PERSISTENCE AND VIGILANCE

STUDIES IN THE DEVELOPMENT OF ACCOUNTING THOUGHT

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STUDIES IN THE DEVELOPMENT OF
ACCOUNTING THOUGHT VOLUME 24

PERSISTENCE AND VIGILANCE: A VIEW OF FORD MOTOR COMPANY'S ACCOUNTING OVER ITS FIRST FIFTY YEARS

BY

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INVESTOR IN PEOPLE

This book is dedicated to hard-working, diligent accountants everywhere, but especially to corporate accountants who serve as communications and data experts to their companies, helping them make strategic decisions. May the memories of James Couzens, Norval Hawkins, Frank Klingensmith, and Ernest Breech, as well as those of other accountants mentioned herein, continue to inspire their efforts.

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FOREWORD

Much has been written about the history of the Ford Motor Company since its inception in 1903. Its story is rich with ambition, clashing personalities, mechanical innovations, and the transformation of society by access to affordable transportation for the masses. There are multiple components to the tale: the fast-paced implementation of mass production and mechanical advancements that changed peoples' lives, with the human elements in achieving these goals, including men perceived as heroes and villains, along with geniuses, power-mongers, and everyday workers.

This book is not an attempt to retell the history of the Ford Motor Company in all of its details.[1] Rather, it is an opportunity to experience the saga from the viewpoint of accounting and its practices within the company from its origin in 1903 through approximately its next 50 years. Given that accounting procedures and financial reporting depend on the professionals who perform these tasks, this is a story that calls attention to their efforts. It is a tribute to their contributions and hard work.

In 2005, after 20 years as a corporate accountant, along with years of raising three children, I made a career change to full-time college teaching. My initial interest in the Ford Motor Company began during my doctoral studies in 2005–2007. Always a major history "buff," I was delighted to see that Accounting History was one of our required doctoral courses. Our required text was *A History of Accountancy in the United States: The Cultural Significance of Accounting* (Previts & Merino, 1998). I was mesmerized by the rich history of accounting in America and knew I found the topic for my dissertation – but precisely in what area of accounting history?

While discussing my dissertation anxieties with the then-Dean of our business college, he talked about his keen interest in the Ford Model T and his own mechanical abilities to tool various engine parts in his garage. His passion for the restoration and maintenance of the Model T was evident. At the time, I recall he owned at least eight different Model Ts of various years, and it was fascinating when he brought one of these cars to our university and took several of us for a ride in his nicely restored Tin Lizzie. Before too long, I was interested in the history of the Model T myself, and I devoured several library books on the history of Henry Ford and the Ford Motor Company. The Dean suggested I visit The Henry Ford in Dearborn, Michigan, a vast history museum and complex that includes The Henry Ford Museum of American Innovation and also Greenfield Village, an outdoor museum which consists of historical buildings, memorabilia, and events. Within The Henry Ford complex, the Benson Ford Research Center houses the Ford Motor Company archives in a climate-controlled setting, with stacks of data available to the public and accessed by library specialists. Visitors

are welcomed to request and view the archival items at the library on weekdays from 9.30 a.m. to 5.00 p.m. During sabbaticals, the Dean himself volunteered his scholarly expertise at the Benson Ford, helping to organize and describe the contents of various accessions. He advised me to delve into several accessions that contained financial data, especially as some of these boxes had not been closely viewed since they were donated to the archival collections in the 1950s.

Fig. 1. Dean Boggess' Restored Model T at Plymouth State University.
Source: Collection of Yvette Lazdowski.

Curiosity, as well as the dissertation countdown clock, outweighed my travel budget, and I was soon entrenched in the pleasant library at the Benson Ford Research Center. The Dean was absolutely correct – the wealth of detailed information was enormous, and I was convinced a dissertation was possible on the accounting history of the Ford Motor Company. After several trips to Dearborn in 2006 and 2007, with the helpful assistance of the Benson Ford staff, I was contentedly engrossed in gray and silver boxes of documents, correspondence, and photographs. Time in the library always seemed to pass by so quickly, with the awe and interest of viewing the original Ford Motor Company articles of incorporation, board minutes, journal entries, correspondence with original signatures, among many other treasures.

By the end of 2007, I completed and defended my dissertation. Along the way, I began acquiring my own book collection on the history of Henry Ford, the Ford Motor Company, and many key players in the progression of the company. Of

Fig. 2. The Benson Ford Research Center at The Henry Ford.
Source: Collection of Yvette Lazdowski.

course, I was particularly intrigued by the financial administration of the company, as I thought back to my own years as a corporate accountant for several manufacturing companies.

It was clearly noticeable that the evolution of the Ford Motor Company was complex on many levels, as in all ventures that involve humans and their interactions with life's events. The Ford narrative included personality conflicts, egotistical behaviors, and power struggles throughout the early and later years, but there were also novel accomplishments, mechanical improvements that could rival today's technological innovations (for their time), and proactive reactions to societal changes and events in an industry that was new in the early years of the twentieth century. While advancements in mass production revolutionized manufacturing and made the Model T affordable to the masses in great numbers, the pains of organizational growth strained the administration to adapt to the new scale of the company. The five-dollar day is an example of the effects related to the monotony of mass production and high labor turnover. The challenges of two world wars required amazing flexibility in production methods, scheduling, and fast-paced response to governmental contract changes. Throughout the years, the details of accounting activities and financial reporting remained on task, adjusting as needed to support these types of critical operations.

Hence, it is impossible to tell the financial side of the company's history without paralleling the business and historical events that occurred, as well as

the people involved. As is common in many businesses, there is often a certain disconnect between the financial and manufacturing administrations, especially when strong personalities are involved who focus on different priorities. The Ford account does not disappoint in that aspect, and I do not intend to cite blame or bias toward any faction or individual. For example, Henry Ford was known to have some indifference, some could say disdain, toward detailed financial reporting or cost accounting methods – and even accountants themselves – yet he understood the numbers and why they mattered. Thus, the tale of the Ford Motor Company's accounting practices and reporting must be told in the context of specific events, personalities, and their reactions, and most importantly, with a minimization of present-mindedness.

Consequently, a caveat may be warranted in the narrative that follows. The National Council for History Education (NCHE) states that, among others,

> history's habits of mind empower and enable individuals to perceive past events and issues as they might been experienced by the people of the time with historical empathy rather than present-mindedness. (National Council for History Education, 2020)

They further suggest us to "realize that all individuals are decision makers, but that personal and public choices are often restricted by time, place and circumstance" (National Council for History Education, 2020). These statements readily apply in this case, as some occurrences reflect the societal norms and practices of the time, albeit many were also controversial and received strong criticism when they happened. When reading about business practices at Ford and other companies during the early 1900s, it is challenging to avoid exhibiting personal prejudice toward the behaviors and policies that were in place, and in this case, toward accounting.

While there were many prominent accountants and financial professionals who worked at the Ford Motor Company from 1903 to the early 1950s, the focus will include four particular individuals: James Couzens, Norval Hawkins, Frank Klingensmith, and Ernest Breech. It is not intentional to overlook the valuable contributions of other financial professionals and administrators in the company, such as Edsel Ford, among others, and they will be mentioned plentifully in appropriate circumstances. But the decision to emphasize Couzens, Hawkins, Klingensmith, and Breech relies primarily on their impactful and/or event-specific contributions to the company, as well as the amount of historical documentation available in the archives and elsewhere.

It is likewise unrealistic to avoid the involvement and leadership of Henry Ford himself throughout the story – he was invariably referred to as either Mr. Ford when spoken to directly, or "the boss" when referred to among employees. The financial administration and strategy of the company were highly influenced by his uneven attitude toward accounting overall, including costing methods, financial statements, and anything that related to banking. Written in conjunction with Samuel Crowther, Henry Ford's autobiographical book, *My Life and Work*, relates his perceptions of finance and bookkeeping, with a particularly negative view of borrowing (Ford & Crowther, 1922).

Ford historians often consider the trilogy of the Ford Motor Company books written by Allan Nevins and Frank Ernest Hill from 1954 through 1962

as the foremost historical record of the company. This business history series was the result of a grant from the Ford Motor Company Fund to Columbia University (Nevins & Hill, 1954). Extensively researched over several years, the series was based on vast quantities of archival data, anecdotal reflections, and recorded oral reminiscences. This book will often rely on the same archival records and reminiscences referred to in the Nevins and Hill series, which are housed within the accessions at the Benson Ford Research Center in Dearborn, Michigan.

It is impossible to say enough about the depth and breadth of available archival material stored within the Benson Ford Research Center, and to the forethought of archivists to retain and catalog this material from the 1950s onward. A veritable treasure trove for Ford historians, the collections include millions of documents, photos, newspaper clippings, notes from Ford historians, correspondence, financial reports, and many other items. Of particular significance for this research study is the Owen Bombard Interview Series, begun in 1951 as part of the company's 50th anniversary activities. Over the course of 10 years, Bombard conducted interviews with previous and then-current Ford Motor Company employees, as well as Henry and Clara Ford's neighbors, relatives, personal employees, and friends.[2] Some of these interviews date prior to the company's inception from the younger years of Henry and Clara Ford. These manuscripts provide a first-hand account of the events, operations, and personalities as recalled by key members of the organization. In terms of accounting, they provide relevant and detailed day-to-day activities and operating procedures. For example, the branch and cost accounting methods are explained by the men who supervised and implemented these systems. Many Ford historians have relied on these reminiscences to piece together various events at the company, and this book does as well, with its emphasis on accounting systems and methods in the words of the people who were there.

Regarding the oral reminiscences, I spent considerable time reading through many of them, looking for mention of accounting, bookkeeping, record keeping, costing systems, financial reporting, and overall financial policies. On a personal note, it is impossible to read through these recollections without feeling an emotional response to statements made by real people who worked for many years under challenging circumstances. In many instances, it brought me back to the six years I worked as at a ball bearing manufacturing company, where I began as an accounting clerk and worked my way up to general accounting manager. Reading through the reminiscences, I was brought back to the sights, sounds, and smells of machinery, and the differences in attitudes between manufacturing and accounting. As an accounting manager, I remember the frustrated communications from the manufacturing supervisors when they received their monthly operating reports and their complaints about "this overhead thing." Given my responsibility to create the company's financial statements, I also remember the pressures of closing the books each month and responding to requests for information from the office of the vice president of finance. When reading the accounting reminiscences, in particular, I recognized a lot of the duties I had performed as well years ago.

Several themes emerged in these voluminous oral reminiscences. For one, the enormous scope and scale of the Ford Motor Company made it almost

impossible to maintain control, especially given the rapid pace of growth. It is apparent the imposed lack of formal organizational structure, especially as the company veered toward vertical integration, caused unnecessary chaos, and in some cases allowed strong, power-obsessed people to attain significant authority. However, there were also many well-intentioned, clever people who consistently attempted to implement changes that would bring the company into a more modern structure, with specific titles and duties in certain areas. Unfortunately, their efforts were often in vain, with consequences that included dismissal, shunning, and even illness – the term "Forditis" was mentioned as a physical ailment that presented stomach trouble and overall fatigue. Several of the reminiscences mentioned the fear among factory workers to be fired at any time, with foremen and supervisors watching for any infraction, such as sitting, smoking, or putting one's hand in their pocket. Accountants rested no easier, as their firings were swift and without compassion, with office areas virtually cleared out overnight. Yet, these reminiscences also exude a tremendous amount of perseverance, personal pride, and duty to one's job at Ford Motor Company, along with immense loyalty to the company, the product, and to Henry Ford himself. Many of the reminiscences conclude with exuberance upon the company's appointment of Henry Ford II as president. They hailed the reorganization implemented by Henry Ford II and his management team headed by Ernest Breech. No doubt, these reminiscences were an emotional roller coaster, and they are frequently referenced and quoted in the coming pages.

Thus, the tale begins with the inception of the Ford Motor Company during a time of heightened interest in producing a "horseless carriage." Akin to the 1980s quest to develop personal computers, Detroit in the early 1900s was a hotbed of industrial aptitude and fledgling automobile entrepreneurs, all vying for a breakout prototype that would gain them fame and fortune. This is where the "silent heroes" of accounting and finance enter the picture, for without their expert guidance and involvement, some of these endeavors, including the Ford Motor Company, would be unknown relics of history. At least, this is the author's opinion and a viewpoint for readers to ponder.

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I am very appreciative to have the support and assistance of several persons in this venture. Without their help, this book would not have been possible.

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I am grateful for the patience, advice, love, and encouragement of my husband of many years, Ed Lazdowski. He listened to hours of Ford anecdotes and facts, and wisely offered his suggestions to my frequent questions on book content. I will always remember our Thursday night takeout fish dinners during the time spent writing this book. Despite our busy workdays, we managed to take a day off to buy our newest Ford vehicle, which was fun while writing a book on Ford. Our cat Hampton did his writing support duty by navigating piles of Ford archival material on the desk, and then sitting for long hours beside the computer.

Much gratitude goes to Dr. Trent Boggess of Plymouth State University, who initiated my interest in the Ford Motor Company years ago. I have fond memories of long talks about the company's history, and I recall our visit to Dearborn, Michigan. A true Ford aficionado, Trent took me to both of Henry Ford's homes (one of which is privately owned), the restored Piquette Avenue plant, the abandoned remains of the Highland Park plant, and the gravesites of Henry and Clara Ford. I appreciate all the time he took to explain the mechanics of the Model T engine and to describe historical sites in and around Dearborn. Attending the Ford Motor Company's 100th anniversary celebration of the Model T in 2008 was wonderful.

Thank you to the kind and accommodating staff at the Benson Ford Research Center at The Henry Ford in Dearborn. They were all so knowledgeable in finding materials and retrieving the accession boxes. A particular note of thanks goes

to reference librarian Linda Skolarus and image services specialist Jim Orr of the Benson Ford Research Center. Linda's assistance dates back to 2006 when I spent hours at the Benson Ford, overwhelmed by the massive collections. Jim Orr helped attain images and permissions that were pivotal to the project.

Dr. Dale Flesher continues to mentor, teach, and guide accounting historians, and I thank him for always being there for all of us in the Academy. Most of all, I would like to thank Dr. Gary Previts for his thoughtfulness, direction, and scholarly wisdom. As members of the Academy of Accounting Historians, we all appreciate what he has done to encourage research endeavors for us. When assigned to read the classic Previts and Merino book, *A History of Accountancy in the United States,* in my doctoral studies years ago, I never imagined this Emerald Publishing opportunity provided by Dr. Previts. A gracious and heartfelt acknowledgment for all you have done for accounting historians throughout the world.

NOTES

1. See the reference list for books written on the history of the company or on focused areas, events, or people. Many scholars consider the three-part series written by Allen Nevins and Frank Ernest Hill as the premier source for a well-researched and detailed history of the company through 1962.

2. See the Owen W. Bombard Interview Series, 1951–1961, Accession 65 located at the Benson Ford Research Center at The Henry Ford in Dearborn, Michigan. Mr. Bombard conducted oral interviews using a reel-to-reel tape recording machine, which were then transcribed and sent to the interviewees for their corrections and approval. Some of these transcripts are over 200 pages long, containing a wealth of details explaining various policies and procedures within the company, including accounting methods. They also contain first-hand perspectives on historical events, as well as reflections of the personalities and relationships of key administrative figures, including the company's financial leaders mentioned in this book.

INTRODUCTION

Over the years, it has been said that when the Model T was introduced in 1908, the world was changed forever. The Ford Motor Company revolutionized manufacturing with its innovative production techniques, making the Model T affordable to a large population of the country, and eventually the world. From farmers to clerks and from doctors to tradesmen, the Model T was revered first as a novelty, then as a practical necessity. The landscape of America was transformed: affordable transportation influenced urbanization, construction of infrastructure, educational opportunities for professions and trades, and an appetite for recreational pursuits such as travel and other leisurely activities (Lazdowski, 2007). In terms of social influence, comparisons to the invention of the automobile could be made to the Gutenberg press in 1440 (Woods, 2005) and more presently to smartphones and tablets – items that alter the fabric of society and how people live.

Henry Ford's accomplishments resulted from mechanical abilities and determination in a developing industrial age that was increasingly reliant on machinery. He did not take credit for inventing the automobile, but was simply one of many players in the field of early carmakers. His dream of "building a car for the multitude" was not initially part of the plan, as it was more of a personal challenge of his capabilities to build a self-propelled vehicle for his own use. Some say he was also motivated to prove to family and friends that his choice to abandon farm life and engage in successful mechanical ventures was justified.

Initially, the idea of a dependable, lightweight, inexpensive, and simply designed vehicle was uncharacteristic in the early years of car-making. Driving a car was viewed as a hobby for wealthy urban dwellers, especially given the lack of adequate roads and the limited driving season of good weather. Thus, other early car manufacturers, such as the Packard Motor Car Company and the Cadillac Automobile Company, aimed to build bigger, faster, and more luxurious cars. Some of these cars sold for $7,000 cash, quite shocking when the average salary in 1907 ranged from $600 to $900 per year (Nevins & Hill, 1954, pp. 260, 351). Ford relied on target pricing as his strategy to minimize costs and sell at greater volumes, despite a lower profit margin per vehicle. By 1921, the Ford Model T had an impressive market share of 61.5% (Mueller, 2003, p. 36). The Model T's lowest price during its 19-year production run from 1908 to 1927 was as little as $260 in 1926, thus allowing the automobile to become an essential transportation

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mode for the average citizen (Bak, 2003). Ultimately, Henry Ford became the everyman's folk hero, and America's love affair with the automobile was born.

Ford Motor Company modernized manufacturing and achieved astounding growth through economies of scale via mass production. Its global influence even coined the term Fordism to represent an approach to cost containment and high volume sales, with subsequent expansion of one's own market by raising employee wages and presumably morale. Clarke (1990) states that Fordism is based on the "mass production of homogeneous products, using the rigid technology of the assembly line with dedicated machines and standardized (Taylorist) work routines."

Per O'Brien (1964), mass production is considered a complex synthesis of five elements: *division of labor*, separation of the production process tasks to be performed by specialists, including specialized machines; *standardization of parts*, so they can be mass-produced, easily interchanged, and assembled by semiskilled workers; *precision-tooling*, the making of standardized parts through machines according to specific blueprint dimensions with minimal tolerance; *the assembly line*, the moving of work from one station or worker to another in a serial pattern; and *mass demand*, the actual desire for the product that justifies its production expense. The Ford Motor Company achieved all of these.

Perhaps it could be said that the influx of Taylorism around the time of the creation of Ford's moving assembly line in 1913 influenced gains in their mass production. It is known that Frederick Taylor visited Detroit several times before the publication of his book *The Principles of Scientific Management* in 1911 (Nevins & Hill, 1954). For instance, Taylor spoke to engineers at the Packard plant and by 1913, they had applied scientific management analyses and institutionalized its principles (Nevins & Hill, 1954). At Cadillac, assembly had been re-arranged to allow cars to be made simultaneously by groups of specialized labor (Nevins & Hill, 1954). Yet there is no indication that Taylor visited the Ford factory specifically. Like many of the Detroit car manufacturers, Ford had already begun its own version of Taylorism to meet the ceaseless demand of increasing production. Timekeepers were employed to watch various tasks, and cost records were kept in various departments.

Standardization of parts was also of prime importance in the goal to decrease the Model T's production time. Hoskin and Macve (1994) discussed the use of interchangeable parts to mass produce guns at the Springfield Armory and how it encouraged other small manufacturers to follow suit, especially in the clock and watch industry. Interestingly, Henry Ford spent countless hours repairing watches as a youth, making most of his own tools, and learning the importance of standard parts (Nevins & Hill, 1954). Max Wollering, production superintendent for the Ford Motor Company at one time, mentioned Ford often talked about the interchangeability of parts to handle great quantities of production (Wollering, 1955).

With the help of his able assistants P.E. Martin, William Klann, Bill Knudsen, Charles Sorensen, and many others, Ford adopted the idea of continuous motion in production, along with careful timing, as a priority when he moved the company to their new Highland Park plant in 1910 (Nevins & Hill, 1954). Progress in the moving assembly line was soon evident by 1913, when the Model T's

production jumped from 82,000 to 189,000 cars (Watts, 2005, p. 135). Henry Ford and Samuel Crowther (1922, p. 93) stated in *My Life and Work*, that "the idea came in a general way from the overhead trolley that the Chicago packers used in dressing beef." The flywheel magneto was the first part manufactured in an assembly-line manner, carefully tweaked to reduce the time of production, such as modifying the height of the line to avoid extra bending motions (Brinkley, 2003). Other departments and parts soon followed, and the momentum was contagious.

Much of the Ford Motor Company's success in mass production was attributed to hiring skilled people and placing them where they would best serve the organization. The accounting, record-keeping, and auditing staff were no exception, and their work was pivotal in helping to monitor the reduction of costs as production increased. Cost accounts and auditing were mentioned in college accounting textbooks at the turn of the century, implying the onset of accounting specialties (Previts & Merino, 1998), and several of the men who were hired had taken accounting and bookkeeping courses at local schools of higher education. Others had experience working in the railroads, and they used these skills in establishing and maintaining accounting policies, as referred to in the oral reminiscences.

Consequently, the functions of finance and accounting, with its minutiae of book- and record-keeping, found a way to co-exist alongside a burgeoning manufacturing division, but not without its challenges. According to one-time treasurer L.E. Briggs,

> the opposition to record keeping was company-wide, not just in one place and reflected, I believe, the attitude of Henry Ford. I understood that he looked on records as unnecessary expense. He was inclined to minimize the importance and necessity for records. (Briggs, 1951, p. 11)

This was echoed in Henry Ford's own words, when he stated

> the primary object of a manufacturing business is to produce, and if that objective is always kept, finance becomes a wholly secondary matter that has largely to do with bookkeeping. (Ford & Crowther, 1922, p. 177)

His negative views on finance operations were known throughout the company. Thus, the intersection of financial and manufacturing processes began its tenuous relationship from the inception of the Ford Motor Company in 1903, and the vigilance and persistence of financial managers, accountants, auditors, and bookkeepers prevailed throughout many years.

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CHAPTER 1

THE INCEPTION OF THE FORD MOTOR COMPANY

HENRY FORD'S EARLY YEARS

Henry Ford's early years began on July 30, 1863 on the family farm in Dearborn, Michigan. As the eldest of six children born to William and Mary Ford, it was said he had a general dislike of farm chores (Lazdowski, 2007). He attended a one-room schoolhouse located a mile's walk from home (Lacey, 1986). It was clear from an early age, Henry exhibited excellent mechanical skills (Lazdowski, 2007). Upon receiving a watch for his birthday in 1876, he promptly took it apart and reassembled it (Nevins & Hill, 1954, p. 58).

The family farm had endless chores, and as the oldest son, Henry was assigned his share, which he considered drudgery. Years later he was quoted as saying "from the beginning I could never work up much interest in the labor of farming … I wanted to have something to do with machinery" (Nevins & Hill, 1954, p. 49). William Ford had mechanical inclination as well, and was proud of his son's abilities (Watts, 2005).

Legend suggests two key events had profound impact on young Henry Ford. First, the sudden loss of his beloved mother during the birth of her seventh child shocked the entire family (Watts, 2005). Second, while riding in a horse-drawn wagon in July 1876 with his father, they witnessed a self-propelled steam engine approaching (Lacey, 1986). Certainly a rare sight at the time, and it was a first for Henry. Lacey (1986, p. 12), quotes Ford as saying "I was off the wagon and talking to the engineer before my father, who was driving, knew what I was up to." Engines were common enough during this time, but this particular engine had a unique design, including a chain that connected the engine and rear wheels that allowed it to self-propel. Per Lacey (1986, p. 13), "Henry Ford regarded his encounter with the moving engine as his meeting on the road to Damascus."

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By 1879, Ford's passion for mechanics prompted him to leave the farm behind to find machine shop work in Detroit. Various biographers disagree on whether Henry had the support or opposition of his father in leaving the farm, but nonetheless, the 16-year-old ventured off to the city of Detroit – population, 116,340 (Nevins & Hill, 1954). He was soon hired as a machine shop apprentice at the Flower Brothers' machine shop (owned by a friend of his father) and then later at the Dry Dock Engine Company (Arnold & Faurote, 1919). Further experience was gained during one summer working as a "road expert" for the Westinghouse portable steam engines (Arnold & Faurote, 1919). At every opportunity, Ford consistently expanded his experience with various machine tools such as forges, lathes, and drillers, etc. This provided an opportunity to experiment with engines, and he was capable of constructing any small-size machine that interested him (Arnold & Faurote, 1919).

Around 1883, Ford returned to the farm and then married Clara Bryant in 1888 (Lazdowski, 2007). He was offered an 80-acre parcel of forest land by his father, which could be cleared away for lumber and farming (Lacey, 1986, p. 34). These were productive and happy years for the Fords, as they built a modest home and a rudimentary lumber mill. Any available spare time was an opportunity for Ford to hone his mechanical skills on small engines. Given his reputation as a skilled machinist, he occasionally went back to Detroit, and during one particular visit, Ford saw an internal-combustion engine called "the silent Otto" (Lacey, 1986). Upon returning home, he confidently persuaded Clara that he could construct such an engine as part of a self-propelled vehicle. However, that would mean moving to Detroit for more experience.

When the Fords moved to Detroit in 1891, the invention of the automobile by Gottlieb Daimler and Karl Benz in 1886 had already been achieved (Lacey, 1986). Meanwhile, Ford was employed by the Edison Illuminating Company, and Clara tended to their first, and ultimately, their only child, Edsel, who was born in 1893. Ford excelled at his job and before long was promoted to foreman, where he oversaw the generators and managed the shop. There was ample time between tasks for Ford to casually experiment with electric coils and scraps of metal (Lacey, 1986). He was elevated to the chief engineer position at the decent salary of $90 per month (Watts, 2005), and made acquaintances who were also curious and mechanically like-minded. No doubt, Ford was enthusiastic in this environment, enthralled by the innovations in engines, machinery, and power. It was also in this setting that he made lifelong connections to men who could help build his car.

During the mid-1890s, Ford taught an evening metalworking class at the Detroit YMCA, where he met fellow car enthusiast Oliver Barthel (Lacey, 1986). Both Barthel and his supervisor, Charles B. King, were researching the "horseless carriage," and one day in King's office, Barthel showed Ford an article in *The American Machinist* (Nevins & Hill, 1954). After reading this two-part article on how to construct a simple gasoline engine from odd parts, Ford calmly stated "I want to build one of these" (Lacey, 1986, p. 42). Per Barthel's reminiscences, Ford was able to replicate the engine in the article, and this was the engine he used in his first car built at his Bagley Avenue residence (Barthel, 1952).

Olson (1963, p. 58) reflects on Ford's dispositions that flourished during this time in his life, especially as they relate to his future habits and behaviors. He states:

> One of them was a cheerfulness about failure … as long as he knew why and where and how and what had gone wrong, he was happy – had learned something.

Olson (1963) also mentions the formation of another trait, letting someone else do the work:

> In the next few years we will see Henry steadily developing talents for salesmanship and management. He could talk other men into helping him, backing him, working for him; you will note how many times someone else was always lifting the heavy end while Henry was off talking another man into a little weight-lifting. (Olson, 1963, p. 58)

Some of Ford's associates from Edison Illuminating Company and elsewhere shared his enthusiasm for building a motorcar based on this gasoline-powered engine, and per Olson (1963, p. 61), "Henry had some sort of a magnet … he could draw people to him." Thus, they worked in a little shop across the alley from the Edison Company on a gasoline engine. Ford also toiled with a few friends in the shed located behind his rented house at 58 Bagley Avenue on a car (Lacey, 1986). The men did their best to make engine parts by hand, or found items that could be substituted. It was an enjoyable time, with camaraderie and work combined.

Nonetheless, it was Charles B. King who completed his horseless carriage several months prior to Henry Ford (Lacey, 1986). However, King's machine weighed nearly 1,300 pounds and could not exceed five miles per hour (Olson, 1963). Ford's version was lighter, weighing 500 pounds with a top speed of 25 miles per hour (Olson, 1963). He was more concerned with damaging the engine to move a heavier vehicle, and there is a belief Ford was already thinking years ahead, in terms of a lighter, more reliable car that would appeal to a great number of buyers (Lacey, 1986).

Hence, Ford's "quadricycle" debuted during the night of June 4, 1896 through the quiet streets of Detroit (Nevins & Hill, 1954). Interestingly, Ford inadvertently built his prototype larger than the shed door – which he quickly broadened with an axe (Brinkley, 2003). He was pleased with the machine, although it caused some challenges. Ford himself states:

> It was considered to be something of a nuisance, for it made a racket and it scared horses. Also it blocked traffic. For if I stopped anywhere in town a crowd was around it before I could start up again. Finally, I had to carry a chain and chain it to a lamp post whenever I left it anywhere. (Ford & Crowther, 1922, p. 39)

Ford eventually sold his first quadricycle for $200 to Charles Ainsley of Detroit and years later it was recovered and restored (Watts, 2005). It is now displayed at The Henry Ford Museum of American Innovation. From the experience of his first car, Ford built a second, more sophisticated vehicle in 1897, which proved much more dependable, such that he drove this car to visit the family farm on weekends (Watts, 2005).

Ford's second car drew the attention of William C. Madbury, the mayor of Detroit, as well as lumber merchant William H. Murphy. Car fever had hit Detroit

(and elsewhere), and both Madbury and Murphy, along with other partners, agreed to finance and organize a company to produce cars (Nevins & Hill, 1954). Thus, the first car manufacturer in Detroit, the Detroit Automobile Company, was founded on August 5, 1899 and capitalized at $150,000, but with only $15,000 actually paid in as cash (Nevins & Hill, 1954). Backed by an enthusiastic group of investors, Ford himself was a stockholder (without cash input), and he was forced to make the difficult decision of leaving his position at the Edison Illuminating Company to devote all of his time to the new venture as mechanical superintendent (Nevins & Hill, 1954). Over the next year, multiple vehicles were constructed, but the company ran into difficulties with materials, assembly, and eventual lack of funding.

There are various perspectives on why the company did not succeed. For one, the cars took too long to produce commercially, as Ford realized the cars' shortcomings, particularly in the engines, and he was reluctant to lock in a design (Nevins & Hill, 1954). He also placed blame on the company's investors, whom he felt exploited his engineering skills. Per Lacey (1986, p. 50), Ford said they had no sympathy with his objectives,

> which was to make a better car for the public … and being without authority other than my engineering position gave me, I found that the new company was not a vehicle for realizing my ideas but merely a money-making concern.

Conversely, the owners believed Ford showed a lack of commitment and held back on designs. Per Oliver Barthel, now one of Ford's employees:

> I think the company failed because the stockholders were a little bit disappointed that Ford didn't make better progress, and they refused to put up any more money. I think this is where the difficulty was. They spent the money that had been put in. He needed more money to finish the cars, and they were disappointed at the way the thing turned out. (Barthel, 1952, p. 24)

Historians tend to place the company's demise more firmly on Ford. Despite his best efforts, he seemed unable to stop changing the design and move forward with production (Watts, 2005). The Detroit Automobile Company was dissolved in January 1901, one company among the hundreds in the nascent automobile industry.

Although disappointed, Ford turned his efforts toward improving engine design. Now around 38 years old, he spent several years racing automobiles under risky and perilous conditions to test his engines – and some say to seek publicity (Lewis, 1976). Ford became a local celebrity upon winning several of these races on frozen lakes and gravel tracks. Sometimes he drove the powerfully built cars himself, other times he hired a professional driver. These public events were well-attended, including the presence of his previous supporter, William Murphy, who had not lost faith in Henry Ford the engineer. By November 1901, with the intention of building a smaller, lighter car, The Henry Ford Company was formed with Murphy's financial support (Watts, 2005). With the assistance of Ed Huff, Frederick Strauss, and C. Harold Wills (who would later be a significant contributor to the creation of the Model T), Ford was tasked to design and build a small car that held promise for commercial production (Watts, 2005).