford paid his US workers in Dearborn well, subject to the “Americanization” provisions, this was not true in Germany. Ford Werke used the same labor supply as other German companies: forced labor (those from occupied territories) and slave labor (Jews), making the labor costs minimal. Wages were paid directly to the Reich, and workers received nothing. Work days were long and arduous, up to 12 hours of heavy labor, and food was minimal: “They were given 200 grams of bread and coffee for breakfast, no lunch and a dinner of spinach and three potatoes or soup made of turnip leaves” (Silverstein, 2000, p. 14), roughly analogous to the official caloric allotment for Jewish ghetto and camp inmates of 184 per day compared to 699 for forced laborers and 2,613 for a German national (Silverman, 2013). Elsa Iwanova, a 16-year-old who was taken from her home in Russia, recounts her experiences at the Cologne plant: “The conditions were terrible. They put us in barracks, on three-tier bunks. It was very cold; they did not pay us at all and scarcely fed us. The only reason that we survived was that we were young and fit” (Dobbs, 1998). Another account tells of several workers who died “when they were forced to sleep outside the plant in subzero temperatures” (Moreen, 1998).

Even more disconcerting than the working conditions at Ford’s factories is the adoption of his assembly line process in the concentration and extermination camps. Once the “Final Solution” was approved in the 1942 Wannsee Conference (USHMM, 2014), several areas in Poland were adapted or created to engage in one industry: death. Just as Henry Ford had witnessed the efficient processing of beef in a Chicago meat-packing plant (Patterson, 2002), the Nazis used the processes of mass production, perfected in Dearborn, Michigan, to murder some 6 million people. And just as the Midwestern butchers processed the cattle carcasses, so too did the Nazis treat human corpses, removing hair, gold teeth, clothing, and shoes—anything of value that could be sold or re-manufactured to enrich the Reich. While Ford never commented on the genocide taking place in Europe, perhaps due to his great age and failing health, he is somewhat morally responsible for the process, as his company thrived by using the assembly line. Furthermore, his anti-Semitic writings conferred quasi-respectability to Nazi ideology. According to Patterson (2002), Ford’s “impact on the twentieth century began, metaphorically, at an American slaughterhouse and ended at Auschwitz.” Ethics and corporate social responsibility vanished when Ford consciously decided to align his company with a regime that made mass murder a state policy.

Fordlandia

While Ford’s efforts in automotive manufacturing were a stunning success, other ventures proved to be more humbling. By the mid-1920s, with the future of FMC assured domestically and internationally, Ford looked towards Latin America, specifically the Brazilian rain forest, for establishing a manufacturing utopia where he could fashion both product and people to his peculiar vision of civilization. According to NPR’s All Things Considered, “Henry Ford didn’t
just want to be a maker of cars—he wanted to be a maker of men. He thought he could perfect society by building model factories and pristine villages to go with them” (NPR, 2009).

In the late 19th and early 20th centuries, the world rubber market followed a “boom or bust” model: the boom meant high prices and a plentiful supply, but the bust meant very low prices and limited amounts (Exenberger, 2009). Either scenario translated to higher costs for car manufacturers such as Henry Ford, who used rubber for tires, hoses, wiring, and gaskets. In all, the US auto industry used 70% of the world’s rubber supply, then primarily concentrated in Southeast Asia, and FMC alone needed tires for about 1.25 million cars annually (Jackson, 2013). Following his model of the self-sufficient factory, Ford began negotiations in 1923 with the Brazilian government to secure land for a rubber plantation. A survey performed by a Brazilian native indicated that an area around Boa Vista (“pleasant view”) could support enough trees to produce rubber for about 2 million cars a year (Benson, 2014b).

Eventually, Ford acquired 2.5 million acres at the mouth of the Tapajós River, an area about the size of Connecticut accessible only by boat, involving an 18-hour trip through dense jungle and treacherous waters (Macintyre, 2009). Although Ford was very optimistic about taming the jungle, as well as the jungle’s inhabitants, he had conducted some research, he might have decided otherwise. As Jackson (2013) notes, “Previous attempts to tame that particular section of the Amazon ended in grief; scores of men died trying to establish railroads and plantations, [sic] so great was the carnage that one described the area as ‘A welter of putrefaction, where men die like flies’” (p. 6).

The effort was fraught with peril from the outset, and poor planning exacerbated logistical problems. For example, when the ship with earth-moving and construction equipment finally docked, after waiting for four months for the river to rise, workmen discovered that the cranes needed to remove the equipment from the ship’s hold had been packed first and hence were at the very bottom (Bell, 2013).

Intrepid and determined, Ford persevered and ordered workers to begin clearing the land. As his workforce, he hired indigenous peoples, offering 37¢ a day, double the going rate; managers came from his facilities in Detroit, and none was knowledgeable either in rubber production or the extreme, even dangerous, conditions of the dense Amazonian jungle (Grandin, 2009). But Ford had faith in his managers, knowing that applying “simple common sense and elbow grease” (Bell, 2013) would yield success.

Ford’s great blunder was assuming that he could simply import a bit of Dearborn and the American lifestyle to the Amazon rain forest. He ignored cultural differences and built a Midwestern town in the jungle, complete with American-style houses, barracks for single workers, schools, a Protestant church (the Brazilian population is predominantly Catholic), a hospital and dance hall, a golf course, retail shops, ample transportation facilities (airport, railway, and roads), a sawmill, a powerhouse, and, of course, processing facilities for rubber (Exenberger, 2009). Essentially, he attempted to recreate the River Rouge plant.

Workers terraced the rocky hillsides in preparation for planting trees and unknowingly created the perfect incubation areas for malaria-bearing mosquitoes. Clearing the land was dangerous,
and workers succumbed to insects, diseases, and vipers; by 1929, 90 residents, including three children of manager Einar Oxholm, were buried in Boa Vista’s cemetery (Hall, Part 2, 2014). Ford also tried to control his Brazilian workforce in the same ways that he did in Michigan, imposing work hours that were unsuitable for the extreme heat and humidity of the jungle: a 6-3 regime that was at odds with the before-sunrise and after-sunset typical Brazilian workday that avoided the heat of the day (Dempsey, 1994). A reporter for the Indian Rubber Journal, visiting in 1931, wrote, “In a long history of tropical agriculture, never has such a vast scheme been entered in such a lavish manner, and with so little to show for the money. Mr. Ford’s scheme is doomed to failure” (Fordlandia, 2014). A US diplomat posted in Brazil echoed the sentiment, seeing the plantation as a “venture which apparently will never be commercially profitable” (Grandin, 2009, p. 17).

Labor problems were rampant, with an annual turnover rate of nearly 400% (Exenberger, 2009). Workers were disgruntled with the dictatorial decrees that attempted to control behavior off the job: consumption of alcohol was prohibited, as was smoking. Recreational activities in the dance hall consisted of square dances, sing-alongs (in English), and poetry readings. Children were required to wear shoes, attend school, and learn English (Dempsey, 1994). Worst of all, the Brazilians were required to follow an American diet that included oatmeal, Jello, and canned peaches (Hall, Part 2, 2014), which resulted in widespread diarrhea and dysentery (Grandin, 2009). Workers expressed their frustration by rioting; the first occurred in 1928, triggered by the alcohol prohibition. Later, in response to a company-imposed cafeteria system (Dempsey, 1994), they destroyed the cafeteria, chased the American managers with machetes, chanting, “Brazil for Brazilians! Kill all the Americans!” and started fires. To restore order, the Brazilian army intervened (Bell, 2013).

Ongoing labor disputes aside, the major problem with Ford’s venture was the trees themselves. True to his past, Ford did not consult botanists for scientific information about the types of plants that would be amenable to the harsh conditions and plantation life. Rather, he decided to plant a species, *Hevea brasiliensis*, native to Brazil, that proved very fertile on the plantations of Southeast Asia. In Brazil, however, rubber trees only produce in the wild, in clumps, not in cultivated areas. In fact, there are no Brazilian rubber “plantations” (Couper & Henbest, 2014).

Using their “common sense,” Fordlandia managers decided to plant the trees Midwestern-style, like corn, in neat rows, fairly close together. This was exactly the wrong thing to do: as the trees grew, their branches and leaves touched, and this resulted in the spread of a leaf blight, which rapidly disseminated and decimated the crop. All of the trees died, without producing one drop of latex (Grandin, 2009).

In 1933, the decision was made to abandon Boa Vista and move the plantation efforts to Belterra (“beautiful land”). The company hired a plant pathologist, James Weir, in an attempt to avoid the biological woes of Boa Vista; Weir introduced a program of bud grafting as a way to thwart the voracious leaf blight (Benson, 2014b). Ford embarked on another ambitious building program, and, according to FMC records, “By 1940, Belterra had 7,000 inhabitants, more than 2,000 workers (including 261 women and 60 boys), 844 houses, and wooden barracks that could accommodate 950 men” (Benson, 2014b). The 150-foot water tower gracing the landscape was the tallest structure in Brazil at that time, symbolic of power and Ford’s empire (Jackson, 2013).
The change of venue, however, did not change the conditions: the land was still not conducive to a plantation-style method of farming; disease, poisonous insects, and vipers still stalked the workers; and control over workers’ lives still existed, although diet and entertainment were now based on a Brazilian model (Benson, 2014b). While the new trees were not stricken with leaf blight and actually produced a small amount of latex, a multitude of insects, caterpillars being the chief culprits, attacked the new plantings. In all, Ford workers planted more than 3.6 million trees at the two sites, most of which died (Benson, 2014b), and invested nearly $250 million, in contemporary dollars, in his South American boondoggle. In 1945, with Ford’s grandson now at the company helm, the development was sold back to the Brazilian government for $255,000, a substantial loss (Grandin, 2009).

As many writers chronicling the tale of Fordlandia have noted (see, for example, Bell, 2013; Grandin, 2009; Hall, 2014), one of the underlying causes of failure was Ford’s hubris: given his success in Dearborn, Ford was overly confident about bending the jungle to his will, and his ignorance about both rubber and other cultures was his undoing. Like the Greek tragic heroes, Ford was a man of high estate brought low by his own devices.

In a study examining leadership traits, Owen and Davidson (2009) note that the charisma of great leaders is also accompanied by “exaggerated pride, overwhelming self-confidence and contempt for others” (p. 1396). This is certainly true of Henry Ford, who thought that he could successfully import American lifestyles and values into the Amazon Basin, thus forcing another culture to emulate his own. It is significant that Ford himself never admitted the failure of his venture, or, for that matter, the wrongness of engaging in a highly lucrative business with a totalitarian regime that happened to share his worldview regarding Jews. And, while his treatment of workers in terms of wages was outwardly philanthropic and generous, those high wages came with strings attached, as Ford attempted to control every aspect of his workers’ lives and mold them to his particular vision of reality. While financially Ford was a stunning success, ethically he was approaching bankruptcy. As Macintyre (2009) has noted, “Instead of a miniature but improved North American city, what Ford created was a broiling, pestilential hellhole of disease, vice and violence, closer to Dodge City than peaceable Dearborn.”

**Ringwood, New Jersey**

The ethical indiscretions of the Ford Motor Company have long outlived its founder. While the Pinto situation was garnering headlines in the 1970s, another situation was quietly unfolding in the Native American settlement of Ringwood, New Jersey, one that far eclipsed the Pinto in human and environmental devastation.

In July 1955, FMC unveiled its new plant in Mahwah, New Jersey, the largest auto manufacturing facility in the country, “covering an area the size of seven football fields and containing roughly 11 miles of conveyor systems” (Ervolino, 2010). It was also the largest employer in Bergen County: the plant employed 3,732 workers, with a payroll of $85 million at the time of its closure in 1980 (Hanley, 1980). At its peak in the 1960s, Mahwah boasted 5,100 employees who pumped out a new car every minute, nearly 6 million vehicles over its 25-year existence; the plant was the launching pad for Ford’s Edsel and elaborately finned Thunderbirds (Barry et al., 2005).
In addition to cars, however, the Mahwah plant pumped out tons of toxic by-products, including the following, in just three years (Barry et al., 2005):

- **Paint sludge**: 3,403,644 gallons
- **Kolene sludge**: 28,478 gallons*
- **Thinners, oils, liquids**: 73,000 gallons
- **Wood dunnage**: 1,525,000 cubic feet**
- **Paper**: 190,000 tons
- **Cardboard**: 490,000 cubic feet

* A paint cleaner  
**Packing materials

With the high production pace, disposal of toxic materials quickly became a problem; for example, the production of each new car generated 5 gallons of paint sludge, for a total of 6,000 gallons per day (Barry et al., 2005). Initially, Ford dumped in its own backyard, but by 1967, that area could accommodate no more.

Ford solved its problem by turning the Ramapough Indian community in Ringwood into a toxic wasteland. Ringwood is an iron mining site that dates back to the 1700s (EPA, 2012), and the area is honeycombed with mineshafts and tunnels. The mines shut down after World War II, but the facilities remain, and some mines go deep into the earth. The Peters Mine, one of the deepest at 2,000 feet (Barry et al., 2005), is also one of the oldest and operated intermittently from 1740 through World War II (New Jersey Mines, n.d.). Ramapough Indians have inhabited the area for more than 300 years (Ramapough, 2013).

In 1967, Ford contracted with O’Connor Trucking and Haulage to deal with its substantial waste disposal issue. Ringwood, with its proximity, mines, and small population, was an ideal choice. In addition, Henry Ford’s grandson, Henry II, was then company president and shared his grandfather’s racist tendencies: “Ford decided that these people were not worth worrying about since the general perception...was that the Ramapough Mountain Indians, who are descended from the Lenapes, were ‘trash’ that deserved everything they got” (Mann v. Ford, 2011).  

Unknowingly, Ford echoed local sentiment: “They are all inbred lowlifes. The odds are they got what they deserved” (McGrath, 2010).

Brilliant colored piles, corresponding to Ford vehicle paints, such as Belmont Blue, Buttercup Yellow, and Monte Carlo Red (1960, n.d.), dotted the landscape, slid deep into mine shafts, and hardened in fields and backyards. Hidden within were car parts: carburetors, copper “snakes,” and other salvageable items. Local residents scavenged the heaps: “It was grocery money for some families,” stated Ringwood resident Bob DeGroat (Barry et al., 2005). Children played in the sludge, as the investigative team of the local newspaper, *The Record*, noted:

> As a boy, Mickey Van Dunk chased raccoons at night. He and his cousins would sprint through the woods with flashlights, past weirdly colorful slabs of sludge. He fished for walleye and caught turtles for soup in streams tinted with paint. He molded the sludge...
into baseballs. Other kids made sludge mud pies. They’d turn over old wrecked car hoods, pile on and slide down a massive mountain of gray paint. They called it Sludge Hill (Barry et al., 2005).

Vivian Milligan, a child in the 1960s, recalls chewing the soft paint chips like bubble gum and romping in the piles: “We used to jump around on it, and it was so enjoyable, jumping around on that pretty, colored hard stuff. And did we know it was going to affect us? No” (Forde, 2014, March).

FMC insists that the dumping was legal at the time due to minimal environmental restrictions. After the 1970 establishment of the EPA, permits were required, yet the practice continued into the 1970s. At one point, the Mob’s Genovese crime family was involved (Emslie, 2009); toxic dumping was big business in New Jersey due to its industrial base, and trash hauling was very lucrative.

Although FMC has maintained that “Paint sludge does not pose a serious health risk to residents” (Ford, 2006), the industrial waste dumped in Ringwood is a lethal cocktail of carcinogens and other chemicals, as indicated in Table 1. To add to the misery, fires have spontaneously erupted, spewing dioxins into the air (Pacatte, 2011).

Table I. Chemicals identified in FMC’s toxic wastes**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Effect of Long-Term Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony</td>
<td>Damage to heart and lungs</td>
</tr>
<tr>
<td>Arsenic</td>
<td>Lung cancer, liver disorders</td>
</tr>
<tr>
<td>Chromium</td>
<td>Lung cancer; damage to liver, kidneys, nerves, circulatory system</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>Cancer; damage to hearing, kidneys, reproductive system</td>
</tr>
<tr>
<td>Freon</td>
<td>Damage to lungs, stomach and digestive system, heart; irritation to skin, eyes, ears, nose, throat, skin</td>
</tr>
<tr>
<td>Lead</td>
<td>Damage to muscles, nerves, brain, hearing, vision, reproductive systems (adults); damage to liver, kidney, brain, hearing; developmental delays (children)</td>
</tr>
<tr>
<td>PCBs</td>
<td>Cancer; damage to stomach, liver, kidneys, thyroid</td>
</tr>
<tr>
<td>Xylenes</td>
<td>Damage to liver, kidneys, developing fetuses</td>
</tr>
</tbody>
</table>

The health status of Ringwood residents seems to belie Ford’s statements, which blame poor health on “genetics, lifestyle habits, infectious agents, problems with an individual’s immune system, etc.” (Ford, 2006). However, according to an intensive eight-month investigation by Bergen County’s award-winning newspaper, every household in the area has lost a family member to cancer, children have died from very rare blood and autoimmune diseases, and asthma is common (Barry et al., 2005). In 1982, elevated levels of arsenic were discovered in drinking water supplies (Craig, 2011).

Ringwood was declared a Superfund site in 1983, and FMC conducted several efforts to remove hundreds of tons of contaminated soil, declaring in 1994 that the area was clean. When residents discovered more sludge repositories, it was relisted (Barry et al., 2005). Legally, the situation is a morass, punctuated by periodic lawsuits from the Ramapoughs, the most recent occurring in 2006; it was featured in the HBO documentary *Mann v. Ford*, which resulted in considerable publicity. Most recently, in July 2014, the EPA released information regarding clean-up: Ford would remove another 22,000 tons of contaminated earth and then cap two of the mines. Residents are concerned about the capping, which would not remove the waste but merely contain it (Forde, 2014, July). But caps are not permanent, as the story of Love Canal so aptly illustrates: in 1978, a record rainfall displaced the cap over the toxin-filled canal, allowing toxic chemicals to flow into residential basements and school facilities and puddle in yards (Beck, 1979). In the meantime, the Ramapoughs continue to fight for their land and their health.

**Pedagogical Notes**

In September, 2014, hundreds of Colorado high schoolers walked out of class, protesting a proposal that schools teach only the positive side of US history in AP classes and “effectively ban any material that could lead to dissent” (Townes, 2014). In addition, some teachers, citing censorship, have boycotted, forcing schools to close (Bever, 2014). In a similar situation in Tennessee, Vanderbilt University history professor Thomas Schwartz, has noted, “We should tell the truth about the past, not as any sort of self-flagellation . . . but simply to understand ourselves better” (Boucher, 2014).

The story of Ford’s complicity with the Third Reich, the folly of Fordlandia, and FMC’s toxic waste dump in Ringwood can be used to foster energetic class discussions regarding the social responsibility of corporations. Questions such as the following can guide students’ discussions:

- Should historical facts be bent to support a political agenda?
- Should history be subject to censorship due to the opinions of an outspoken group?
- What responsibilities do we, as educators, have in teaching the truth, even if it results in tarnishing the reputation of American icons, such as Henry Ford?

Teaching the truth about Henry Ford is also an excellent way to discuss “cherry picking,” that is, the use of selective details; in this case, choosing only those positive attributes and ignoring others, such as the blatant anti-Semitism of Henry Senior and the racism of Henry II.

Engineering topics for discussion include such items as sustainability (Is the “all-in-one” factory feasible?), sensitivity to the effects of intense manufacturing on other cultures (Should a major
corporation have the ability to blatantly exploit the workforce in other countries?), and responsibility in regards to environmental pollution (Should corporations be required to clean up their messes?).

Overall, students respond very favorably to this information, and at least one has replaced his Ford vehicle in favor of one from a more environmentally and ethically aware firm. And more than a few have voiced their concern about the “whitewashing” of history currently occurring in the public schools.

**Final Thoughts**

At least one editor has characterized the Ringwood situation as an example of “Ford’s heartless negligence” (Emslie, 2009). However, Ringwood is yet another instance of FMC’s ethical transgressions, which have recurrent over the course of the company’s existence. Ford has consistently manipulated its workforce, most obviously in Brazil. Ford Senior publically expressed anti-Semitic views, to the delight of men who would become history’s most reviled; Henry II, following in his grandfather’s footsteps, dismissed an entire community of Native Americans as “trash” and consciously decided to contaminate great swaths of land, sickening inhabitants and polluting the environment. Ford may espouse all-American values, but the company seems a little lax in practicing them, at least in the examples discussed above.

Corporate Research Project, a watch-dog group that analyzes the actions of various businesses, has issued a “rap sheet” for the Ford Motor Company that includes comments on environment and product safety, labor, employment discrimination, and human rights. In reading over the list, it becomes obvious that, since its inception, FMC has incorporated questionable practices regarding corporate accountability, social responsibility, and business ethics in general. The company has been the defendant in numerous lawsuits over the past century, some from as far afield as South Africa (Mattera, 2013).

Taking a close look at American icons such as Henry Ford has enormous pedagogical value: students are surprised, angered, and curious; they wonder why they have never heard this information before. More than a few vow never to purchase another Ford vehicle. Most importantly, students start questioning. And questioning is the beginning of true learning.

**References**


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**Biography**

Marilyn Dyrud is a full professor in the Communication Department at Oregon Institute of Technology, where she has spent her entire career. She received her B.A. from the University of the Pacific, and the M.A. and Ph.D. from Purdue University, West Lafayette. She has been a member of ASEE for more than 30 years and has served in a number of capacities, including Pacific Northwest Section chair, Zone IV chair, Board of Directors member, Engineering Ethics Division chair, ETD executive board member, and communications editor for the *Journal of Engineering Technology*. An ASEE Fellow, she has received both the McGraw and Berger Awards for her contributions to the ETD and has published more than 100 articles in peer-reviewed journals and conference proceedings. Her research interests include electronic communications, engineering ethics, and the role of engineers in the Holocaust.