The Development of the M-form in the American Automobile Industry

by

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Table of Contents

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Introduction

“No, sir, there is no such thing as a saturation point – not until every man, woman and eligible child in the country has an automobile.”

William C. Durant, 1910

Few industries in the United States are so closely tied with its history and economic progress as the domestic automobile industry. For the majority of the twentieth century, for better or for worse, cars have become a necessary aspect of American life. The innovations made in both manufacturing techniques and management organizations by Ford and General Motors during the first half-century of the automobile industry's existence were critical in solidifying the automobile's position in the American landscape, and revolutionized the way that large, integrated enterprises operated around the world.

The early automobile industry was much more competitive than it was by the mid-twentieth century. There were dozens of small firms in the Detroit area competing with Ford and GM in the 1910s and 1920s. As the industry grew, these small firms had trouble competing with the larger manufacturers because economies of scale became increasingly necessary to lower costs. Consequently, by World War II, the only true competitor to Ford and GM was Chrysler (Chandler 2004, 207). While Chrysler, which was founded in 1925, successfully competed with GM and Ford, and actually overtook Ford in sales for a few years in the 1930s, it never came to dominate the industry and was more of a follower than a leader in most respects. For this reason, it will not be extensively discussed.

The first dominant company in the US automobile industry was Ford. During the 1910s, innovative manufacturing processes (such as the use of moving assembly lines) allowed Ford to reliably produce Model Ts at a low enough price that working class Americans could afford them. Using these techniques, Ford dominated the new car market, selling well over fifty percent of the cars for that decade (Rae 1959). By

making the Model T so inexpensive, Ford was instrumental in changing the automobile from being a toy for the wealthy to a viable mode of transportation.

Despite the unmitigated success of the Model T during the 1910s, Ford was overtaken by GM during the 1920s. By restructuring its management organization to match changing market conditions, GM eventually controlled about fifty percent of the automobile market for about three decades between the mid-1930s and mid-1960s. Though it seems unthinkable given its current state, in the middle of the twentieth century, GM was the largest manufacturing enterprises in the world as well as one of the most profitable in the US (Pelfrey 2000). Using their respective organizational innovations, Ford and GM both grew to dominate the automobile industry at different points and were the driving forces behind most of the changes made to the industry for the first half of the twentieth century.

Chapter one explains the origin of the modern firm during the nineteenth century, as described by the theories of economic historian Alfred D. Chandler and economic theorist Oliver E. Williamson. While GM and Ford played an important role in the innovation of the way firms were organized, they were building on over fifty years of managerial evolution. Williamson and Chandler discuss how modern large manufacturing firms developed following the expansion of the railroads in the mid-nineteenth century.

The first step in the organizational evolution of manufacturing firms was the development of the holding form, or H-form, organization. H-form companies consisted of a central parent company that owned several subsidiaries obtained through horizontal and vertical integration. The subsidiaries in H-form companies

generally operated independent of one another and independent of the management of their parent company. Because the central management of H-form companies generally had little influence over the operation of their subsidiaries, H-form companies generally produced more innovations in production processes (Bartlett and Ghoshal 1993, 8). However, H-form companies generally had problems coordinating the activities of their subsidiaries, so most of them gradually converged on the more centralized unitary form, or U-form, organization.

The U-form was the dominant organizational form for the first few decades of the twentieth century. Instead of subsidiaries, U-form companies consisted of functionally organized departments which were strictly controlled by the firm's central management. This meant that departments at U-form companies specialized in a single function, such as a given step in a manufacturing process, and it was the responsibility of the central office to make sure the departments were coordinated. U-form companies were relatively inflexible in adapting to new market conditions because departments could get overspecialized in a specific process. Also, in larger U-form companies, managers that coordinated different departments could get overburdened with information from each department and would become unable to make informed decisions to solve interdepartmental problems. It was not until the automobile industry began to mature that the next step in the evolution of firm organization took place.

With the background about the H-form and U-form organizations in mind, chapter two discusses the origins of GM and Ford as well as their respective founders, William C. Durant and Henry Ford (referred to herein as "Henry"). The two

companies were founded on opposing philosophies on how to achieve success, which led Durant to found GM as an H-form company and Henry to found Ford as a U-form company. Durant, who saw that the technologies used by the nascent automobile industry were still developing, embraced the H-form. As a holding company, GM could swallow up different manufacturers and suppliers and thus could hedge its bets on what automobile technologies would ultimately win out (Rae 1958, 258-260).

Henry took a different approach to running his company, which more closely matched the U-form. In fact, Henry took the U-form above and beyond what most industrialists had ever done up to that point. Ford built on the ideas of, *Taylorism*, a set of theories about scientific management that were popularized by economic theorist Fredrick Taylor, and developed the philosophy of *Fordism*, which emphasized the minimization of human involvement in manufacturing processes (Dassbach 1994, 504). The policies Henry implemented under Fordism, while controversial, enabled him to successfully produce his flagship Model T cheaply and reliably for almost twenty years.

Chapter three focuses on the successes and failures of GM while it was run as an H-form company by Durant. The disadvantages to the H-form stem from the weakness of the parent company's power over its subsidiaries. This led to a variety of problems that damaged GM's profitability, to the point that GM had to be bailed out twice in 1910 and in 1920 to avoid bankruptcy. Durant presided over both of GM's brushes with bankruptcy and both times was forced from the position of president as part of the deals made to save GM. After being forced out in 1910, Durant orchestrated a complicated hostile takeover to retake control of the company in 1916.

Durant continued to let GM operate as an H-form company, and the company once again came close to folding due to his inability to control production levels at GM's subsidiaries in 1920, at which time Durant was ousted again. After being force out for the second time, GM' leadership finally began the process of restructuring its management hierarchy so that it could avoid falling into the same predicament a third time.

Chapter four describes GM's transformation to the novel multidivisional form, or M-form, organization, which was conceived by Alfred P. Sloan. Sloan was chosen by GM's board to run the company after Durant left as vice president of operations in 1920. He eventually succeeded to the presidency in 1923. Chapter four outlines why and how Sloan decided to restructure GM as an M-form company. The M-form is in many ways a compromise between the U-form and the H-form, because it centralizes some parts of a firm's operations while leaving other parts independent. Unlike U-form companies, which were divided into functionally organized departments, M-form companies consisted of semi-autonomous divisions that individually performed almost all the functions that U-form companies did (see Figure 1). Chapter five explores how Sloan was able to use the M-form to his advantage to realign GM's car brands to cover all the price ranges in the automobile market.

Chapter six contrasts GM's success during the 1920s and 1930s with Ford's decline and explores why the M-form worked so much better than the U-form during these decades. Each decade presented a different problem for Ford's functionally organized factories. During the 1920s, as the Model T lost popularity, Ford had difficulty switching over to a new model primarily because its departments had

become so specialized in Model T production. During the 1930s, Ford had trouble because the departments in its factories became too large to be managed through the U-form, so Ford could not effectively control costs and became extremely unprofitable by the end of the decade. The last part of the chapter describes Ford's attempt to restructure as an M-form similar to GM's following World War II. When GM's success during the two decades prior to the war is contrasted with Ford's decay over the same period, it becomes clear why Ford tried to emulate GM's management structure. However, for several reasons, Ford was only partially successful in its attempt to decentralize some of its operations, losing hundreds of millions of dollars in the attempt.

The different levels of centralization that were achieved by GM and Ford when they converted to the M-form can be explained by the different management structures that the companies started from. Before adopting the M-form, Ford and GM were organized as dissimilarly as possible, as Ford was completely centralized while GM was completely decentralized. By examining how the two companies formed and what route they took to converge on the M-form, it becomes clear why GM was more successful in its transformation and what the consequences of Ford's failures were.

Chapter 1 – The Development of the Modern Corporation

“I don’t know much about history, and I wouldn’t give a nickel for all the history in the world. It means nothing to me. History is more or less bunk. It's tradition. We don't want tradition. We want to live in the present and the only history that is worth a tinker's damn is the history we make today.”

Henry Ford, 1916

Introduction to Williamson, Chandler, and the Modern Corporation

The ups and downs of the fortunes of GM and Ford to be outlined in subsequent chapters can ultimately be traced back to their different approaches to management. As with all early large enterprises, Ford and GM both used a modern, hierarchical managerial organization to try to efficiently organize car production in the early twentieth century. The difference between them was that Ford's management structure was highly centralized, while GM's was highly decentralized. Though they used substantially different organizational forms, both were the end result of over half a century of innovation that allowed industrial firms to grow to proportions that could not possibly be managed by older, simpler management styles. The evolution of these modern firms and their respective strengths and weaknesses is extensively explained by the economic historian Alfred Chandler Jr. and theorist Oliver E. Williamson.

Alfred Chandler Jr. began writing on the way the management of firms developed in the late nineteenth and early twentieth centuries in his 1962 book Strategy and Structure. Chandler's theories are concerned with the development of the modern multi-unit firm from earlier firms which were managed in a simple owner-worker fashion. Before the industrial revolution, most manufacturing firms were small factories overseen by a few managers who reported directly to the firm's owner (Chandler 2002, 50). The key difference between these early firms and modern firms was that modern firms had a hierarchy of management, which allowed them to grow beyond the limits imposed by the abilities of a single manager. The hierarchical managerial structure allowed a single executive to delegate tasks out to lower

managers, multiplying the size of the firm he could oversee. As modern managerial methods gained sway, the size of firms grew and new managerial forms developed. By the time that the automobile industry rose to prominence, the management of firms had evolved to be highly centralized and scientific.

Oliver E. Williamson's work analyzes the development of the modern business firm as a study of *transaction cost* minimization. Transaction cost is a broad term that can refer to any cost incurred by two parties making any economic transaction. It could be anything from transportation costs for moving components between factories to the additional administrative overhead that an independent supplier firm would need. According to Williamson, the primary purpose of a firm is to minimize transaction costs in the production of a given product (Williamson 1981, 1543-1551). Companies decide to internalize a given production process based on whether they think they can produce the good more cheaply than an outside firm could when transaction costs are taken into account.

In addition to transaction costs, the *capabilities theory of the firm* is an excellent way of thinking about how managerial hierarchies at firms develop. For firms, a capability generally can be described as the ability to accomplish a task of any sort. This includes tasks like the manufacture of a product as well as more abstract tasks such as ability to innovate or even how and how well a firm can manage its finances (Langlois and Robertson 1995, 3). The capabilities theory is relevant because it can explain why some industries tend to vertically integrate. Early in the development of some industries, the capabilities needed to make some inputs are not well disseminated, so supplier firms are unable to produce parts for the

industry. The capabilities theory relates to transaction costs because as an industry matures and the technologies used in it become both more advanced and more widespread, more firms have the capability to produce inputs for an industry with lower transaction costs.

The origin of the modern industrial firm can be traced back to the consolidation of several industries into trusts in the 1870s and 1880s. Following the expansion of the railroads in the 1850s and 1860s, there was a boom in the number of firms in several manufacturing industries. This is because before the railroads were built, the price of coal was a barrier to entry in industries that utilized simple, coal powered production technologies, such as oil refiners or grain processors. With the expansion of the railroads, however, coal could now be cheaply delivered more places, so many smaller firms could now afford to fuel heavy machinery. Additionally, the railroads made distribution of finished products to locations all over the country inexpensive. Both of these factors incentivized more people to enter these industries, caused the market to become so glutted with producers to the point where it was difficult to make a profit (Chandler 2002, 316-318).

To deal with their falling profits, processing firms began to organize into associations, trusts, and later holding companies to try to maintain profits through price controls and production schedules. The first of these organizations, associations, were generally only loosely coordinated, and had little enforcement power other than the good will of member firms. This led to a problem because firms would try to undercut each other, which would drive production back up and prices back down. The behavior of firms within associations led them to form trusts, in which the

shareholders of independent firms gave control of their shares to a single board of trustees. Trusts were more unified than associations, and thus had more market power them and were more effective at controlling prices (Chandler 2002, 332-339).

The Development of the H-form

Trusts solved the problem of firms undercutting prices that were agreed upon by and exerting control over supply and distribution networks, which in effect bullied smaller firms into keeping their prices up. Trusts later used this control to force competitors out of the market. The price controls enforced by trusts in the late nineteenth century were the first large scale coordinated made by manufacturing firms. As states began letting companies buy out-of-state assets, many trusts began to be replaced by horizontally integrated companies. Horizontal integration refers to a situation where firms that carry out the same function within the same industry combine through merger. The first state to allow such mergers was New Jersey in 1889, but many states soon followed with similar laws of their own (Chandler 2002, 319). The result of these changes was the formation of what Williamson refers to as the holding form, or H-form of firm organization.

Though they were more centralized than trusts, H-form companies were still highly decentralized in terms of the operational control that parent companies exerted over their subsidiaries. Subsidiaries within H-form companies often operated independently under the loose control of their parent company. However, because an H-form parent company controlled a majority of a given subsidiary's stock, the parent company could indirectly place some price and production controls on them through the subsidiary's boards of directors.

H-form companies were an important stage in the evolution of the organization of the modern firm, but neither Chandler nor Williamson spends much time discussing them in their theories aside from using them as a point of comparison to other management styles. The reason for this is that following horizontal integration, many H-form companies began substantial consolidation of facilities as well as vertical integration through the purchase of supplier and distributer companies. Consolidation of manufacturing into fewer factories made coordination easier and allowed for more economies of scale. However, because centralized organizational forms were more effective at administering horizontally and vertically integrated companies, many firms abandoned the H-form relatively quickly (Chandler 2004, 37-38).

Vertical integration, which consists of backward and forward integration, occurred at different times in different industries depending on inputs and technologies used in the industry. Backward integration occurs when a firm expands to encompass the production of raw materials that are used as inputs, while forward integration occurs when a firm becomes involved in the marketing, sale and distribution of its final product rather than relying on independent distributers. Both forward and backward integration were done to minimize transaction costs between stages in production (Williamson 1985, 85-86).

Forward integration was generally done under the assumption that the firm producing a product knew the most about how, where and when that product should be distributed and marketed to consumers. In delegating the marketing and sale of a product to an outside company, not all of the information about the product would be

passed on, so the other company may not be as effective at selling the product. This loss of information could affect the sale price of a product, so it can be categorized as a transaction cost. Because of this, Williamson suggests that firms in a given industry will evolve to become centrally organized and vertically integrated when transaction costs between independent firms within the industry are high. An example given by Williamson of this phenomenon is IBM in the 1950s. When IBM began producing computers, the market was so small and the manufacturing process was so complex that no parts supplier had the knowledge yet of how to make computer components cheaply. As a result, IBM had to invest in its own factories and buy raw material suppliers so that they could become specialized in making computer parts (Williamson 1985, 126).

Another reason for forward integration was that it could lead to some economies of scale. For example, a single sales department, no matter how big, was easier to deal with than dozens of sales outlets that the firm did not own and had less control over. By consolidating the management of marketing, distribution and sales into one company, redundant transaction costs could be eliminated because fewer entities were involved in the product's sale, and specialized, standardized practices could be developed and used by the sales department (Chandler 1962, 29).

Interestingly, forward integration was less of a presence in the automobile industry than it was in the other complex manufacturing industries. Instead of setting up their own sales outlets, automobile manufacturers developed extensive dealer franchise networks to deal with the marketing and distribution of cars. The reason for this that is cited by Williamson was the complex nature of car trade-ins. Unlike most

products that people purchase, used cars retain significant proportion of their value, so they were (and still are) used to offset the price of new cars for consumers. As every used car had different amounts of wear and had to be valued qualitatively and locally, the car manufacturers decided early on that profit-driven car dealerships that could specialize in local markets would be the most cost-effective way of solving this problem. Standardization of this process would be very difficult, so the car franchise was decided to be the best solution (Williamson 1985, 157).

In addition to forward integration, backward integration is also a central element in the evolution of firm organization because of what Williamson refers to as an industry's *lifecycle* (Williamson 1985, 127). At the start of an industry's lifecycle, few supplier firms are able to manufacture pars and other needed input at low prices. These companies do not have the capabilities to provide parts at an appropriate level of specificity because neither the technology nor the demand exists for the mass production of highly specified parts (Langlois and Robertson 1995, 46). Production firms therefore integrate backward into the manufacture of needed inputs. This pattern is commonly in industries that utilize relatively new and complex technologies.

Langlois and Robertson illustrate this phenomenon using the Ford Motor Company during the 1910s. The cost of outsourcing production of several pieces of equipment used in Model T production were significantly higher than making the equipment internally because an outside firm would have had to spend money learning about the Model T to make the part, whereas a Ford engineer that helped design the Model T could more easily design the part used in its production. Unlike

supplier firms, manufacturing firms know precisely what the characteristics of the needed input are and therefore would be more capable of producing it at an adequate level of specificity.

The latter part of the lifecycle theory states that as an industry matures, the capabilities needed to make highly specified inputs disperse, so eventually the capabilities of independent supply firms in the market will catch up to and surpass the capabilities of an individual vertically integrated. At this point in an industry's lifecycle, some firms choose to become less vertically integrated to lower costs. There still can be benefits to backward integration, however. A firm that supplies parts to a larger manufacturer will be able to perfect its method of producing that part if it becomes a subsidiary because it does not have to worry about losing business and being forced back into the general marketplace (Langlois and Robertson 1995, 64).

Additionally, a parts supplier that is a subsidiary of a vertically integrated manufacturing company will likely have access to exclusive information about the manufacturing processes used by the larger firm. This can increase the subsidiary's capability to specify an input to be compatible with other manufacturing processes within the larger firm. It can use this knowledge to fine tune its product to be better specified than a product produced by a company in the general marketplace (Langlois and Robertson 1995, 36). An example of this would be a firm that produces paint under an exclusive contract for a company that builds houses in a warm climate. Since the company knows for certain what type of weather its paint will be exposed to, it can design the paint to last longer in warm conditions without worrying how cold weather will affect it. Conversely, a competing independent company that

produces paint for builders all over the country would have to make it less specialized for a specific type of weather, so it may not last as long in hot climates as the first company's paint.

The Development of the U-form

The benefits of vertical and horizontal integration of the manufacturing sector led to the consolidation of many American industries into a few enormous firms. For these firms to take advantage of their vertical organization, however, they had to change how they were structured so that they could better coordinate their operations. To achieve better coordination, a majority of these large firms centralized the operations of their subsidiaries into functionally organized departments. The term *department* refers to a single unit of a company that performs and specializes in a single specific task. If a company's departments were *functionally organized*, it means that each department administered a given process in the chain of production. In the context of a manufacturing firm, a department could be in charge of a single step in the manufacturing process, such as the assembly of a specific component. Administrative functions were also separated into task-specific departments, meaning that all of a firm's manufacturing departments were budgeted through the same central accounting department and their legal issues were dealt with by a central legal department. This type of organization flows naturally from vertical integration because acquired subsidiaries, for the most part, could be relabeled as departments, as they were already specialized.

The performance of a department was the responsibility of a departmental manager who reported to the firm's centralized upper management. By organizing the

various firm functions this way, central managers were able to standardize and coordinate the operations of a firm's various departments to efficiently work together. Williamson refers this type of organization as a Unitary form, or U-form, firm. The U-form became dominant at the end of the nineteenth century, and remained dominant through the 1920s (Williamson 1981).

The U-form and the H-form exist at opposite ends of the firm organization spectrum. While the U-form can be seen as the epitome of a centrally planned organizational structure, the H-form can be seen as the least centralized form a multi-unit firm can take. H-form companies were created as firms horizontally integrated, so they did not have extensive central management offices unless such offices were able to be imposed. Often, H-form companies consisted of several partially owned subsidiaries whose owners refused to sell outright, so the parent company had to convince the managers and other owners of its subsidiaries to take certain actions, making coordination difficult. Most H-form companies eventually reorganized into U-form companies in one way or another in order to expand their production, but there were some companies that remained at least partially H-form through the 1910s. For example, at the time that Standard Oil was broken up in 1911, the firm itself operated some oil refineries but for the most part owned many loosely organized subsidiaries over which it exerted little operational control (Chandler 1962, 41). The Standard Oil headquarters set prices and production schedules, but individual refineries operated independently with their own managers.

H-form companies had an advantage over U-form companies in that they could cover a diverse market more effectively, as the various subsidiaries of the

company were essentially autonomous U-form companies that each use their own production process. This was important in companies that were spread out geographically or provided different products to different customers, because each subsidiary could adapt to its local economic environment. However, without strict and enforceable guidelines, the subsidiaries would often become selfish or corrupt to the detriment of the firm. Without a central accounting office, divisions within an H-form company may keep their own profits to reinvest in themselves, or worse could simply be kept by the manager running the division. This meant that for industries that did not need to be flexible or diverse in their offerings, the U-form was a better management choice. The corruption of the managers of divisions in H-form companies is referred to as *opportunism* by Williamson (Williamson 1985, 65,283-285). While H-form firms do have some advantages, the problem of opportunism typically overpowers them to the point that the H-form is no longer favorable for most industries.

The exact moment that the U-form was conceived is difficult to pinpoint because different companies in different industries centralized different aspects of their organization at different times. One of these firms, the DuPont Explosive Powder Company, (referred to herein as “DuPont”) developed from the H-form into the U-form in a particularly well documented transition (Chandler 1962, 52-113). The experience of DuPont illustrates very well the way in which some industrial firms underwent the transition from H-form to U-form, as well as the benefits of the U-form over the H-form (Baughman 1969, 78).

Following the death of DuPont's president, Eugene du Pont in 1902, the company was taken over by Alfred du Pont and his cousins, Coleman and Pierre du Pont. After choosing Coleman to be DuPont's new president, Alfred, Coleman and Pierre proceeded to convert the company to the U-form. While DuPont itself only owned only a few factories at the time they took over, it owned a majority stock interest in several other explosives companies. DuPont gained control its subsidiaries through a stock swap. Coleman offered the subsidiary owners stock in DuPont in exchange for their outstanding stock in DuPont's subsidiaries. After gaining control of DuPont's subsidiaries, the three du Ponts began the process of reorganizing how the company's management structure.

They instituted standardized manufacturing techniques for each type of explosive DuPont produced and concentrated production into fewer, larger factories. They also reorganized the company into functionally organized departments so that similar manufacturing processes were part of the same department. The manufacture of different types of explosives was overseen by different production managers. Production managers reported to a general manufacturing manager. Other departments, such as sales, were functionally organized too. Salesmen would specialize in a specific type of explosive and would report to a general sales manager. The departmental managers, including Alfred and Pierre, along with the president, Coleman, made up the executive committee, which coordinated the various departments. Coleman was in charge of determining the company's broader strategy, and the departments were the responsibilities of their respective managers. Stories

such as DuPont's were not uncommon as companies converted to the U-form (Chandler 1962, 54-58).

There were many benefits to having functionally organized departments. First, it let the departments maximize their ability take advantage of economies of scale through the consolidation of manufacturing and administration. Second, U-form companies were generally able to produce a specific product much more efficiently and cheaply than their H-form or non-integrated counterparts because the different departments were able to increase their manufacturing capabilities through specialization and continual refinement of manufacturing processes (Langlois and Robertson 1995). Third, the U-form made accounting easier for the central accounting office, which could audit and supervise the expenditures of each department. Lastly, centralized control of DuPont's departments allowed for the creation of a research and development department, whose purpose was to increase efficiency along the chain of production and to research new potential products. Without standardized practices that the newly implemented U-form made possible, any attempts to increase efficiency would have been very difficult to put into practice. This department would not have been any use in an H-form firm because H-form companies had no way of efficiently coordinating their subsidiaries to make changes to their production methods.

Despite the fact that consolidation and specialization are the greatest strengths of the integrated U-form, they also cause two of its biggest weaknesses. While some capabilities of the divisions were amplified by the centralized nature of a U-form company, others were lost (Raff 1991). U-form firms were generally less flexible in

their ability to change their production methods because they become over-specialized. By foregoing the capabilities needed to have more generalized production methods, manufacturing firms can specialize in a given production process to increase efficiency and cut costs. Since the departments in U-form firms are encouraged to specialize in their specific function, they lose their more general manufacturing capabilities, making it difficult for them to adjust to a change in a production process.

The other problem with the U-form is that it creates an information bottleneck at the top levels of a firm's management. The reason for this is that as a U-form firm grows, its departments also grow. If departments get too large, department managers can get overwhelmed with day-to-day operations of the department, which prevents them from effectively working towards the firm's larger goals (Williamson 1970, 114).

An overwhelmed manager in such a situation may begin to pursue subgoals that are important to the department but go against the strategy of the firm as a whole. One possible outcome of this is that department managers may not be able to coordinate their own production levels with other departments, leading to production shortages in some departments and surpluses in others. An example used by Chandler to illustrate this problem is how the Armour Meatpacking Company responded to the recession of 1920. When the recession started, demand for meat dropped precipitously, but Armour's factories kept up meat production for two years, despite losing money. This was because the only part of a U-form company that interacted directly with the marketplace was the company's distribution network. Since the departments that dealt with distribution did not have a way to communicate that

demand had dropped to production departments, they continued to produce meat at the same level they had been producing it before the recession. The resulting losses from overproduction were so great that the company's owner, J. Ogden Armour, had to sell the company to creditors because he could not cover its losses. (Chandler 2002, 453-457). This problem with the U-form persists even with general oversight mechanisms such as central accounting departments. These departments can become inundated with more information than they can handle just as production departments can, so they often fail to adequately supervise a firm's other departments (Langlois and Robertson 1995, 39).

The U-form's difficulty with communication between departments can also lead to other problems. For example, it is difficult for U-form organizations to incentivize the development of cost saving innovations within departments. The reason for this is that the success of a given product may result from a combination of several innovations up and down the chain of production, and thus it may be difficult for the central management office to quantify how much credit should be given to each stage that contributed to the success (Williamson 1985, 141). Without a way to fairly reward a given department for an innovation that brings costs down, departments have less of an incentive to innovate. Even within individual departments, advantageous innovations may go unrewarded because as department managers become busier with day-to-day operations, they have little incentive to implement an innovation that could change a process that they already have difficulty overseeing (Chandler 1962, 41). Because innovators were unable to get their own departments to make changes, and because it was difficult for them to communicate

to other departments what changes they needed to make the innovation to work, they were generally lost in U-form firms (Langlois and Robertson 1995, 38).

The Development of the M-form

Just as the U-form held the answer to many of the problems with the H-form, the H-form held the answers to many of the problems with the U-form. H-form companies often had more than one subsidiary for any given production process, so one subsidiary could experiment with an innovation without affecting the manufacturing process at other, parallel subsidiaries. The manufacturing capabilities held by the subsidiaries of H-form firms were not as extensive as those held by the departments in U-form firms, but they were much more diverse, so H-form firms could better adapt if industry conditions changed. This advantage, however, was of limited use in industries where production efficiency was more important than the ability to diversify and innovate. Without the ability to allocate resources or to implement some sort of coordinated strategy for the company, H-form companies were severely crippled in their capability to compete against other better organized U-form companies.

Because of the problems of the H-form and the U-form, firms began to reach the upper limits of how large could grow while remaining profitable by the 1920s. The next step in the evolution of firm organization was the development of the multi-divisional form, or M-form, by Alfred P. Sloan of General Motors. The M-form could refer to any of several management structures that are more centralized than the H-form but less so than the U-form. In the M-form, the upper levels of management make decisions about the broad policies and the allocation of resources within the

company, while lower level managers deal with the day-to-day operations of the divisions (Williamson 1970, 120-121). The key difference between the U-form and the M-form is that the divisions in an M-form company are organized by brand or geographical region and not by their function as they are in the U-form. In the case of GM, for example, many of the divisions Sloan devised were separate car brands. Each division actually operated its own set of functionally organized departments, which were overseen by a divisional manager, meaning the divisions themselves often behaved like small U-form companies (See Figure 1: Comparison of the M-form and U-form). Each brand was in control of its own advertising, manufacturing, and accounting procedures, so long as they were able to operate effectively and to the level of production that had been approved by the central office.

Unlike the H-form and the U-form, which grew organically out of the necessity of firms to consolidate to lower costs and maximize profits, the M-form developed through careful planning by Sloan. Because Sloan's inception of the M-form is so well documented in his autobiography, there is little disagreement that GM was certainly the first M-form company. The reason the M-form did not grow out of the U-form was that it reversed a trend in modern manufacturing organizations toward centralization of management. Until the development of the M-form, the evolution of the modern organizational structure had (in general) gone from the completely decentralized H-form to the completely centralized U-form. In contrast, the M-form, which can be thought of as a compromise that combined the strengths of both the U-form and the H-form, was a step back towards decentralization.

The divisions in an M-form company were not as autonomous, however, as they were in the H-form. M-form companies generally had some centralized departments that would oversee some of the operations of the divisions. According to Williamson, in addition to deciding which functions to centralize and which to decentralize, the central office is responsible for rewarding divisions that perform well, allocating company resources appropriately, setting production at sustainable levels, and performing strategic planning. The functions that were centralized depended on the particular industry the M-form firm was in, but generally they were functions that benefitted from economies of scale (like research and development) or functions that involved auditing the other divisions, such as accounting or legal divisions.

The centralization of some administrative functions was necessary for the upper management to effectively assess the performance of the various divisions. For this reason, firms that did not do this sort of oversight are referred to by Williamson as conglomerates whose “merits, if they had any, presumably resided elsewhere” (Williamson 1985, 284-289). In addition to administrative functions, there are advantages of consolidation of some manufacturing operations in M-form firms that operate primarily within a single industry, such as GM. This is because it is more cost effective to consolidate the development and manufacturing process of a component that is used by all divisions rather than having each division produce the same component individually. If each division developed and manufactured its own components, economies of scale could not be used to lower costs. Centralized part manufacturing can also complement centralized research divisions. The centralization

of research allows companies to standardize commonly used components, and ensures that all divisions were technologically advancing at the same rate (Raff 1991, 744).

In the minds of both Williamson and Chandler, the M-form was a major step forward in the evolution of modern firm management because it has most of the advantages of both the H-form and the U-form and, if structured correctly, has almost none of the disadvantages. The reason for this is that different aspects of firm operation run more efficiently when they are under centralized control, while other aspects run more efficiently when under decentralized control. For the M-form to be successful, it must have the right balance of centralized and decentralized operations, so that the firm can run efficiently while at the same time be able to adapt to changing market conditions (Williamson 1985, 284). With the centralized divisions in charge of administrative burdens like accounting and functions like long-term research, and the company's central management making policy divisions, manufacturing divisions could innovate to meet consumer demand and increase efficiency, but still were unified enough to use economies of scale to operate efficiently as a large enterprise (Chandler 1964, 119).

M-form companies are also better at incentivizing their divisions to perform better than U-form companies are at incentivizing their departments. This is because M-form companies have parallel divisions that perform the same set of functions, so there can be competition between divisions within the firm. Because the central auditing office evaluates all the divisions in an M-form company using the same accounting methods, they can easily see which divisions are more efficient (Maskin,

Qian and Xu 1999). Thus the firm's central management can easily reward the better performing departments and try to apply their methods to the less efficient ones. Also, because there are parallel divisions, some of the division managers are in charge of similar production processes, so they can help one another cut costs. In the H-form, there is generally no medium by which the managers of different subsidiaries can talk with one another, and in the U-form, department managers specialize in a specific task, so their suggestions may not apply to other departments. Divisional managers at M-form are able to work together to try to determine what management techniques work best, and then standardize them throughout the company.

Given that most large manufacturing enterprises at the start of the twentieth century were organized as U-form firms, it is interesting that GM, the first M-form company, was not. GM started out as an H-form company and became M-form by centralizing some of its operations. This was relatively unusual, as most M-form firms developed from U-form firms through decentralization. A major reason for this difference is that Alfred P. Sloan reorganized GM as an M-form firm out of necessity following the 1920 recession. After GM became an M-form firm, several U-form firms saw its advantages and reorganized as M-form firms for the purpose of expansion. Sloan wanted to keep GM as decentralized as possible while maintaining enough central control to keep it from being susceptible to the problems with the H-form. By recognizing the advantages of both the U-form and the H-form, Sloan was able to combine them into M-form, which not only to brought GM back to profitability, but also revolutionize the way that firms were organized.

Chapter 2 – The Successes and Failures of Ford's U-form

"Any customer can have a car painted any colour that he wants so long as it is black."

Henry Ford, 1922

Two Founders with Two Very Different Philosophies

At the time that Ford and General Motors were founded by Henry Ford and William C. Durant, respectively, the two major management structures that existed were the H-form and the U-form. Both Henry and Durant had confidence in the nearly infinite growth potential of the automobile industry (Livesay 1979, 171-172). However, the two men had different ideas about how to capitalize on the potential of the automobile, which led them to organize their companies in different ways. Their respective philosophies led Henry to found Ford as a U-form company and Durant to found GM as an H-form company.

The different management forms chosen by Durant and Ford can be traced back to their opposing theories about how the automobile industry would advance technologically. Durant believed that the key to success was to invest in many different companies with different growth strategies and technologies, which would maximize the chance that at least some investments would turn a profit (Pelfrey 2000, 15). The reason for this was that when Durant was assembling General Motors, there were several different technologies that were vying for dominance in the automobile market, including cars with gasoline, steam and even electricity powered engines. Furthermore, there were other technological variants in engine designs within these technologies, meaning that even if one fuel source came out as dominant there was no guarantee that one specific engine design would dominate along with it (Volti 2004, 7-15).

To hedge his bets on the future of the automobile industry, Durant acquired several different manufacturers over his tenure so that when one technology emerged

as dominant, GM would be able to compete. This led Durant to organize GM as an H-form company because the H-form maximizes the freedom given to various divisions, departments, and subsidiaries within the organization. Durant knew that some of his ventures might not be successful, but he also firmly believed that the future of the automobile industry was bright (Livesay 1979, 230-234). The H-form guaranteed that he and his company would be able to capitalize on the growth of this new industry because it did not limit the scope of GM's production capabilities as the U-form would have.

In contrast to Durant, Henry was committed to the gasoline engine early on, so he looked inward to his own company in his strategy to take over the industry, choosing to develop and refine his own designs rather than investing in various different technologies. As a self-made businessman from a humble background, Henry believed that the key to the success of the car industry was making the automobile more affordable to working class people. Also, unlike Durant, Henry was himself an automobile engineer, and he placed great value on his ability to control every aspect of his car's design. The U-form allowed him to accomplish both of these objectives because it let him maintain control of everything and everyone in his factories while at the same time allowed him to use substantial economies of scale on to lower costs. Unfortunately for both Durant and Henry, while the H-form and U-form both had their advantages, they had disadvantages too, which would eventually cause trouble for both of their companies.

The Origins of Ford and General Motors

Henry first began his work with gasoline powered cars in 1896, while working as chief engineer for the Edison Electric Light company in Detroit. It was there that he built his first gasoline powered carriage, which he called the Ford Quadricycle, as a side project (Langworth 1987, 8). By 1899, Henry had become a well-known car engineer and was able to get enough financial backers to start his first business, the Detroit Automobile Company. Though he did not manage the company, Henry was in charge of design and production. The company built cars for private use, but they were failures in the marketplace, and the company ceased operations in late 1900. In the three years following the demise of the Detroit Automobile Company, Henry began building race cars which he entered in races at the Grosse Pointe race track outside Detroit (Bak 2003, 35-43). As Henry's cars began regularly winning races, his reputation as a master automobile engineer grew.

In 1901, Henry was able to get financial backers to help him start the Henry Ford Company. Perhaps as a foreshadow of what was to come, Henry left the Henry Ford Company in March of 1902 after several disagreements with the company's investors about who decided what car designs the company should build. Henry left because his investors would not let Henry develop new car models. After Henry left, the company's investors brought in Henry Leland, a well-known engine designer, to appraise the company's assets for liquidation. However, Leland convinced them to stay in business and to put him in charge of car design and production. Leland had the company reincorporated under the name Cadillac, after the founder of the city of Detroit, Antoine Cadillac. In subsequent years, Cadillac would gain an unsurpassed

reputation for making quality cars, and ironically was bought by Ford's eventual chief rival, General Motors (Bak 2003, 44-45).

After leaving the Henry Ford Company, Henry entered into a contract to build racecars for a wealthy bicycle racer named Tom Cooper. However, after building the cars Cooper wanted, the two of them ended their partnership for personal reasons. Henry's next venture was the Ford & Malcomson Company, which Ford founded on August 20, 1902 with the backing of Alexander Malcomson, a coal dealer. With the Ford & Malcomson Company, Henry once again attempted to build an automobile that could be used for commercial and private use and would be affordable to working class Americans. However, once it became obvious that the new company's startup costs would exceed the investment that Malcomson provided, Henry began to seek out other potential investors. After securing more investors, Henry incorporated the Ford & Malcomson as the Ford Motor Company on June 16, 1903. Over the next five years, Ford released eight models that met with mixed success, but none of them was cheap or reliable enough to be attractive to the working class until he introduced the Model T in 1908 (Bak 2003, 47).

Henry's desire for control that caused him to leave the Henry Ford Company is largely what pushed him to establish Ford as a U-form firm. The U-form enabled Henry to maintain better control absolute control over Ford's production because he could orchestrate Ford's entire production process from the top down. Henry believed this would lower costs by minimizing human error, an idea that is a main tenet of Fordism, which is discussed later (Bonsall 2002, 19). Henry's desire to lower costs through minimizing interdepartmental interaction did have some merit, as the price of

the Model T continually dropped almost every year it was produced. However, the problems with interdepartmental coordination in the U-form eventually had negative consequences for Ford in the 1920s.

Unlike Henry, Durant was a businessman instead of an automobile engineer, and unlike Ford, GM did not start out as a small automobile assembler that gradually grew over time. Durant grew up working in his father's lumber yard, dropped out of high school at seventeen, and afterward proceeded to move around between several different jobs for a few years. One day, while working as a meter reader for a gas company, Durant happened to take a ride in a horse-drawn cart that was made by a nearby Canadian company (Gustin 2008, 18). Durant was so impressed by the smoothness of the cart's ride that he and his friend, Josiah Dort, ended up buying the company for a $1000 investment each. Following their purchase, Durant and Dort reincorporated the company in Flint, Michigan as the Flint Road Cart Company in 1886. After the company experienced several years of substantial growth, they reincorporated it again as the Durant-Dort Carriage Company in 1893. By the beginning of the twentieth century, Durant had become a millionaire from his and Dort's original $2000 investment (Gustin 2008, 39).

Durant's entrance into the automobile market was relatively unexpected, as Durant felt that so-called "horseless carriages" were noisy, dangerous, and had a foul odor (Gustin 2008, 67). Even though these complaints were common, the US automobile market was steadily growing by the turn of the century. As more people began to purchase cars, more small manufacturers began to pop up all over the Michigan area. Michigan was not the only place in the country that had a high

concentration of automobile manufacturers. There were several companies that started in New England as well. It is generally thought that the reason the Michigan area won out was that most of the major technological advances in automobile manufacturing, including the development of the moving assembly line, were thought of by people in the Michigan area (Rae 1959, 59). Once Michigan was established as a major automobile manufacturing center, it became a very attractive location for automobile part supplier companies to do business. Michigan had a potentially huge market for parts that could be cheaply delivered because shipping distances were so short. This made Michigan very attractive to parts suppliers from a transaction cost standpoint, which in turn attracted more automobile manufacturers (Glasmeier and McCluskey 1987).

One of these small manufacturing companies was the Buick Motor Company, which began making gasoline powered engines in 1901 in Detroit. The company was founded by engineer David Buick and his financial backer Ben Briscoe (who would be instrumental in the formation of GM with his later venture, the Maxwell-Briscoe Motor Company). The company struggled for its first two years, so Briscoe sold Buick in 1903 to a businessman named James Whiting, who moved the company to Flint and invested heavily in the company by building a brand new factory that had the capacity to manufacture entire automobiles (Gustin 2008, 61). This factory was up and running within a year, so by 1904, Buick was producing finished cars. Unfortunately, Buick's investment in its new factory had depleted its entire capital stock, putting the company so far in debt that it did not have the capital to produce cars. Whiting approached Durant in 1904 to save his company. Whiting knew Durant

because in addition to Buick, he also ran a competing road cart manufacturing company in Flint. To convince Durant automobiles were not as bad as he thought, Whiting took him for a ride in a completed Buick. Durant was so impressed with the car that he purchased the company and invested needed capital into its factories to ready them for production. Under Durant's leadership, Buick grew considerably to the point that by the time that Durant founded GM in 1908, Buick had become the largest manufacturer in the industry (Gustin 2008, 60-75).

While Durant did enjoy making impulse purchases to expand his empire, his plan to consolidate the automobile industry, which ultimately led him to found GM, was actually initiated by a call from the aforementioned Ben Briscoe, the owner and president of the Maxwell-Briscoe Motor Company. Briscoe, thought that the automobile manufacturing industry would inevitably consolidate into a single dominant firm accompanied by several much smaller niche firms, just as Standard Oil and US Steel had come to dominate the oil and steel industries (Pelfrey 2006, 116). To make sure that he was not a loser in the inevitable shakeout, Briscoe called Durant to arrange a meeting to discuss a possible merger of their two companies in the spring of 1908. Following their meeting, Briscoe arranged another meeting among the heads of the four largest automobile manufacturers at the time – himself, Durant, Henry, and Ransom E. Olds, the owner of Reo.

The four owners were unable to come to a consensus on how to merge their companies because they could not agree on who would eventually be running the new company, or even the market values that would be used in the sale of their respective companies. After the talks failed, Henry and Olds went back to running their

companies as if the meeting had never happened. Durant, however, had pulled several strings in order to get Buick's stockholders to agree to a merger, so he was worried that he would lose credibility if he did not come back with some results (Pelfrey 2006, 124). Consequently, his talks with Briscoe lasted somewhat longer than those with Olds or Henry, but eventually those talks fell through as well. The reason they failed was that Briscoe wanted the new company to be a U-form enterprise that merged all aspects of the company including manufacturing operations, while Durant was determined to create an H-form company that would consist of several independent manufacturers.

Durant's concern with consolidating into a U-form company was that, in addition to stifling innovation, consolidating the various functions of the four manufacturers would lead to confusion because the companies would have to change how they operated, especially since the four owners could not agree on who would be in charge should a merger take place. By pointing this problem out, Durant identified one of the key advantages of H-form organizations. H-form firms can easily acquire subsidiaries that are difficult to integrate into the firm's existing operations because the new subsidiary does not necessarily interact with the chains of production used by other subsidiaries. Some of Durant's later investments, such as the Fisher Body Company, were not immediately useful to GM at the time, but proved invaluable as the market changed. This type of conglomeration of non-related firms is not possible at a U-form firm such as Ford, and arguably prevented Ford from making proper long-term investments (Langlois and Robertson 1995, 64-65).

True to his vision of creating a decentralized H-form company, Durant founded the General Motors as a holding company on September 16, 1908 and, on September 28, Durant convinced Buick's board of directors to allow GM to purchase Buick through a one-to-one swap of Buick stock for GM stock. Now that he was in charge of a holding company, Durant was able to follow through on his promise of acquiring another automobile manufacturer. Durant arranged for the purchase of the much smaller Olds Motor Company, popularly referred as Oldsmobile. Oldsmobile had been started by Ransom Olds (who later went on to found the aforementioned Reo Motor Company) in 1897, but he left the company in 1904 because his financer, Fred Smith, was forcing Olds to make more expensive models than Olds wanted to (Forbes and Foster 1926, 234-235). Following Olds' departure, Oldsmobile's sales slumped considerably, so Smith readily accepted Durant's buyout offer. Oldsmobile was acquired by GM in December 1908 through a stock swap similar to Buick's, and became the second of dozens of acquisitions to be made by GM in the first two years of its existence (Pelfrey 2006, 130-131).

The Initial Success and Subsequent Failure of Fordism

As Durant began building up GM over the next two years, eventually creating one of the nation's largest H-form companies by buying up other small manufacturers, Ford was growing rapidly as well, as a result of the success of the cheap and reliable Model T. However, while the Model T generally associated with the moving assembly line, the first few model years of the Model T, between 1908 and 1912, were actually assembled by hand as cars had always been. The production

increases that Ford achieved were due to the hiring of more workers, not investment in a more efficient assembly line.

The Model T's combination of high dependability and low price (it cost only $825 in its first year) made it an instant success. Its fame continued to grow as the Model T began winning highly publicized races. Ford dealers were unable to keep them in stock, forcing the company to enact a policy in which a dealer would only be supplied with more Model Ts if they sold out their entire inventory. Adding to its success was its mechanical simplicity; if it did break down, any person with basic knowledge of how cars worked could fix it. Ford manufactured over fifteen million Model Ts during the nineteen years it was manufactured. Model T sales alone accounted for over half of industry sales for many early years of its production, and even as it started to lose market share, sales of the Model T continued to grow into the 1920s (Langworth 1987, 23).

Because the Model T used mostly off-the-shelf components in its production process, it did not require proprietary tools or labor skills. This made its production process simple to divide into steps that could be assigned to departments within Ford's factories. Ford could easily adjust the production processes used by different departments in the manufacturing process to find ways to increase his factories' overall output capabilities. Henry's desire to increase Model T production efficiency soon led the company to backward integrate into parts suppliers so as to reduce transaction costs between Ford and its suppliers. By integrating backward, Henry hoped to further increase Ford's overall production capabilities through the gradual

consolidation of all of its operations, including parts production, into one enormous chain of production that could be centrally managed.

The low price market segment was created by Ford with the Model T, and until the 1920s, the Model T was essentially the low price segment's only entrant. For this reason, it took more than a decade for enough Model Ts to be made for a used Model T market to develop, so a brand new Model T was the only car choice for many people, making price the only point of comparison for these customers. Under these market conditions, the Model T did not have to become more technologically advanced to attract customers, it just had to keep getting cheaper. Henry took this opportunity to continually refine the Model T's manufacturing process to squeeze as much efficiency as possible out of his workers and factories because he did not have to worry about competitors stealing his customers. This strategy was immediately successful, allowing the Model T to overtake Buick as the country's best-selling car in 1909.

Before the Model T brought the automobile to the masses through its combination of inexpensiveness and reliability, the automobile industry was only available to the upper classes of society. When the Model T overtook Buick in sales, it was not because Buick's popularity was declining, but that the popularity of low cost cars was growing. This is why the Model T declined in popularity in the 1920s while Buick did not. The Model T's production process was excellent for cheaply producing a car that was being sold to an expanding market. Unfortunately for Ford, once people started wanting nicer cars, demand for the Model T plummeted. While Buick's production process was less efficient than Ford's, it was flexible enough to

allow Buick to keep up with changes in technology and consumer demand. Thus, Buick was able to maintain consistent sales figures through 1920s even though its Buick segment was smaller.

In his quest to raise his factories' production capabilities, Henry came up with one of his most famous innovations: the moving assembly line. The idea of using an assembly line in automobile manufacturing can actually trace its roots back to Ransom Olds while he was still running Oldsmobile. For a few years at the start of the century, before the company found itself near financial ruin in 1908, Oldsmobile was the top selling brand in the country. To keep up with demand Ransom Olds installed an experimental assembly line in one of his factories in 1901, and soon implemented it in all his factories. In Oldsmobile's assembly lines, workers were assigned to stations to perform one step of the manufacturing process on a partially completed car before moving it to the next worker's station. Using this concept, Olds was able to quadruple production of his factories in just one year (Rae 1959, 30-31). The innovation Ford came up with was the addition of conveyors to the assembly line which further decreased the time and cost of making an automobile. According to several sources, Ford was inspired to use moving conveyors after seeing them successfully implemented in meat and grain processing factories.

Ford's adoption of moving conveyor belts were part of his larger philosophy of his called *Fordism*. Fordism was based on *Taylorism*, the theories developed by Frederick Taylor about the scientific management of factories. According to Taylorism, any task in a production process can be done at maximum efficiency by empirically measuring the most efficient way of doing the task and finding the most

adept worker to perform the task (Jordan 1994, 36). Fordism built on Taylorism by minimizing the role of human workers in the production process. Henry believed that the biggest source of inefficiency in his factories was human error, so he wanted to automate his factories as much as possible. By adding conveyors to his factories, Henry succeeded in further removing human interaction from the Model T production process.

Henry first installed conveyors in Ford's Highland Park factory in August of 1913 to distribute parts quickly around the factory, and in October this concept was expanded upon and conveyors were installed that were large enough to move entire partially completed cars around the factory. The cars would slowly proceed down the assembly line and workers would do their task before the partially assembled car moved on to the next worker. Production time for the Model T was immediately halved, and it continued to decline over the next several years (Langworth 1987, 34). As the decade went on Henry continually refined his moving assembly line to produce more quickly and more efficiently. The idea of streamlining the production process extended to all aspects of the Model T's production. In fact, the Model T was only produced in black between 1914 and 1925 because black paint dried faster than other colors, so using only black sped up overall production (Langworth 1987, 34-36). Over the years, features were added to the car, such as electric starters and expanded cabins, and even some modest styling updates to the look of the car to stay somewhat competitive with competitors. However, for the most part, very little changed about the Model T over the entire period it was manufactured, which enabled Ford to continue refining Model T production to shave costs from its production.

Henry operated several different factories over the course of the production of the Model T, but his factory at Highland Park, Michigan was the one most widely associated with Model T production. At sixty acres, the Highland Park facility itself was not particularly large, though the factory building was the largest building in Michigan at the time it was constructed. What made the factory significant was its unprecedented level of organization. Ford employed 16,000 workers at the factory, and they were all coordinated to be able to produce a car every ninety-three minutes.

The Highland Park factory, however, was only the beginning of Henry's ambition to completely centralize and coordinate his company's automobile production (Langworth 1987, 25). The River Rouge plant in Dearborn, Michigan was conceived by Henry following World War I as the answer to the ever increasing demand for Model Ts. At 1,200 acres, the factory far more comprehensive than Highland Park, including a power plant and raw material processing facilities for things like glass, rubber, and unfinished wood. The factory was so large and complex that it took until 1928 to complete, though it had begun operations several years earlier making parts for the Model Ts produced at Highland Park.

After equipping Highland Park plant with conveyors, Ford became extensively backwards integrated because of Henry's belief that, with the right procedures, he could scientifically perfect the manufacturing methods used by supplier firms and lower Ford's costs. Consequently, as his company grew during the 1910s, Henry purchased raw material suppliers and part manufacturers all over the continent, expanding his network of factories and facilities to include mines, forests, as well as many factories. At Henry's insistence, Ford maintained ownership of these

assets through World War II, even though many of them never became profitable. For example, Henry was insistent on purchasing a large plot of land that contained rubber trees in the Amazon rain forest in 1928, which persistently lost the company money until it was sold during Ford's restructuring following World War II. During the years the Model T was in production, however, these purchases were an essential part of Henry's plan to control every step of his company's production (Grandin 2009).

The Rouge River factory was built to take advantage of Ford's backward integration into raw materials. This plant was originally intended to house the entirety of the Model T's production process, so it was built with the facilities to process completely all of the raw materials used in the Model T. Raw materials such as coal, iron ore, and wooden logs would be delivered from their source at one end of the factory, and Ford automobiles would emerge out the other end (Bak 2003, 108-110). By automating as much as possible nearly the entire automobile production process in a single facility, the River Rouge Factory embodied Fordism more than any other single project. It was built to fulfill Henry's vision of a completely backward integrated U-form production line by replacing not only the assembly functions of the Highland Park factory, but also the functions of many of the Ford factories that supplied Model T parts. Though the Model T was cancelled before the factory could be put to use extensively for its production, it was used for Ford's subsequent models and remains one of Henry's crowning achievements as the epitome of vertical integration and consolidation of manufacturing processes due to its size and complexity (McCarthy 2007, 57).

The River Rouge factory was intended to make workers have as little to do with Model T production as possibly by allowing Henry to calculate and control every step of the production process. However, as the largest U-form facility ever created up until that point, the River Rouge factory proved to nearly be impossible to effectively manage with the U-form because of the informational bottlenecks that plague large U-form organizations. The factory's workforce was too vast to be adequately overseen by any number of managers because, even if lower level managers had the same amount of responsibility as they did in smaller factories like Highland Park, the larger Rouge factory required more upper level managers. The problem of overseeing the factory compounded upon itself further up the management hierarchy, and as a result, the River Rouge factory had a relatively well run staff on the floor of the factory, but a disorganized management structure. The poorly organized managerial structure at Ford continued to cause problems at the factory when Henry began updating his models more regularly. Any major changes in car design were difficult to implement, which continued to cause problems at the company until it began to switch to the M-form.

Social Controls at Ford Produce Mixed Results

In addition to designing his factories to be as efficient as possible, Henry also tried to make his workers work as efficiently as possible. In his autobiography, Henry states that he did not see different parts of the chain of production as different cogs in a metaphorical machine. Rather, he saw his workers as machines that, like the other equipment in his factories, could be optimized to work at maximum efficiency. Henry believed that any communication between employees would distract them and lead to

inefficiency, so he instituted several policies to reduce his employees' social interactions (Forbes and Foster 1926, 105). This attitude is consistent with the U-form, because it allows departments to further specialize in their own tasks by keeping them separate from other departments. Fordism assumes that if departments were allowed to freely interact with departments upstream or downstream in the production process, they would not be able to specialize as effectively because they would be distracted.

Another reason for keeping workers isolated was that Henry thought that a worker's desire for recognition would impede that worker's efficiency. If a worker thought that he needed to get credit for his work in order to get promoted, his main goal would be to get recognition for his work, not the work itself. Henry thought that this type of attitude would arise if workers were permitted to socialize, so he tried to limit the interaction between workers as much as possible (Ford 2009, 73). Henry wanted to perfect the Model T production process to the point where no human interaction was necessary, and in fact wrote that "it is not necessary for any one department to know what any other department is doing" (Ford 2009, 69). By perfectly timing and measuring all aspects of Model T production, Henry thought he could continually drive costs down at his factories.

As part of increasing the efficiency at his plants with the assembly line, Ford's workers were assigned a single task to master. While Henry did not believe that an assembly process could actually be perfected, he did think that a worker could strive toward perfection, with ever increasing efficiency as the end result (Ford 2009, 74). It was for this reason that, like Taylor, Henry supported the specialization of his

workers. Henry dismissed the idea that there were downsides to repetitive labor, and had no patience for noncompliance in the lower levels of his employ. To Ford, a disobedient worker who altered a process would disrupt the entire chain of production, and therefore was not to be tolerated (Ford 2009, 84). The repetitive labor requirements, however, contributed to a high turnover rate at Ford's factories. Henry tried to counter this by paying his workers a high wage.

One of the main advantages of the U-form is that various departments specialize in a single task, allowing them to increase productivity over time, so long as the goal of their task remains relatively unchanged. Henry realized this, and came to the conclusion that the extra money spent to keep workers at a specific job for an extended period of time was less than the long-term cost of persistently having to train new employees. This policy constitutes another area where Fordism expands upon Taylorism. An important part of Taylorism is that wages should incentivize workers to work as efficiently as they can, by rewarding effort (Haber 1964, 27). While Henry did not reward his employees based on effort alone (as that likely would have been difficult to measure), his wage policy constituted an incentive for employees to stay with his company and presumably get better at their task over time. Regardless of whether his workers did in fact put in more effort as a result of Henry's policies, the wage did manage to keep workers from quitting and allowed his factories to lower cost through worker specialization.

Henry began offering his workers the famous $5 per day wage in 1914. The $5 a day wage was more than double Ford's previous wage rate, but it had a catch. Only part of the workers' wage was calculated at an hourly rate. The rest was

distributed as a bonus in what Henry described of as a form of profit sharing. Ford's profits were distributed to employees so that, when added to their earned wages, the total amount they were paid added up to at least $5 a day. The profit sharing portion of wages was paid at a different interval than the workers' standard wages, and came with some strings attached (Ford 2009, 96).

Henry did not believe in charity and was not paying high wages in order to make his workers happy or to let them live more prosperously(Sorenson 1956, 141). The conditions he attached to the profit sharing bonus portion of his worker's wages were a testament to this. To collect their bonuses, workers had to prove that they were living an "acceptable" lifestyle. To enforce these conditions, Henry had investigators make sure that employees took care of their families and did not participate in what Henry regarded as unacceptable social behavior, such as renting out their houses to boarders or even drinking alcohol (Ford 2009, 96-97). The department in charge of determining whether a worker led an acceptable lifestyle was the called the Sociological Department. It existed from 1913 to 1921 and consisted of up to eighty investigators whose sole task was to make sure that his employees were living in a style that Henry saw as wholesome. They did this through routine inspections of the homes of employees, as well as by interviewing neighbors (Bak 2003, 72).

The higher wage rates paid by Henry worked on two levels. First, they allowed Henry to directly control what types of activities his employees participated in. In Henry's mind, this cut down on the distractions that his workers were burdened with and allowed them to work harder, which benefitted the company and the worker. Second, Henry thought that laborers would work harder if they were not worried for

their own financial security. Paying them higher wages allowed them to devote more concentration to their jobs (Ford 2009, 98).

Henry believed that various non-work related activities that his employees were involved in distracted them, in a sense preventing them from becoming fully specialized. Efficiency increases through specialization are a key advantage to organizing as a U-form company, and given that Henry looked at his factory workers as machines hired to perform specialized tasks, it would make sense that he would want to get rid of anything that was preventing them from maximizing their productive capabilities. Thus, as in Taylorism, Fordism used wages to incentivize workers to perform more efficiently. However, unlike Taylorism, Fordism focused on increasing the ability of workers to specialize, not on the specialization itself, because Fordism already assumed that workers are trying their hardest from the outset, as they otherwise would be fired.

In contrast to the strict social control policies outlined in the previous few paragraphs, as an employee moved into and up the management hierarchy in Ford's factories, the boundaries defining the responsibilities of his position became increasingly blurred. While workers on the factory floor were assigned a single, repetitive task, managers often had little oversight and could do whatever they wanted whenever they wanted so long as their direct subordinates continued to perform acceptably. While Ford did have a loose hierarchy of management that rose from wage laborers at the bottom to the factory general superintendent at the top, in his autobiography, Henry seems to be unconcerned with precisely how the overall factory was managed (Ford 2009, 70). Unlike the factory workers that were strictly organized

by function, factory managers often had several unspecialized assistants doing jobs that spanned different departments. This was not a problem for Henry so long as those assistants were adequately doing their jobs.

Henry claimed that the reason that he was less strict about how his factory managers operated was that he firmly believed that superior workers would rise to the top and advance. A worker would advance as far as his abilities let him meaning that a worker who did not distinguish himself did not do so because he was inferior (Ford 2009, 75). In other words, he trusted his employees to manage effectively, so there was no need to bother policing them. Henry believed so strongly that his managers were promoted based on merit alone that he had a policy against assigning arbitrary titles to positions. Henry thought naming his managers' positions would encourage managers to pursue titles rather than increased efficiency and would allow managers to pass off responsibility by saying it was not under their jurisdiction.

It is slightly contradictory to the idea of the U-form that Henry did not give his managers specifically defined roles. One would think that Henry, who wanted to make sure that his lower-level workers were undistracted by other departments, would think the same principles would increase efficiency at higher levels of management as well. The absence of such a policy in Ford's management hierarchy actually shows where the U-form began to break down in Ford's factories. As Ford grew, the upper managers became unable to manage the areas they were responsible for. This was the reason they needed to hire non-specified assistants to help them. By acknowledging that his managers operated independently and needed assistants to perform their duties, Henry was admitting to a fundamental failure of the U-form.

Managers in Ford's factories were promoted, demoted, or fired on the basis of how their bosses perceived their performance. The way a manager's performance was evaluated was completely up to his boss, so managers were constantly under pressure to make sure everything in the factory in many departments was running efficiently. This led to subgoal pursuit because subordinates would end up performing only the duties that would please their bosses. By managing factories without any strict guidelines, Henry overburdened his managers with the day-to-day operations of his factories because managers were responsible for more than just their own department. This problem with the U-form was identified by Chandler, who said that U-form departmental managers can become lost in their department's operation if a firm gets too big, hindering their ability to manage effectively in the long-term (Williamson 1981, 1555).

While this laissez-faire attitude toward upper level managers worked for the relatively small Highland Park factory during Model T production, it had disastrous results for Ford in the 1930s as the company expanded its product line. Because Ford was organized as a U-form company, as the departments grew, managers devoted more and more time to overseeing day-to-day operations at the expense of their other duties. They ignored or delegated out administrative duties such as budgeting and auditing to assistants. As a result, Ford had no effective way of evaluating departmental performance for cost or production efficiency. Without an apparatus to assess a manager's or department's performance, Henry's meritocracy broke down and the company became increasingly unmanageable.

Chapter 3 – The Successes and Failures of GM's H-form

"They say I shouldn't have bought Cartercar. Well, how was anyone to know that Cartercar wasn't going to be the thing? It had friction drive and no other car had it."

William C. Durant, 1909

Durant's First Reign as President of GM

Following the creation of GM in 1908, William C. Durant had in place the infrastructure necessary for his strategy to take over the automobile industry. Durant thought that the horizontal combination of various automobile makers and suppliers without consolidation of their manufacturing processes would increase the diversity of GM's manufacturing capabilities beyond those of its competitors (Rae 1959, 88). In this way, GM would be able to more easily adapt to changes in the marketplace. Durant believed that the popularity of different car makes went through cycles and having an H-form company with several makes in effect increased the likelihood that he always had at least one popular brand of car (Pelfrey 2000, 15).

Durant incorporated GM in New Jersey, which at the time of GM's founding had state laws that said a company could issue as much stock as it wanted without regard to the actual value of its assets. This gave Durant an essentially limitless supply of capital with which to acquire new companies, and Durant went on a buying spree that lasted until 1910. Thus, during the first two years of its existence, GM acquired other automobile manufacturers, parts suppliers, and even firms that were completely unrelated to the automobile industry, like light bulb manufacturers (Pelfrey 2006, 126).

Within a few weeks of GM's incorporation, Durant ascended to the presidency. As president of GM, Durant had nearly complete control over what acquisitions the company made. However, as part of his strategy to maximize the diversity of GM's capabilities, Durant let GM's various acquired companies run with little official oversight from GM's central management, thereby allowing them to

retain their individual characteristics. In Durant's mind, significant consolidation or interference by GM's central management would have caused GM to lose its diversity, especially with regard to the mechanical differences between GM's makes (Bartlett and Ghoshal 1993). This was also done because it was often a condition of his acquisitions that he not interfere with how they were managed (Pelfrey 2006, 136). Whether his subsidiary's managers liked it or not, however, Durant would occasionally drop in on the companies he acquired and would even suggest changes to employees without the consent of their managers. While these drop-ins were often simply due to Durant's interest in what his companies were doing, other times they were done in response to specific issues with how the firms were performing.

One of the more famous instances of Durant intervening took place shortly after GM's acquisition of Oldsmobile. When GM bought it, Oldsmobile had been suffering from mismanagement for years. Oldsmobile's previous owners had incorrectly assumed that consumers were trending towards larger, more powerful cars, when in fact the fastest growing area of the market was for lower cost, smaller cars like the Model T, especially since the Panic of 1907 cut into consumer demand. Consequently, Oldsmobile had neglected to advance development of its low-end model (Rae 1959, 31-32) and was hemorrhaging money. To quickly and cheaply remedy this problem, Durant travelled to Lansing, Michigan, where Oldsmobile was headquartered, and showed Oldsmobile's engineers how they could cut a Buick car body into fourths (at this time, car bodies were still made mostly out of wood) and rearrange the pieces to slightly alter the length and width of the car. This created a completely different looking car body that used essentially the same parts as the

Buick. When it went into production, the new Oldsmobile was an immediate success and reversed Oldsmobile's declining sales trend (Pelfrey 2006, 131-132).

With this demonstration, Durant was able to showcase the way that GM could take advantage of its H-form structure. Buick and Oldsmobile could both have distinctive styles while cutting costs through part interchangeability (Pelfrey 2006, 133). This cost cutting measure continued to prove itself as GM expanded through the acquisition of parts suppliers, which could cheaply supply parts to both Oldsmobile and Buick. Given that Buick and Oldsmobile were both car manufacturers, they shared at least some components, making this sort of consolidation possible under the H-from even if they did not explicitly decide to use the same components.

After reviving Oldsmobile, Durant purchase several more manufacturing and supplier companies over the next two years. In fact, in 1908, Durant once again attempted to purchase the country's number two automaker, Ford, but as Henry wanted cash instead of a stock swap, the deal eventually fell through. Not deterred by the failed deal with Ford, GM acquired Oakland (which would later be renamed Pontiac) and Cadillac in 1909. By 1910, GM had a controlling interest in ten manufacturers and controlled 21% of the automobile market (Pelfrey 2006, 140-146).

Part of the reason that Durant was easily able to acquire so many companies was that the companies he purchased were often struggling or in debt. Usually, Durant decided to buy a company not because it was profitable, but because it had unique facilities or technologies that he thought might one day be valuable or lucrative (Pelfrey 2000, 15). Durant's approach was to revive the companies that he bought as quickly as he could by infusing them with capital and making necessary

management changes, then let them operate relatively independently. Even Cadillac, which Durant desired enough that he was willing to pay for it in cash instead of GM stock, was in the midst of a sales slump when Durant approached its owners with a buyout offer (Gustin 2008, 121). The reason Cadillac was so valuable to Durant was that it had an unsurpassed reputation for its ability to maintain high quality while using standard, off the shelf parts that lowered production and maintenance costs, attributes that Durant realized would make it one of his most profitable brands (Pelfrey 2006, 134-137).

One of Durant's earliest purchase attempts was in 1908, when Durant almost closed on a deal to buy Ford. At this point, the Model T had not yet become popular, but the sale fell through because Henry refused to take GM stock as payment in lieu of cash. Interestingly, as Ford's success grew and the Model T became the top selling car in the US in 1909, Durant stated that he did not regret his choice not to purchase Ford because he would not have led it in the direction that Henry did (Pelfrey 2006, 141). Ford invested heavily in the centralization and consolidation of all processes in the chain of production. Durant, on the other hand, preferred to let each manufacturer keep its own facilities and method of production and did not force consolidation. There is no way to know whether Ford would have grown to the same degree with Durant influencing the department, or whether Henry would have even stayed on as manager of Ford if he did not actually own the company. Either way, if this deal had taken place, the landscape of the automobile industry would have looked radically different than it did in the 1920s.

The continual expansion of the automobile market was able to fuel Durant's spending spree for the first two years of GM's existence, because car sales were booming, so nearly everyone wanted GM stock. Regrettably, Durant's unbridled spending habits combined with GM's decentralized H-form management style led to several problems at the company when sales of higher-priced cars stalled in 1910 due to a minor drop in consumer activity. Because the numerous acquisitions made by GM, the company had become too dependent on the growth of industry sales to fund its day-to-day operations. Even with limitless ability to issue stock to pay for acquisitions, GM still had to make payrolls and buy parts and materials in cash. GM did not need cash to buy companies, but did in order to operate them. This was especially problematic because many of the companies bought by GM were unprofitable and had to be subsidized by GM's more successful brands, like Cadillac and Buick. This meant that Durant had to convince the managers of Cadillac and Buick to give up some of their profits to help GM, a prospect they were not happy about.

Adding to GM's troubles, because Durant agreed to allow his subsidiaries to remain independent after their purchase, GM was weighed down with repetitive costs that could otherwise have been reduced through the consolidation of management (Pelfrey 2000, 17), such as legal or accounting departments. Additionally, each company kept its own inventory of parts and had its own production facilities, so they could not effectively take advantage of economies of scale by collectively bargaining for parts contracts or by combining manufacturing processes (Pelfrey 2006, 147). Even after showing how GM could cut costs through some consolidation as in the

Oldsmobile example described earlier, GM's subsidiaries continued to buy parts from independent suppliers, and GM's own parts suppliers would often charge high prices even if they were selling to other GM divisions (Freeland 2001, 45-47).

The ultimate consequence of all these inefficiencies was that when GM's sales dropped in 1910, the company had too little money on hand to continue producing cars or even to pay its employees. To save his company, Durant finally a group of Boston-based bankers led by a man named James Storrow to loan GM the money it needed. The price of the loan was steep; for the $20 million loan, the bankers wanted $6 million in stock, $3 million in interest, and for Durant step down from his post as president of the company, though he could stay on as an advisor to the board with the title of vice president (Gustin 2008, 139-141). Furthermore, the contract stated that the bankers would retain control of GM for five years regardless of who owned the majority of GM's stock.

This deal being the only option, Durant had to accept it, and on September 26, 1910, he ceased to be in control of GM. Storrow assumed the role of interim president. Because Storrow and the other bankers did not know very much about the industry they were getting into, they tried to fill GM's management positions with managers familiar with the industry. The most important person hired by the bankers was Charles Nash, whom Storrow initially recruited (at Durant's suggestion) to run Buick. Nash in turn recruited Walter Chrysler, who previously ran a locomotive assembly plant in Pittsburgh, to run the Buick factory in Flint in 1911. Storrow appointed Nash to be president of GM in 1912, and Nash in turn promoted Chrysler to the head of Buick. The bankers left Cadillac essentially untouched, as Leland had

always done a good job running the division. Ironically, the H-form of management worked best at GM during Durant's absence. The heads of GM's two most important divisions, Buick and Cadillac, and GM's president, worked with the bankers on the board of directors to cut costs and increase efficiency (Pelfrey 2006, 160-165).

Storrow and Nash saw GM as a medium-to-high price car company, and adjusted the company's operations accordingly. This included closing or selling several unprofitable supply companies, as well as halting the production of the low priced Buick 10, one of GM's only offerings that was cheap enough to compete with the Model T (Gustin 2008, 142-143). Additionally, they consolidated some of GM's subsidiaries to bring them back to profitability, such as combining GM's three truck companies into a single subsidiary. The changes made to GM under the bankers were distasteful to Durant because they reduced the scope of the company's manufacturing capabilities. By cutting the unprofitable subsidiaries from the company, Durant thought the bankers were potentially creating problems for GM in the long-term because one of the cut subsidiaries might turn out to be important. The bankers cut so many of GM's operations that by the time GM returned to profitability, but its market share dropped from 21% in 1910 to 10% in 1915.

While Durant helplessly watched his company struggle through its restructuring, he devised a plan that would allow him not only to retake command at GM, but also take on Ford's Model T (something GM seemed to be unwilling to do). Durant accomplished both of these goals by starting a new company in 1911 with former Buick racecar driver Louis Chevrolet (referred to herein as "Louis"). Durant's plan was to start a set of new companies to sell cars designed by Louis under the

brands Chevrolet and Little, which was named for William H. Little, Buick's general manager during Durant's first reign at GM (Rae 1959, 110). The first set of cars designed by Louis sold were priced similarly to the Model T, but did poorly in the market. Durant decided to drop the Little brand, but still wanted the remaining Chevrolet brand to build an inexpensive Model T competitor. Louis disagreed with Durant, wanting to build a bigger, more expensive car instead. Tensions grew between them until Louis left their partnership in 1913, which allowed Durant to do as he pleased (Pelfrey 2006, 173).

After the departure of Louis, Chevrolet designed and built two new models, the Baby Grand and Royal Mail, which were introduced to widespread acclaim in 1914. These two models were the first to feature the Chevrolet bowtie emblem that would become famous through the twentieth century. Part of the reason the Chevrolets succeeded was the timing of their release. The economy was doing well so people had more money, which allowed Chevrolet to capture some wealthier customers who would otherwise have bought a Model T. While they were larger and more expensive than the Model T, the Chevrolets were close enough in price that people shopping at the upper end of the low-price market were willing to spend a little more to purchase them (Pelfrey 2006, 176-177). The Chevrolets were so popular that Durant had to invest in new factories to produce them. The success of the Chevrolets enabled Durant to begin the process of retaking GM.

Enlisting Pierre du Pont, Durant Retakes GM

While Durant had been buying up GM stock since he was ousted in 1910, he was only able to make significant headway in his stock purchases after his success

with Chevrolet in 1914. However, even with Chevrolet's success, Durant still did not have enough stock to retake the company when the bankers' trust expired, so he had to turn to other financial backers for help. Luckily for Durant, the success of Chevrolet not only increased the value of the company itself, but reestablished Durant as an influential player in both financial and automotive circles. This allowed Durant to gain enough clout to convince other big investors on Wall Street to get behind his bid for the presidency and to begin (or continue) buying up GM stock. One of these investors was Pierre du Pont (Herein referred to as "Pierre"), part owner of the DuPont explosives company. He and his assistant, John Jakob Raskob, would prove to be invaluable allies to Durant. Additionally, Durant convinced the managers of GM's subsidiaries, who cumulatively owned a large proportion of GM stock, that should they back his bid for the presidency of GM, they would not be at risk of being shut down by Storrow and Nash. With all of this additional support, Durant was able to get what he thought was a majority of GM stockholders to back his bid at the GM presidency at the time the bankers' trust expired on October 1, 1915 (Pelfrey 2006, 188).

Storrow, however, was not convinced. Durant's claim that he had the support of a majority of GM stockholders was speculative at best, as it included stock held by thousands of private investors, who would be difficult to account for. To solidify his position as the controller of a majority of GM stock, Durant arranged a stock swap between GM stockholders and Chevrolet, trading five shares of newly issued Chevrolet Stock for each share of GM stock. GM stockholders rushed to take advantage of this offer, through which Chevrolet acquired a majority stake in GM

with 450,000 of GM's 825,589 total shares. Thus at the May 1916 GM board meeting, Durant announced that Chevrolet, a manufacturer that made 20,000 cars in 1915, had acquired a company five times its size. Since Durant controlled Chevrolet, the deal put him back in charge at GM (Pelfrey 2006, 193).

On June 1, 1916, Durant officially became the president of GM, succeeding Nash. Durant tried to get Nash to stay on as a vice president, but Nash decided to leave the company and eventually founded the moderately successful Nash Motor Company. Durant also made an effort to keep the president of Buick, Walter Chrysler. Chrysler had proven himself an excellent manager and, with some convincing, a generous salary, and a promise by Durant not to interfere with how Chrysler ran Buick, Chrysler agreed to stay on. However, Durant could not resist dropping in on Buick every so often to make suggestions to Chrysler's employees and, in 1919, Chrysler quit out of frustration (Gustin 2008, 200).

Durant's return to GM proved that above all else, Durant was very talented at orchestrating stock deals to get what he wanted. Durant reclaimed the top position at GM because he knew how to manipulate boardroom politics in his favor. While this type of maneuvering had gotten him to the presidency of GM twice, neither time did it lead him to actually run the company effectively. Part of the reason that Durant utilized the H-form was that it allowed him to do what he did best, orchestrate takeovers, while giving the responsibilities of GM's operations to the individual companies. Durant liked building his empire, but did not like the idea of running it, which is one of the reasons he continued to use the H-form when he returned to power. Making GM more of a U-form company could have helped Durant achieve

better control over GM's divisions but he decided against it to keep GM's divisions independent, allowing him to focus on making acquisitions (Gustin 2008, 196).

Once Durant was back in power, however, there was a significant obstruction that prevented him from expanding GM's empire as freely as he had between 1908 and 1910: Pierre du Pont. Pierre and John Jakob Raskob had been some of Durant's most steadfast supporters during his bid to retake the presidency. They had also been board members since before Durant's return. As Durant began to replace board members that were loyal to the bankers with people loyal to himself, they offered to resign because they did not intend to be Durant's yes men. However, to thank them for their support, Durant asked Pierre and Raskob to stay on as chairman and financial director respectively (Pelfrey 2006, 203).

The result of Pierre staying was that Durant's control over GM's acquisitions was more tenuous than it had been during his first reign as president because Pierre was a more active board chairman than Durant would have preferred. This was because a significant portion of Pierre's personal fortune was invested in GM, and he did not want to put it at risk. Pierre had gleaned from conversations with GM employees who worked with Durant, as well as from the fact that Durant had almost driven GM out of business in 1910, that his disorganized, autocratic management style was a double-edged sword. While Durant enabled GM to grow faster than most other companies, he could eventually destroy the company if given free reign. In the interest of protecting his investment in the company, Pierre decided to keep an eye on Durant as chairman of the board of directors by meticulously reviewing most of Durant's decisions.

Durant, on the other hand, felt that the board of directors should exist to approve, not set, the policy of the company they oversaw. For this reason, Durant was frustrated that he had to explain his decisions to Pierre because he felt that doing so needlessly slowed him down (Pelfrey 2006, 217). Pierre's scrutiny over all Durant's actions frustrated Durant to the point that he organized his acquisition of several supplier companies outside of GM by forming a new, independent holding company called United Motors Company in 1916, with Alfred P. Sloan as its president. United Motor was set up by Durant as an H-form company, but it was where Sloan began to formulate his ideas about the M-form. By organizing United Motors outside of GM, Durant was able to evade Pierre's authority, which Pierre was not happy about. United Motors existed as an independent company until 1918, when Durant was forced to merge it into GM by Pierre is part of a deal to save his own personal finances.

The events that led to GM's acquisition of United Motors began with Durant's mismanagement of his own finances. Durant, since taking over GM, had begun buying more GM stock on margin under the assumption it would go up. This worked out for Durant until the US entered World War I in April 1917, when the price of GM stock dropped from $200 a share early in 1917 to $75 a share just a few months later. This left Durant owing his personal creditors $1 million with no way to pay it. Fearing what would happen to GM's stock price if the public find out that Durant was in financial trouble, Raskob, as finance director, got the board to retroactively pay Durant a $500,000 a year salary in 1918 for the two prior years to cover the cost (Gustin 2008, 190).

Durant's near-bankruptcy in 1917 as well as his creation of United Motor Company out of the GM board's jurisdiction caused Raskob and Pierre to begin seriously doubting Durant's ability to handle GM's finances. Knowing that Durant would not willingly cede power to them, they had to find a way to increase the number of shares they controlled to exceed those of Durant, who, through his control of Chevrolet, was GM's largest shareholder at the time. The low value of GM stock provided them with this opportunity because even though the board had saved Durant's personal finances from being exposed, GM still needed to boost its stock price. Raising the price of GM's stock was necessary for the sake of the company's credibility in financial markets should GM need to take out loans at any point and to appease concerned stockholders who lost a significant portion of their wealth when the stock dropped.

To raise the stock price, Pierre arranged a deal between GM and DuPont. DuPont purchased a 25% stake in GM in 1919 as well as 133,000 shares of Chevrolet (the holding company), for a combined investment of $25 million. Pierre easily convinced the DuPont board to make this investment because the company was already flush with cash made from government contracts during World War I, and the company's board saw GM as a good investment because GM consumed many products in its manufacturing processes that DuPont was beginning to produce, such as paints and plastics. In exchange for the investment, which was sure to raise GM's stock price, Pierre required that Durant reincorporate GM as an operating company instead of a holding company, as well as merge the manufacturing operations of Chevrolet and United Motors with GM.

Durant knew that for the sake of GM, he had to bolster GM's stock price, so he agreed to Pierre's terms. Durant reincorporated GM in Delaware in 1917. The new company, the General Motors Corporation, consisted of operating divisions instead of subsidiaries, giving GM's board more direct control over its operations. The new GM purchased the subsidiaries controlled by the old GM in 1917 and distributed them among the new company's divisions (Sloan 1963, 13). In May 1918, GM bought out all of the assets belonging to the Chevrolet Motor Company that were production related and created the Chevrolet division. The Chevrolet Motor Company continued to exist for several years as a holding company for Durant's controlling interest of GM stock, but it in effect exited the car business in 1918 (Gustin 2008, 201). A few years later, when Durant was no longer running GM, the Chevrolet Motor Company was dissolved and its shareholders were given GM stock in exchange for Chevrolet stock.

GM's reincorporation as an operating company at the insistence of Pierre was the first significant blow to Durant's plan to run GM as an H-form company indefinitely. Initially, the only effect this reincorporation had on GM's subsidiaries was to rename them divisions. By unifying GM's assets into a single operating company, Pierre made it easier for GM to centralize some of its operations down the road. While Pierre arranged the deal between DuPont and GM to bring financial stability to GM in the short-term, he had other long-term goals as well. Ultimately, Pierre wanted to transform GM from the H-form to the U-form, as he and his cousins had done with DuPont. By wresting financial control from Durant, Pierre was positioning himself to make a similar transformation from H-form to U-form at GM

(Pelfrey 2006, 217). Following the deal, Durant still ran GM as an H-form company, but Pierre was making sure that GM's H-form days were numbered.

History Repeats as Durant is Once Again Forced from Power

The downsides of Durant's H-form management style were not apparent during World War I or the post-war recession, which had little effect on car sales, but it was clear to Pierre that they put the future of GM itself at risk because GM still had no ability to control its divisions' expenditures. One of the most extreme examples of this problem was the operation of GM's board of directors' finance committee. Pierre set up the finance committee to keep track of GM's finances in 1917 after wresting financial control of GM from Durant. The finance committee's purpose was to distribute money to GM's various divisions should they need it for their operations. By the end of the 1910s, the divisions were regularly requesting millions of dollars from the committee for expansion projects. The finance committee generously doled out the money without so much as a cost analysis of the projects they were funding. The result of this lack of oversight was that cost overruns and rising material and labor costs plagued the expansion projects, causing a cycle where the divisions would run out of money before their projects were completed, prompting the need for them to request more money. GM was too big for the finance committee alone to handle all the requests and determine which ones were legitimate projects, so the finance committee would approve unneeded and poorly budgeted projects that likely should not have been approved (Sloan 1963, 28).

Durant pointed the finance committee's problem out to Raskob as an area of concern in 1919, but looked at the problem a different way. Durant was of the opinion

that the reason that the committee was ineffective at reining in divisional expenditures was that the finance committee itself was inadequate, and that the divisions should just be left up to themselves to make financial decisions(Gustin 2008, 205). Essentially, Durant pointed out to Raskob the problem with having an organization organized in the U-form. The finance committee was set up by Pierre following the deal with DuPont as a way to organize the accounting of all expenditure of all the divisions into one central office. However, the finance committee was miniscule in size compared to the number of requests being pushed through it, so it inadequately analyzed the projects that it allowed to go forward (Sloan 1963, 119). Pierre, however, thought that this problem proved that GM was still too much in the H-form because the central office still had almost no authority over the divisions. The truth is that they were both right; GM was experiencing both U-form and H-form control problems, because GM had grown too big and diverse to be managed by either organizational style.

When the 1920 recession hit, the cost and expenditure control problems at GM were exposed, causing a chain of events that eventually led to the second ousting of Durant, and the rise of Alfred P. Sloan. The economy entered a recession in the spring, and by the summer, car prices and sales were dropping precipitously. This crisis was easily dealt with by Ford, which shut down all manufacturing operations when sales were no longer supporting production. Within twenty-four hours of Henry giving the order, Ford had sent its entire work force home until demand for cars was restored and manufacturing would restart (Pelfrey 2006, 225). As for his surplus inventory, Ford was able to force its dealer network to purchase the cars at a loss,

which they accepted knowing that they could return to profitability when the economy recovered (Chandler 2002, 457). As a result, while Ford's debt and inventory stock declined during the spring of 1920, GM's rose precipitously.

GM, had difficulty controlling production as the economy entered recession. Soon after the recession began, the board created an inventories committee to determine what the appropriate level of production for each division should be. Durant also issued a statement in the spring to the divisions telling them to cut or stop production in the wake of decreased demand. Even with these warnings, the divisions were slow to react. Production levels were ultimately determined by the division managers, who would estimate what they thought their division should produce, or in some cases would produce as many cars as possible to suit their ambitions. Thus, the divisions kept up their production, seeing Durant's warning as a suggestion, not an order (Pelfrey 2006, 225). The independence that both Durant and the various GM divisions cherished allowed automobile production at GM to proceed without regulation, depleting the divisions' working capital and supplying GM dealers with too many cars. Production only started falling as the division managers ran out of money in October, when GM was forced to take out an $83 million loan just to make payroll (Sloan 1963, 124). Almost all production at GM ceased by November, save for Cadillac and Buick, which were producing cars at a reduced rate.

It was not just the H-form's lack of enforcement that led to the divisions ignoring Durant's warning, but also the H-form culture Durant had let GM develop during his tenure. In the past, Durant had been hesitant to interfere with GM's division's operations, and when he did, he generally let the divisions heavily

influence his decisions (Gustin 2008, 127). GM's divisions valued this independence from GM's central administrative offices, so they did not give much thought to Durant's warning. By letting the divisions behave freely via the H-form, Durant lowered his own influence over GM as a whole. Had GM's divisions listened to Durant, GM would not have had nearly as much trouble as it did. However, after more than a decade of electing whether to listen to Durant or not, the divisions were not willing to cut production.

The decision by GM's divisions to ignore Durant ultimately led to Durant's expulsion from the GM presidency. Unsurprisingly, the massive losses at GM led to a steep decline in the value of GM stock in the latter half of 1920. From a peak value of $420 per share immediately before the recession, the stock dropped in value to just $12 a share. This may not have been a problem for Durant, except that since being bailed out by the GM board in 1917, he had continued to buy up GM stock on margin using his existing stock as collateral. By the start of 1920, he had amassed a fortune worth $90 million, with the vast majority of it in GM stock. However, when the stock price dropped, he once found himself $20 million in debt, and at the mercy of the bankers who funded his trading. Durant had once again backed himself into a corner with his own personal finances, and once again had to ask Pierre and Raskob for help. This time, however, they would not be as generous as they were in 1917.

Durant only informed Pierre and Raskob of his financial trouble in November of 1920, when it became apparent that he had no way out of his predicament. As in 1917, Pierre and Raskob feared the backlash against GM's already weakened position should it come out that Durant had personal financial troubles. They feared that if

Durant declared personal bankruptcy, it would destroy any remaining confidence in General Motors, which would have likely forced the company into liquidation. Rather than letting Durant publicly go bankrupt, Pierre agreed to bail out Durant on the condition that he abdicate the GM presidency. After being driven from GM a second time, Durant unsuccessfully tried to retake GM again with a failed venture called Durant Motors before fading into relative obscurity.

Following Durant's resignation, Pierre assumed the position of president of GM. The failure of Durant to effectively run GM as an H-form company proved decisively to Pierre that GM needed to change how GM was organized to be more centralized so that it could have effective inventory and financial controls to avoid overproduction in the future. GM had already tried mixing H-form and U-form aspects by having the finance committee combined with independent divisions, which had proven to be a failure. As a result, Pierre wanted GM to convert to a purely U-form organization. Because he was not an expert in the automobile industry itself, Pierre looked for someone he could trust within GM to lead this effort. He landed on Alfred P. Sloan, the manager of the United Motor division, who he effectively put in charge of GM's transformation. As it turned out, Sloan already had a plan in mind for how to restructure GM, and it was not exactly what Pierre had envisioned.

Chapter 4 – The Organization Study of 1919-1920

"The primary object of the corporation…was to make money, not just to make motor cars."

Alfred P. Sloan, Jr., 1963

To Save GM, Pierre Puts Sloan in Charge

While Durant's unbridled expansion of GM caused the company several problems that threatened its destruction, he also laid the foundation for GM to take over the automobile industry and eventually become the largest corporation in the world. The H-form organization allowed its various automobile manufacturing divisions to remain independent and retain their own character, often to the detriment of GM's overall profitability. If GM had consolidated or eliminated all its unprofitable divisions (as the bankers tried to do), GM would not have had the diversity necessary to be reorganized into an M-form company. When Sloan took over, GM had several brands with pre-existing manufacturing facilities, distribution networks, and brand recognition, which, when properly organized, would give GM the appropriate breadth to dominate all segments of the automobile industry.

Sloan began thinking about how to organize GM as an M-form firm as the head of United Motors. While serving on GM's executive committee in 1919, he developed a rough outline of what an M-form firm might look like in a report he titled the "Organization Study of 1919-1920" (See Figure 2). Sloan sent a copy of the study to Pierre when Pierre became president in September 1920. Pierre was so impressed that he promptly adopted the plan in November 1920. Pierre appointed Sloan vice president in charge of operations in 1920 to oversee GM's response to the recession as well as its eventual transition to a more centralized organizational form. During his three years as vice president in charge of operations, Sloan made sweeping changes to GM that were instrumental in saving the company from disaster, and he continued to move GM closer to the M-form after becoming president in 1923.

When Sloan took over as vice president, GM's biggest problem was its financial control policy (or rather its thereof). Under Durant, each operating division had its own bank accounts into which it deposited its earnings and from which it paid its expenses. At no point would money flow through GM's central office. The result of this was that GM had to request money from the divisions to pay taxes and stock dividends. GM even had to request money for the purpose of transferring it between divisions. If the division managers did not respond to GM's requests, GM's treasurer would have to physically go to a division and convince its manager to transfer money to GM's central headquarters. In addition to being disorganized and difficult to account for, GM's corporate finances were further inhibited by the division heads themselves. The division heads, especially at the more profitable divisions such as Buick or Cadillac, would try to hide their earnings as long as possible so that they could maximize the amount of cash they had on hand.

Because of the difficulty in transferring money around the company, many of the less profitable divisions were continually short on cash, while the more profitable ones were flush with it. This is partly how Buick and Cadillac had the cash to continue car production for as long as they did even after Durant requested that they stop. To remedy this problem, in 1922 Sloan set up one of the most innovative private cash control system seen in the country up until that point (Sloan 1963, 122-125). He set up accounts that were affiliated with GM itself, as opposed to the division that was utilizing them, in hundreds of local banks around the country. The accounts had a maximum balance that GM set based on the nature of the account and the division using it. Any money that was deposited that brought the amount in the account above

the limit was automatically transferred by telegraph to accounts that were controlled by the central GM financial staff. The accounts were division-specific and were only used in conjunction with a specific function within the division that utilized them, which allowed GM's central office to set the maximum balance on the accounts according to their function. This policy was consistent with the M-form because it allowed GM to keep its divisions within operational limits without directly imposing policies or standards on them (Johnson 1978).

Divisions deposited all earnings into these accounts. If they needed extra cash, they had to apply to the financial staff at GM's headquarters, which would determine the merit of the request, in a similar manner to the finance committee set up by Pierre. The new system also put the central staff in charge of handling interdivision payments. These payments had previously been done through the physical transfer of cash from one division to another, but were now done through intra-corporation settlement certificates, a type of cashless money transfer within GM, which were handled by the central GM office (Sloan 1963, 123). This new system also enabled GM to better control the actions of the division managers because GM's central office could easily redistribute money within the company. In addition to the limits of the accounts and the new inter-division payment system, the divisions' financial staffs now had to plan out their expected expenditures according to expected sales in the upcoming months. If actual figures varied from projected ones, investigators from GM's central office could investigate the cause to determine whether it was mismanagement or mistaken sales projections.

At first glance, it may appear that the coordination of GM's financial transactions was similar to the implementation of a U-form accounting office whose sole function was to track transactions. The difference was that individual divisions still controlled their own finances; they just had a central accounting office looking over their shoulders. This was referred to by GM officials as "centralized control with decentralized responsibility" (Johnson 1978, 493). Even if two divisions used their bank accounts for the same purpose, divisions did not share accounts, so they could operate independently. Also, the central office was there simply to audit, not to dictate expenditures, so really all these controls did was force managers to be more careful to stay within their budgets, lest they wanted to be investigated by the central accounting office. This exemplifies the type of compromise between U-form and H-form that the M-form achieves; the divisions maintained the freedom to spend their budget as they saw fit, but had to stay within certain bounds laid out by the central office.

Along with financial controls, Sloan instituted an emergency policy to rein in overproduction in response to the 1920 recession. Sloan created the inventories committee in October to deal with this problem and hand-picked its members from his own financial staff (Sloan 1963, 124). The committee was in charge of controlling the flow of raw materials to and between the manufacturing divisions. No materials were released or brought into the operating divisions without the approval of the committee. From then on, each division had to submit a monthly budget which was reviewed and approved by the inventories committee. The budgets included sales forecasts for the next four months, even though the budget itself was only for a single

month. Calculating these budgets was difficult at first, because GM was not forward integrated into dealerships and thus did not know exactly what its monthly sales trends were. Eventually, in 1924, GM began using dealership surveys to obtain exact sales figures to calculate their production estimates (Sloan 1963, 137). Because the inventories committee controlled the flow of materials, the committee and division managers had to reach an agreement before GM's divisions were allowed to operate, and even then the divisions were given very little discretion with their expenditures. With these measures, GM was able to quickly reduce its inventory down to acceptable levels (Sloan 1963, 124-125).

Despite his success at saving GM from disaster, Sloan was not satisfied with the emergency measures as the permanent solution to GM's problems. Taking so much control away from the divisions was not in the spirit of the decentralized method by which Sloan wanted to operate GM. The solution that Sloan came up with was to eliminate the inventories committee but keep in place some of the policies regarding the tracking of sales trends and production numbers. In May 1921, GM's policy regarding inventory was changed so that division managers had to submit for approval a four-month sales forecasts and corresponding production schedules to the vice president in charge of operations (the position that Sloan then held). Division managers were no longer at the mercy of the inventories committee and thus had more discretion in deciding what materials they bought, but their cash was still limited because they were only given enough money to operate and produce at the level they specified in their report. The new system was intended to force the

divisions to police themselves to keep as much of budgeting responsibility as possible within the divisions (Sloan 1963, 125-127).

Once the necessary policies to control and review GM's divisions to ensure GM's sustainability were in place, Sloan was finally able to begin his overhaul of GM's corporate structure. Sloan's ultimate goal, which he would not achieve for a decade, was to completely separate policy creation from its execution by division managers. The reason Sloan emphasized this aspect was because of his experience dealing with an unsuccessful air-cooled engine design developed by GM's engine research division.

The story of the ill-fated engine design actually began in 1918, when Sloan was still running United Motors. That year, Charles Kettering, the head researcher at GM's Dayton engine research lab, proposed the development of an engine whose cooling system consisted of a series of air-cooled copper fins instead of the standard water cooled radiator system seen in most engines at the time. This would eliminate the radiator system from the engine design, and thus the car would have one less item that could malfunction (Leslie 1979). Pierre realized that the air-cooled engine could give Chevrolet an advantage over the Model T, so, with the support of the executive committee, he tasked Kettering's lab with the design soon after he became president in 1920. Initially, it was going to be used only in Chevrolet models, but at Pierre's insistence, the program was expanded to include Oakland and Oldsmobile.

While Kettering was able to produce several operational prototypes of the engine, none of GM's operating divisions could figure out a way to successfully mass-produce the design, and the ones that were produced often had mechanical

problems. After more than two years of development and refinement by Kettering, as well as the engineering staffs at Chevrolet, Oakland, and Oldsmobile, the engine still was not workable (Freeland 2001, 58-62) and Sloan ordered that the project be halted. At this announcement, Kettering almost resigned from GM, but decided to stay on after Sloan convinced the executive committee to give Kettering his own lab to work on projects as he saw fit, while the operating divisions continued to build water cooled engines (Sloan 1963, 93).

The air-cooled engine fiasco highlighted two major problems that existed with GM's H-form organizational structure before Sloan reorganized it. The first problem was that the executive committee, which was the body that made the decision to force Chevrolet, Oldsmobile, and Oakland to use the air-cooled engine in the first place, was too heavily influenced by division managers. That was why Kettering was able to convince Pierre to push forward with the air-cooled engine despite the car divisions' resistance. The second problem was that without any means of communicating, the divisions were unable to coordinate their operations to make long-term projects like the development of the air-cooled engine work. Because Kettering's lab was not responsible for the actual production of the engines it was designing, it was not concerned with whether the engine could successfully be mass-produced. After becoming president, Sloan remedied these two problems by restructuring GM's executive committee to include fewer division managers and by created new interdivisional committees to coordinate actions between divisions.

The Interdivisional Committees and Technical Staffs

Under Durant, the executive committee was made up predominantly of division managers who were constantly lobbying for their own interests, in what business theorist Peter Drucker describes as “government by crony” (Drucker 1954, 171-173). For this reason, the executive committee put in place by the Organizational Study of 1919-1920 consisted of fewer division managers (Freeland 2001, 68-70). It also limited the executive committee’s authority to setting policies for the operating divisions such as quality standards and the price ranges of the various brands. More specific administrative decisions, such as the approval of production schedules or decisions about specifications in product design, however, now fell under the domain of the president and the people appointed by him. By doing this, Sloan hoped to separate the creation of policy from its execution and thus prevent the executive committee’s policy decisions from being influenced by the interests of a specific division. By separating the people in charge of long-term policy creation and the people in charge of its short-term execution, Sloan was able to coordinate GM’s corporate strategy while avoiding the pitfalls of the U-form (Sloan 1963, 113).

Following his reorganization of the executive committee, Sloan began to create more task-specific committees made up of division managers both to increase coordination between the automobile divisions and to advise the executive committee on policy. The first such committee that Sloan created was the general purchasing committee in 1922 (Sloan 1963, 102). Given that many of the parts used by the various divisions were identical and often were even bought from the same supplier, Sloan thought that coordinating purchases was an easy way to save money through collective bargaining. The committee’s membership consisted of division managers.

To separate the policy creation (decisions about how much of what to buy) and administration (the actual purchasing), Sloan assigned the committee its own centralized staff whose sole purpose was to carry out the decisions made by the committee. Following the creation of the general purchasing committee, Sloan went on to create several other committees that coordinated other divisional functions (Chandler 1964, 124-125).

Interestingly, in his autobiography, Sloan admits that the general purchasing committee was less effective than he thought it would be (Sloan 1963, 104). He underestimated how many parts were shared by multiple operating divisions, and those that were shared were already bought in such high volume by the individual divisions that pooling their purchases had almost no effect on the price. Sloan also mentions that replacing many smaller contracts with one large contract caused the suppliers who were not awarded contracts to subsequently offer lower prices, which had the unintended effect of angering the operating divisions that were stuck with the contract approved by the committee. However, while it did not have the effect of lowering the price of parts, the committee was successful in being the first real effort by the operating divisions to coordinate their operations. It also began the process of standardizing parts between some divisions, which was more effective in cutting costs than the part interchangeability policies under Durant because it forced divisions to use the same parts rather than merely suggesting they do. This program became especially important a decade later, when GM started its interchangeability programs between all its divisions.

By 1925, two years after Sloan had become president, he had established interdivisional committees that were made up of division managers and staff that made policy decisions for almost every aspect of GM's operations (See Figure 3). In addition to committees such as purchasing, which were mostly controlled by the operating divisions, there were committees whose purpose was to coordinate long-term research and development programs with actual production, so that situations like the air-cooled engine problem would not happen again. Even the evaluation of the divisions themselves was done by the operations committee, which included some division managers (Sloan 1963, 113-114). The result of GM's committee system was that division managers worked together to improve their own performance, leading to a high rate of innovation and efficiency increases across all of GM's divisions. Research divisions would work with automobile divisions to make technologies work, and automobile divisions would discuss with research divisions what they thought were feasible technologies they could implement in their production processes. Overall, the committees were mutually beneficial to all the managers involved in them.

Importantly, before the operations committee was able to evaluate the divisions, Sloan had to put in place a way to compare each division's performance. To do this, in 1925 Sloan devised a way to compare the performances of the divisions with one another by using standard accounting practices which he called *standard volume* (Sloan 1963, 143-148). Standard volume was a way of simplifying each division's finances down to a direct return-on-investment ratio, so that GM could compare divisions to see if any one division was underperforming. Each division

calculated standard volume differently, and it took into account materials used, costs of different production processes, local differences (such as local tax costs and local wage rates), how effectively economies of scale could be used, and susceptibility to market conditions to produce an index that approximated each division's return-on-investment ratio. In this way, each of GM's divisions could be compared on equal footing. If a division was not performing at the desired or expected rate, that division's manager was held responsible.

With the implementation of standard volume, Sloan removed what was arguably the biggest obstacle preventing GM from restructuring into an M-form company. Without the creation of the standard volume, the absolute independence the divisions had under an H-form regime may have continued to exist even after Sloan reformed GM's financial policy because without standard volume, Sloan's financial controls could only indirectly evaluate how efficiently a division was using its resources. GM could check whether a division was staying within its budget, not whether the budget itself was efficient. With standard volume, all aspects of a division's production process were under scrutiny, empowering the central office to make better informed decisions about how well a given division was run relative to its peers. The divisions were still free to operate independently, but standard volume encouraged them to increase efficiency as much as they could (Johnson 1978, 490-494).

Because the M-form was decentralized and operational decisions were often made by committees consisting of division managers, many ideas developed at one division were later shared with all the divisions, whether they were innovations in

manufacturing techniques or technological improvements. The M-form allowed GM to focus on improving its cars in addition to its manufacturing methods because the division managers could confer and discuss which ideas could work or be developed further. This was one advantage the M-form had that the U-form could not replicate. If a U-form company was large enough (as Ford was), could engage in collective bargaining with suppliers, especially if various departments used the same parts. What the committees accomplished that the U-form could not was to give the division managers a forum to discuss ideas and innovations and how to effectively apply them to the manufacturing process (Freeland 1996, 494-495).

In addition to coordinating communications between divisions, the interdivisional committees also allowed the divisions to hear ideas from GM's central staffs. The areas where GM had centralized staff were in research, engineering, and manufacturing (Sloan 1963, 248-259). Generally, the central staff focused on the long-term direction of the company by deciding what general direction research should take or how GM's brands could best adapt to changing market conditions. A central department's corresponding division staff was more concerned with how to apply the decisions made by the central staff and solve any short-term problems. The general technical committee, one of the interdivisional committees, served as an intermediate step between the policy suggestions made by the central staff and policy implementation by the divisions. For example, the central manufacturing staff might research more efficient ways of organizing machines in car assembly plants, which they would report to the general technical committee. The committee would evaluate the suggestions and, should the suggestions be approved, it would be the task of the

division manufacturing staffs to coordinate the actual rearrangement of the plant's machines. In this way, Sloan separated day-to-day operations from long-term planning so that they were handled by different staff, solving one of the key problems with the U-form (Sloan 1963, 248-263).

Just as the central staffs were not permitted to force GM's divisions to alter their operations without committee approval, the divisions themselves were not allowed to deviate from the policies the committees agreed upon. They were allowed to run their divisions however they saw fit so long as it was within the confines of set company policy. For example, divisions could not freely design cars with different engine or body types, as that would disrupt the economies of scale brought by GM's part interchangeability programs, nor could the divisions over- or under-produce, as that would likely distort the car market and GM's pricing policies. If a division manager wanted to do something that would significantly differ from the policy set by the interdivisional committees, like the central staff, they had to sell their reasons to the committees before being granted permission (Freeman 2005, 24).

The interdivisional committees were an important aspect of GM during the early stages of its transition to the M-form because they allowed the various operating divisions at GM to work toward coordinating their decisions. The interdivisional committees also allowed the various division managers to share ideas regarding design and management styles. Competition between divisions to solve the same problems with better, cheaper solutions often led to innovative ideas that could be shared with other divisions. The committees offered a forum for division managers to share their ideas with central management and other divisions. The committees lasted

into the mid-1930s, when the committees were replaced with policy groups that were less controlled by the division managers (Sloan 1963, 432).

Sloan Begins to Sort Out GM's Market Presence

As he was working on restoring order to GM's internal organization, Sloan concurrently set in motion his strategy to increase GM's market share. Sloan's marketplace strategy was based on his analysis of how the automobile market was changing in the 1920s. Sloan identified three eras of the automobile market that existed as of 1963, when he published his autobiography. The first was pre-1908 (or pre-Model T), when cars were only affordable to the upper class in society. The second era lasted from 1908 to the mid-1920s, which Sloan characterized as the era of mass marketing of the automobile to the public. This era was dominated by Ford, which was able to utilize the U-form structure to bring the cost of the automobile down enough that almost everyone could afford one. In this period, the price and dependability of the car was all that mattered to most consumers. The U-form was an excellent organizational approach for a company to use to dominate this era because consumer preferences were static; all that people wanted was a car that was cheap and reliable, two characteristics the U-form was excellent at achieving. The third era began in the mid-1920s, and was characterized by cars that were both cheap and diverse in their looks and features. In this era, the U-form would fall out of favor because people's preferences became more dynamic, and cars produced using the U-form, for various reasons, could not keep up with consumers. This era was to be dominated by GM and the M-form, which allowed the company to both efficiently

produce cars and keep up with changing consumer preferences (Sloan 1963, 150-151).

At the time of GM's reorganization, Sloan identified four market conditions that allowed GM to take over the market. First, the development of vehicle financing allowed consumers to buy cars that they otherwise could not afford. GM started the General Motors Acceptance Corporation (GMAC) in 1919 to provide financing to customers. Previously, most customers paid in cash or had to get a loan from a regular bank, which limited how much they could spend on a car. With financing, the number of people buying more expensive cars began to rise. The second change cited by Sloan was that customers began to trade in their old cars when they bought new ones. Dealers had to change how they sold their cars because people were no longer first time buyers, and would walk away from a sale if the price the dealer was offering was not adequate (Sloan 1963, 152).

The vehicle financing and the value of used car trade-ins relate to the third change Sloan discusses. Now that price was not the most important factor in a customer's decision to purchase a car, factors like aesthetics and technological features became more important. This change was especially damning to the Model T as well as the Ford Motor Company itself, as it was a trend that a U-form organization could not keep up with (Chandler 1991, 33). One of the ways Ford kept its prices low was by not significantly changing the design of the Model T over the course of its life. As people became more affluent, however, they wanted cars that were more diverse in how they looked or drove. People purchasing a new car wanted to buy a car that was nicer or more technologically advanced rather than purchasing

the exact same car they were trading in. As the Model T had been essentially unchanged since 1908, this caused many former Model T owners to look elsewhere when they bought their new car, which had a significant negative impact on Ford's sales. As GM and other companies began instituting annual or semiannual model changes, Ford kept the Model T the same, which turned away any customers who wanted something fresh (Langlois and Robertson 1989, 370-371).

The last element that Sloan cites is the increasing popularity of the closed body automobile. A closed body automobile has a metal roof enclosing the passenger cabin, as opposed to a touring car which has no roof or a convertible with a soft roof. Closed body automobiles were an expensive luxury until after World War I, and consequently Ford only produced a very small minority of Model Ts in a closed body configuration. GM acquired a 60% stake in the Fisher Body Corporation in 1919, and purchased the remaining 40% in 1926. The reason for making this purchase was that, even before Sloan took over, people were trending towards closed body cars, which were both nicer to ride in and more attractive. By purchasing Fisher, GM was able to lower the cost of producing closed body car frames through increased specialization (Sloan 1963, 161). GM's purchase of the Fisher Body Corporation increased GM's level of vertical integration, and the way that Sloan integrated it into GM was unique and novel at the time because of how GM spread the division's resources among the automobile divisions. The Fisher Body division was one of the areas in which GM developed significant interdivisional cooperation, as all of the divisions used car bodies produced by Fisher and thus had to coordinate their car designs to make

economies of scale at Fisher feasible. This cooperation was done through the previously discussed interdivisional committees.

The trend towards closed body cars was arguably the biggest problem for Ford's U-form strategy. The Model T was designed to be an open body car and therefore had a relatively light chassis. A light chassis is poorly suited for a closed body car because a closed body is heavier than an open body, which can detract from the quality of the car's operation. Nevertheless, rather than altering the Model T's basic design, Ford instead started producing a portion of Model Ts with closed bodies to adjust to the changing market towards the end of the 1910s. These Model Ts were of noticeably lower quality than other low-priced closed body cars such as Chevrolets in terms of how they drove and handled, and as a result Ford's sales suffered when closed body cars became the norm (Sloan 1963, 161-163).

Once Sloan reorganized GM as an M-form company, GM was better positioned than Ford to handle all four of these changes. This is largely because the U-form is worse at dealing with change than the M-form in general, so Ford was not as able to keep up with the changes as was GM(Constant 1988, 794). GM still did not have a car that could compete with the Model T based on price alone (in the early 1920s, Chevrolets were still slightly more expensive than Model Ts), but as people began to want nicer cars than the Model T, and with financing available through GMAC, this became less and less of a problem. Even if Ford did have financing available, Model Ts became less and less attractive to consumers as the 1920s wore on. Because Henry opted for a majority of the decade to put his effort into lowering the price of the Model T rather than altering his production line in any way, the

Model T slipped further and further away from consumer preferences. While Ford remained adamant about ignoring consumer trends, Sloan got ready to embrace them and take over the car market with a new plan to realign GM's brands to correspond to different market segments.

Chapter 5 – The Product Plan of 1921

“A car for every purse and purpose”

Alfred P. Sloan, Jr., 1924

Sloan Begins the Process of Reorganizing GM's Brands

The Product Plan of 1921 was developed by Sloan to meet the new market conditions described in chapter four head on. The strategy set by Sloan was relatively simple. He divided the automobile market into six price classes, and assigned a different brand to each price class. Sloan knew that he would not be able to take the domination of the lowest price class away from Ford immediately, but he thought that by designing a car that was close enough in price and of noticeably better quality, GM might be able to lure away some of Ford's wealthier customers. Sloan applied this strategy more generally to all of the price levels in the car market. Sloan wanted GM to design cars that would be at the top of the six price ranges and would be able to pull customers who wanted higher quality up from the rest of the price range (Sloan 1963, 67). Sloan also realized that through the consolidation of some of the car divisions' operations, low volume, high priced luxury cars could take advantage of the economies of scale of high volume, low priced cars (Sloan 1963, 158), which could make them cheaper than the cars they were competing with.

When he took over from Durant, GM offered ten cars through its seven brands[1]:

Chevrolet "490" (four-cylinder)	$ 795 – $1375
Chevrolet "FB" (four-cylinder)	$1320 – $2075
Oakland (six-cylinder)	$1395 – $2065
Olds (four-cylinder "FB")	$1445 – $2145
(six-cylinder)[1]	$1450 – $2145
(eight-cylinder)	$2100 – $3300
Scripps-Booth (six-cylinder)[1]	$1545 – $2295
Sheridan (four-cylinder "FB")	$1685
Buick (six-cylinder)	$1795 – $3295
Cadillac (eight-cylinder)	$3790 – $5690

Source: (Sloan 1963, 59)

[1] Scripps-Booth and Olds six-cylinder engines made by Oakland.

Of the ten cars GM sold, only two of them had a market strategy. The Buick was intended to be a high volume, medium priced entry for the growing middle class market, and the Cadillac was a low volume luxury brand for the upper class. The other brands, however, had no strategy regarding their place in the market, other than being above the Ford's Model T and below Buick.

In addition to being the only divisions with a clear strategy, Buick and Cadillac were GM's only divisions producing a profit during the early 1920s. Chevrolet made up a third of GM's sales, but was losing millions of dollars a year. Chevrolet was GM's only brand that competed with the Model T, but it was not selling enough cars to have the same economies of scale as Ford and, as a result, even though the cheapest Chevrolet was priced $300 more than the cheapest Model T, the brand was still losing money. Also, aside from Buick, Cadillac and Chevrolet, most of GM's brands were competing with one another in the same price range while producing cars of differing qualities at different cost efficiencies. In general, GM was a mess, without quality control or a coherent, companywide strategy (Sloan 1963, 64).

To reduce the number of brands to six to match the six price ranges he had identified, Sloan wanted to eliminate the Chevrolet FB, the Oldsmobile FB, the Oldsmobile six-cylinder, as well as the Sheridan and Scripps-Booth brands. Sloan also wanted to add a new Buick, called the Buick 4, right below Buick, making GM's lineup consist of, from cheapest to most expensive, Chevrolet, Oakland, Buick 4, Buick 6, Oldsmobile, and Cadillac (Sloan 1963, 69). Each car would be assigned a specific price range that would partially overlap with the price ranges above and

below it. Ideally, a car in one price range equipped with several add-ons would be the same price as the most basic model of the next price range up, with no add-ons. By reducing the number of car makes it produced, GM could better take advantage of economies of scale, as well as better differentiate between brands, two essential elements to Sloan's plan

GM's brands were more or less organized into price ranges by 1924, with Chevrolet at the bottom, followed by Oldsmobile, Oakland, Buick 4, Buick 6, and Cadillac at the top (Sloan 1963, 155). This lineup is approximately what Sloan outlined in 1921, save for the placement of Oldsmobile near the bottom instead of the top. The reason for this was Oldsmobile's participation in the air-cooled engine program. The failure of this program led to the development of a new, low cost standard water-cooled Oldsmobile engine that could use the air-cooled engine's chassis in an attempt to recoup some of the losses from the program. This new engine was smaller and less expensive than the eight cylinder engine originally planned to be used in the Oldsmobile brand, and thus moved Oldsmobile down GM's brand ladder (Leslie 1979).

Even with the better coordinated brand layout, there were still two gaps in this lineup that concerned Sloan. First, there was a $1500 price gap between the Buick 6 and Cadillac, which Sloan would fill by a new brand, LaSalle. The other gap, between Chevrolet and Oldsmobile, was only about $240, but Sloan felt that it was more significant because there were several competitors that competed in that price range that could potentially poach GM customers away. Since Chevrolet was GM's highest

volume brand, a majority of GM's customers were susceptible to being stolen away by other companies that produced cars in this range (Sloan 1963, 155).

To fill in the gap, Sloan proposed a new car that was based on the Chevrolet design, as the new car would likely steal away some of Chevrolet's own customers and thus would reduce the volume economies of Chevrolet unless they were coordinated. Sloan assigned his technical adviser, Henry Crane, to design the engine for the new car. Sloan's basic idea was to make the car a six-cylinder Chevrolet that could use the same chassis and body of the existing four-cylinder Chevrolets. Though it was based on Chevrolet designs, the final production of the car was assigned to the Oakland division. Oakland was arguably the least successful GM brand, so Sloan thought the new car might breathe life back into the brand (Rae 1959, 158).

The resulting product, named Pontiac after the Pontiac, Michigan, where Oakland was headquartered, came on the market in 1926 at $825, a price that was almost exactly half way between the Chevrolet and Oldsmobile brands. Following its introduction, Pontiac became very popular and adequately filled in the price gap identified by Sloan. The higher priced Oakland, however, increasingly overlapped with Oldsmobile below it and Buick above it, and was discontinued in 1931, at which time the Oakland division was renamed the Pontiac division. With the addition of Pontiac and the elimination of Oakland, GM solidified the order of its brand line up for decades to come: Chevrolet, Pontiac, Oldsmobile, Buick, and Cadillac (Sloan 1963, 160). The development of Pontiac was significant in that it was the first attempt by any company to share basic design features across two different price classes. This type of coordination represented a polar opposite approach to that of the Ford Motor

Company. Ford produced cars with the philosophy that product differentiation and economies of scale were mutually exclusive. What Pontiac showed was that cars could use the same some components and share designs to significantly lower the cost of producing the car while maintaining brand independence (Raff 1991, 737-742).

Being able to consolidate some operations to lower costs while keeping divisions within the company separate is a key advantage to the M-form. Because Sloan only consolidated some of the divisions' operations, the brands were able to remain distinct. The result was that a Pontiac could utilize the same components as a Chevrolet while still selling to a smaller market, thus lowering the cost of Pontiac production below what a small non-integrated firm could achieve. The segments of Pontiac production that were merged with Chevrolet had little effect on the quality or character of the car, because the parts that were interchangeable were standard to both Chevrolet and Pontiac engines, or were parts of the car's appearance that could be made to look different through ornamentation. Thus, Pontiacs could have a distinctive appearance and feel without the loss of economies of scale associated with selling to a smaller market than Chevrolet.

The sharing of components and designs between Chevrolet and Pontiac was the first of several cost cutting innovations GM developed by coordinating its brands. Later interchangeability programs between GM included even more of their brands and thus required even more interdivisional cooperation to make sure the individual divisions could retain their unique identities. One of the clearest cases of this was GM's consolidation of car body design into the Fisher Body division.

Early on in the 1920s, closed bodies were only used on a minority of the cars that GM produced. Consequently, Fisher was not producing enough car bodies for mass production to be feasible, so each brand would custom order car bodies for their own uses. The bodies were all custom-built, but they were usually indistinguishable across brands (Lemm 1990). They would be slightly taller or longer in some dimensions, but their basic shape made them look identical. However, by 1927, 85% of cars sold by GM used closed bodies produced by the Fisher Body division (Sloan 1963, 152). Once closed bodies became more popular, Fisher's practice of producing slightly different bodies for each division prevented Fisher from mass producing bodies as efficiently as they might. Because their models looked so similar, GM began to consolidate body shape and design and instead differentiate different car brands with ornamentation (Bonsall 2002, 65). Using the same body detracted almost nothing from the uniqueness of each brand while significantly lowering costs.

Sloan Incorporates Styling into GM's Strategy

Styling at GM began with the introduction of the LaSalle brand, which was released to fill the price gap between the Buick 6 and Cadillac brands. It went on sale in 1927 and was sold through Cadillac dealers. The brand only lasted until 1940, and never fully separated from Cadillac (the car was built and designed by Cadillac's factories and engineers), but was commercially successful and had the distinction of being GM's first car to be designed from the ground up by what would become GM's styling division. The first LaSalle made such an impression on Sloan and the executive committee that after its introduction, styling became a permanent part of GM's strategy (Freeman 2005, 43).

The man responsible for the LaSalle's styling was the now-famous Harley Earl. Before Sloan recruited him, Earl had worked in his father's carriage shop. Sloan heard about him from Lawrence Fisher, the head of Cadillac at the time. Fisher learned about Earl while visiting an automobile body shop in California which made custom car bodies. Fisher had seen the some of the custom bodies built by this particular shop, so he took a trip there to find out who designed them. Fisher learned that the designs were those of Harley Earl, and at Fisher's recommendation Earl was put in charge of differentiating the LaSalle from Cadillac. Earl pioneered several design techniques that are still used to this day, including clay modeling and creating full sized models of the cars he was designing (Volti 2004, 52-53). Sloan recognized the value in investing in car styling, and subsequently had the executive committee approve the formation of the art and color division which would oversee the stylistic development of all of GM's brands. The creation of a centralized styling department was one of the more controversial decisions that Sloan made during GM's transformation to the M-form, because many divisions firmly believed that styling was an aspect of GM's operation that should remain decentralized.

Sloan was well aware that having a companywide styling department ran the risk of causing the various brands to begin to look alike. The managers of the automobile divisions were aware of this too, and initially complained to Sloan that the various brands would lose their unique identities. At first, Sloan addressed these concerns by setting up the art and color division so that it operated similarly to GM's various engineering divisions. He placed styling staff within each division in addition to the new art and color division so that the divisions could have the resources of a

large styling department without the costs of having a full styling staff in each brand's division (Sloan 1963, 271).

This, however, was ultimately deemed by Sloan to be too impractical to implement, so he set up the separate studios for each brand. Sloan found that by distributing the styling staff among the various departments, the talent of the stylists was diluted, so to remedy this, the styling staffs within the divisions were dropped (Sloan 1963, 430). The art and color division, which was subsequently renamed the styling division in 1934, illustrates another area where consolidation made sense, as having styling staff work together produced better results than them working separately. The stylists could play ideas off of one another or build on each other's ideas, meaning that splitting the styling staff up would limit each stylist's potential. Sloan addressed ongoing concerns about the art and color division by stating that it would have enough staff that there would always be enough diversity in style for all the automobile divisions to remain separate (Gartman 1994, 14-15). The art and color division set up separate studios for each of the different operating divisions. The art and color division would produce new design concepts for the automobile divisions, but the automobile divisions themselves would implement the suggestions they decided were feasible (Sloan 1963, 273).

The argument against having a central styling department under the control of a single manager is a very strong one. In fact, as early as the 1960s, GM began having problems differentiating between brands because they all looked the same and had the same ornamentation. Early on, however, Sloan found that the advantages of having a large styling department outweighed the advantages of several smaller styling

departments (Gartman 1994, 17-19). Staff in the styling department did not get better at what they did by being specialized to one brand. That is, a car stylist could not increase his or her Chevrolet design capabilities by only working on Chevrolets. The way the styling staff worked was that they were told what themes were part of a given brand, and they developed ideas to fit that theme, which made it the case that it was always better to have more people working on a given car design than fewer, even if the same people were working on multiple brands. Having separate studios for each brand was sufficient to prevent ideas and themes from spilling over between brands.

While the styling department was centralized, it did not impose its ideas on the divisions. Division managers could choose which suggestions were feasible to implement and which were not. They were not bound by the art and color department, just strongly encouraged to use it (Gartman 1994, 16). The practice of having the art and color department design a car that is only partially brought to market is one of the practices started at GM that still survives today in the form of concept cars that are presented in press previews at auto shows. Production cars often use some general design ideas from concept cars, but it is rare that the entire car itself is ever put into production. That way, true to the M-form, the divisions have the freedom to innovate and change the concept models to be easier to manufacture or look more (or less) distinctive, but also take full advantage of having an enormous styling division to help them develop initial concepts and general designs.

GM's Challenges During The Great Depression

By the time the Great Depression began, Sloan's Product Plan of 1921 had already paid off tremendously. Sales at all of GM's brands had skyrocketed since the

company's brush with bankruptcy in 1920. In 1925, GM surpassed Ford in market share, and in 1927, Chevrolet's sales surpassed those of the Model T (Rae 1959, 160). Sloan's strategy of realigning GM's brands and running the company as an M-form organization seemed to be working. However, during the depths of the Depression, Sloan's plans were nearly undone by GM's executive committee.

The board wanted to consolidate the Buick, Oldsmobile, and Pontiac brands (referred to as BOP) to cut costs. This consolidation would have eliminated many of the advantages of having parallel divisions work together to solve problems. Their reasoning was that the Depression caused a shift in consumer demand towards the Chevrolet division and, as a result, the low price market covered by Chevrolet made up about 73% of the car market in 1933, up from 52% in 1926 (Sloan 1963, 179-181). Some executive committee members suggested that GM adapt to these new market conditions by reducing its five manufacturing divisions to three, which would be Chevrolet, BOP, and Cadillac. They thought that GM was wasting money with four divisions that covered a shrinking segment of the market. Sloan, however, opposed the idea, stating that keeping the brands separate, while costing more in the short run, was vital to maintaining GM's ability to adapt to market conditions, and consolidation would damage the company when the economy recovered.

Had Sloan succumbed to the pressure to consolidate GM's divisions, the result would likely have been disastrous for the company after the Depression ended and the economy recovered. The main strength of the GM's M-form organization was that it allowed the separate divisions to retain their own identity for the most part even while they were sharing many design features to cut costs. Consolidating the divisions

would have caused them to lose their unique capabilities. This would have reduced the breadth of the brands' independent characteristics and thus would have limited the extent to which GM could rebound once the economy itself did. The brands would have also been limited because having a single administrative structure manage what had previously been three separate divisions could have led to the type of bottlenecking of information at the higher levels of division management that is associated with U-form companies such as Ford. Luckily for GM, Sloan prevailed and the company kept its brands separate through the Depression (Sloan 1963, 177).

Sloan's brush with consolidation was not the only problem GM faced during the Depression. The policies that GM put in place to cut costs by consolidating some of the divisions' operations led to problems of their own. The divisions shared so much of their operations that overall policy discussion at interdivisional committee meetings had become secondary to discussing how to deal with specific problems within divisions (Sloan 1963, 175). When they were instituted, the interdivisional committees were meant to help the various divisions come up with their own solutions to similar problems and submit them for approval. Now, however, since the division managers were in such close communication with each other through the committees, GM's division managers had become lazy and would wait for other managers to solve the problems so that they could simply copy the solution. Because of this, the interdivisional committees became increasingly bogged down with issues that should have been the domain of individual division managers, leading to what Sloan considered to be too much centralization of administrative duties. The problem

the committees were put in place to solve, the separation of policy creation from its execution, was now a bigger problem than ever.

The end result of this debate was the replacement of the committee system introduced earlier with a policy group system to better deal with division coordination while still maintaining division independence. By 1937, all of the interdivisional committees were replaced with policy groups that, like the committees, were functionally organized (See Figure 4). There were policy groups created to replace all the interdivisional committee for every issue, from the technical committees such as manufacturing to the sales committees like advertising. The major difference between the committees and policy groups was that division managers were not permitted to be members of the policy groups, specifically to prevent mixing policy creation with administration. Rather, they would consist of corporate executives, corporate staff specific to the policy group, and other non-administrative division staff (Sloan 1963, 182).

Initially, the policy groups reported to their respective governing committee, but eventually the interdivisional committees were eliminated so as to complete the separation of policy and administration (Doole and Lowe 1997, 343). It should be noted that while division managers were precluded from policy group membership, they did work closely with the groups when the policy groups took over the task of interdivisional coordination. After all of the administrative shifts were completed and the interdivisional committees eliminated, the policy groups began to report to the executive committee, which would for the most part approve of their policy decisions, as many executive committee members were also policy group members. This final

corporate structure, in which the policy groups reported directly to the executive committee, was the management structure in place when Sloan retired in 1956, and continued to be its structure through the 1960s (See Figure 5).

With the creation of policy groups, GM had completed its transformation into an M-form company in which policy creation was completely separated from its administration, just as Sloan had envisioned in his 1919-1920 Organization Study (Sloan 1963, 184). Thus, the central management, be it the executive committee or the policy groups, could plan GM's overall strategy without the distraction of dealing with the company's operations. The policy groups would determine policy directions, and the individual divisions would still have the freedom to adhere to the policy in their own way. Through the policy groups, the division managers could work with one another to solve problems without getting in the way of policy creation because their role was now to participate in policy discussion even without having a say in the discussion's outcome.

Why the M-form Triumphed

Though Sloan did not use the term M-form to describe the organizational structure he was creating (as the term had not been coined yet), he did understand why it was the correct strategy for GM to use in the 1920s. The problem with the H-form was that, while GM's divisions were able to retain their independence, the company could not take advantage of the fact that it had a diverse pool of capabilities to draw from because the company had no way to discern what capabilities were valuable nor did it have way to diffuse them throughout the company. Furthermore, the divisions had no accountability for how they operated because Durant had no way

to measure their performance, let alone reward the divisions that were performing well or punish those that were not (Williamson 1985, 281). Divisions could continue operation even if they were losing money because GM would continue to fund their operation, so unless GM as a whole failed, the divisions would stay in business.

With the creation of interdivisional committees and later policy groups, Sloan succeeded in keeping the operation of the automobile divisions separate while providing a medium for division managers to disseminate their ideas and innovations to other managers, who could utilize or improve upon them. The committees also let the divisions consolidate some of their operations (whether they wanted to or not) in areas where the benefits of consolidation outweighed the costs, such as research, body design, and styling. By enabling GM to consolidate some operations and not others, the M-form allowed the company to take advantage of economies of scale where they led to significant efficiency gains while letting the divisions remain independent in many important respects (Williamson 1970, 134).

Another way the M-form helped Sloan was by allowing GM to separate policy creation from administration, which forced innovation because the divisions were forced to find ways to comply with GM's overall strategy (save for the few years before the interdivisional committees were replaced by policy groups). This is an important part of the M-form that differentiates it from the U-form, because what Sloan refers to as separating policy creation from administration is referred to by Williamson as separating long-term strategy from its day-to-day operations (Williamson 1970, 134). It also eliminated the opportunism present in the H-form under Durant. Previously, when divisions' managers made up a majority of the

executive committee and there were no policy groups, those managers would alter the company's long-term strategy to suit their own needs. However, with the M-form, the division managers no longer had sway over the executive committee, and as a result GM had a clearer strategy going forward.

In contrast to GM, because Ford remained a U-form company, it had no infrastructure to handle innovations that arose in its various departments because Henry designed his factories to minimize worker interaction. Additionally, for the better part of the 1920s, Henry refused to let his company entertain the idea of altering the Model T to include any technological advancement, choosing instead to continue Model T production unchanged until 1927. Not only did this cause Ford to lose market share as people started buying better cars from other companies, but it also caused problems at Ford when the company finally did decide that it needed to research new models (Bak 2003, 137). Much of this was because Ford's staff, including its executives, was so involved in the company's operation that they had no experience with long-term planning. By the time the Model T was discontinued, the capabilities of Ford's staff and factories were so specialized that the company had to shut down for the better part of a year to retool, and the Highland Park factory had to be completely gutted, costing Ford millions of dollars in lost sales (Langlois and Robertson 1995, 64).

If consumer preferences for automobiles had remained constant from the 1910s on, GM would likely not have risen to dominance as quickly as it did. However, the M-form still would have likely dominated eventually because it allowed for more innovation than the U-form by letting managers work together to come up

with solutions to problems. Chevrolet, the only GM brand that competed with Ford in the 1920s, could use ideas from the other divisions to improve its own design, which helped it surpass the Model T in sales in 1927. At Ford, the U-form prevented this type of innovation from occurring because Ford's departments did not perform the same functions, and thus could not help each other. However, even if they could, Ford was centrally controlled by Henry, who refused to allow technological innovations to be implemented in Model T production. These two problems kept Ford from keeping up with GM technologically and eventually caused Ford to fall into third place in sales, behind GM and Chrysler, by the end of the 1930s, prompting Ford to quickly transform to the M-form after World War II.

Chapter 6 – Ford's Attempt to Emulate GM

"For years I thought that what was good for our country was good for General Motors, and vice versa."

Charlie Wilson, 1953

Ford Slowly Moves Away From the U-form

Henry's announcement that he intended to replace the Model T marked the end of a two year battle to keep the U-form alive in its pure, unchanging form. In 1925, as Model T sales began to slump significantly, Ford began offering optional styling features to attract customers, and in 1926, colors other than black were made available. In addition to these new options, the Model T received a price cut both years. However, none of these attempts to reverse the Model T's sales trend were successful. The car's popularity continued to plummet, falling behind Chevrolet for the first time in 1927, prompting Henry's announcement of a replacement on May 25, 1927 (Langworth 1987, 62-73).

At almost every step of the development of the Model T's replacement, the Model A, Ford's inexperience with changing its production methods led to problems, ultimately delaying the Model A's production until several months after the Model T's production halted (Bak 2003, 136-140). Much of this had to do with Henry's stranglehold on the company. Though his son, Edsel Ford (referred to herein as "Edsel"), succeeded him as president of Ford in 1919, Henry continued to pull most of the strings, preventing his son from effectively leading the company. Thus, even though Edsel had insisted for years the Model T needed to be replaced, Ford only ceased its production when Henry relented and only after it lost its lead to Chevrolet. Given the inexperience of the staff designing the car and the fact that Ford's factories had been continually refined for Model T production for over fifteen years, the overhaul of the factories ran into many difficulties and took longer than expected. The Model A used a completely different chassis, body, and engine than the Model T, so

its assembly had to be set up in a different configuration with different tools and machines. Consequently, the Highland Park plant had to be completely gutted and almost everything had to be replaced. Many of the specialized tools for making the Model T chassis were redesigned several times before they were compatible with the design changes for the Model A (Langlois and Robertson 1995, 64).

Upstream and downstream communication along the production process was also an issue. As a U-form company, Ford had no infrastructure at the time to coordinate design and assembly, so parts producers were having trouble designing new components that would fit in the final car assembly. The U-form rendered communication between departments unnecessary because departments had refined their production processes enough to be compatible with each other without communicating with each other. While not having communication between departments arguably (according to Fordism) reduced inefficiency in Model T production, it caused significant problems for Ford when the company was setting up Model A production. This issue was most prevalent in body design, where Ford's pressed steel department was unable to produce usable car bodies for mass production. The way this was solved was that Sorenson ordered they make 100 bodies that were suitable for mass production, and through trial and error they would find one that was usable and base future designs on that one (Langworth 1987, 71). This type of trial and error method was repeated throughout Ford's factories all over the country, essentially turning Ford's production facilities into testing grounds for new production technologies.

The transition at Ford from the Model T to the Model A exposed two weaknesses of the U-form organization. The most obvious problem was that the lack of any long-term research and development department meant that the new technologies used in the new car's production had never been used before by Ford's engineers that were in charge of setting up the Model A assembly line, so they had to re-educate themselves from scratch on how to use many of the newer machines and tools that were used to build the Model A (Langlois and Robertson 1989). This led to the other major problem, which was that engineers and administrators had to be pulled from the management of production lines at various factories to focus on how to redesign factories to produce the Model A. Thus, because long-term planning and administration of day-to-day operations were done by the same managers, production had to be halted to develop the new car. Because the main assembly of the Model T was completely shut down, all of Ford's factories that produced parts used in the Model T also had to shut down and retool concurrently (Langworth 1987, 69-75). This shutdown included 35 plants in the US and 12 overseas in addition to the River Rouge plant, where the new Model As were primarily going to be assembled (Bak 2003, 139).

The problems of making different steps along the assembly line compatible with each other and the need to shut down production at Ford's plants altogether can be traced back to the same cause: that Ford's assembly processes were not organized in a *modular* method. An assembly process is modular if a given step in the chain of production is compatible with more than one variation of the steps upstream and downstream from it (Langlois and Robertson 1995, 69). For example, modern car

assembly is modular because car passenger cabins are compatible with both cloth and leather seats. Modularity is relatively incompatible with a U-form firm such as Ford during the 1920s because modularity would have led to the various departments becoming less specialized. To minimize costs, the Model T's assembly process was refined to the point that it had almost no modularity, so any changes to a single step in the chain of production required the entire production line to be altered. This was especially true because Ford had no communication infrastructure to let different departments coordinate changes. Consequently, the entire Model T assembly line had to be overhauled and replaced, forcing Ford to shut down production entirely.

While Henry insisted that Ford remain a U-form firm, he also recognized that part of the reason the Model T was losing customers was that it lacked diversity. As a result, he allowed the Model A to be offered in more configurations than the Model T ever was. The Model A was offered in a variety of colors for the duration of its production, whereas the Model T was only offered in black for over a decade. Furthermore, it was offered in five different body types, all of which required different steel stamping processes. Because the Model T only had one body type, Ford's factories did not have the capacity produce all five body styles, so the company contracted out their production to several different firms. Though this was likely distasteful to Henry, it was the only short-term solution to diversifying Ford's offerings.

Another significant change in the development of the Model A that would continue at the Ford Motor Company was the inclusion of styling as an element of design. Henry allowed Edsel to be in charge of the Model A's styling. Edsel had a

knack for car design, which he proved to his father by redesigning the struggling Lincoln brand after it was purchased by Ford in 1922. The end result of this project, the 1923 LeBaron edition of the Lincoln Model L, was a modern, streamlined car that was moderately successful and helped turn Lincoln's declining sales around. Given his success with the LeBaron, Edsel used similar streamlining in the Model A, which proved popular enough with consumers that style was a consideration in all new Ford cars, though it was not officially made into its own department until 1935.

After all the kinks were worked out, the Model A finally went into production and was released to an eager public for the 1928 model year. Production was slow at first, but picked up as the Ford factories refined their production procedures. Partially because of all the pent up demand by loyal Ford customers, the Model A managed to outsell Chevrolet for the 1929 sales year. However, Chevrolet had not been dozing off while Ford developed the Model A and had been developing a new six-cylinder engine in response to Ford's replacement of the Model T (Langworth 1987, 78). Thus, Chevrolet was able to recapture the top sales spot the following year with its new lineup.

The six-cylinder Chevrolets that were released for the 1929 model year only cost about $100 more than the Model A, which was a small enough difference to lure some Ford customers away, even during the first few years of the Depression. The full brunt of the Depression had yet to come, and people were not yet looking at the cost of operating a car with a larger engine, so Chevrolet was able to recapture the number one sales spot from Ford in 1930. However, Henry finally recognized the mistake he had made by keeping the Model T on the market for so long, and started

developing the Model A's replacement almost immediately following Chevrolet's introduction of its six-cylinder engine models. Henry had finally begun to realize that Chevrolet was able to stay on top through constant innovation, and he began to become less strict regarding how often his company updated its models.

By 1931, sales of the Model A had dropped to about 500,000 cars, about a third of the 1,500,000 sold in its first year on the market. The Depression was partly to blame for the Model A's plunging sales but did not explain why the Model A was losing market share to Chevrolet. Despite the fact that Chevrolets were more expensive, the Model A had been losing ground to Chevrolet consistently since its record-breaking introduction in 1929. Henry determined that the main reason for Chevrolet's success was its introduction of the six-cylinder engine which, in addition to making Chevrolets slightly more expensive than the Model As, also made them faster, smoother, and more reliable.

Henry recognized early on that the industry was trending towards larger engines, so in 1930 he began work on a low cost, mass producible eight-cylinder engine. The story of the development of the Model A's replacement, which would eventually be called the Model B or the Ford V-8, was not unlike the story of the Model A. The main difference was that it was better planned. Henry did not wait for the Model A to begin losing significant market share before beginning development on its replacement. Both Henry and Edsel were intimately involved in the car's design, with Henry devoting much of his time to perfecting the engine design and Edsel devoting his time to the car's styling and body shape (Sorenson 1956, 225-231). As with the Model A, much of the development of the V-8 was trial and error,

in which Henry and his team would see whether a part could be quickly and reliably mass produced and alter the engine's design accordingly. However, most of this trial and error was done in advance of shutting down Model A production and, as a result, the company did not suffer the nearly year-long gap in car production that it did following the Model T.

Ford Adopts More of GM's Policies and Expands it Brand Offerings

Finally, after about two years of development, the Model B was released for sale for the 1932 model year. It came in both four- and eight-cylinder configurations. Both configurations were produced on the same assembly line, and the only difference between them aside from the engine was that the V-8 models came with a "V-8" emblem on their hubcaps and headlights. Unfortunately for Ford, the V-8s were released in the worst year of the Depression, and failed to immediately gain traction in the market. Consumers were wary of buying a new, untested engine design, especially now that they were so tight on cash. Furthermore, fuel efficiency and other operating costs had become top concerns for people buying cars, and in general consumers thought the new V-8 would be expensive to maintain and use more gasoline.

As fears about reliability and operating cost subsided in the years following the V-8's introduction, the car's sales grew. Henry and his engineers continually refined the V-8's chassis and engine reliability and the Ford brand was able to retake the top spot in sales from Chevrolet in 1935, though it was only for two years. The new engine, for the time being, was sufficiently advanced to compete with Ford's

competitors, who were using other advanced technologies because that Henry stubbornly refused to let Ford employ (Langworth 1987, 100).

While developing the V-8, Ford ran into several of the same problems it did when it was developing the Model A. Henry and Edsel, as well as many other production managers, were intimately involved in both the design and engineering of the V-8 as well as their administrative duties, preventing them from giving their full attention to either responsibility. This problem continued to get worse as Ford adopted a policy in 1933 of completely redesigning its models on a two-year cycle in an attempt to emulate GM's annual product cycle (Langworth 1987, 93). The two year product cycle proved to be difficult to maintain with Ford's U-form organization because it meant that the top executives at Ford, including Henry, Edsel, and several of Ford's other managers, were constantly splitting their time between administrative duties and product development.

Even if Henry and Edsel had not been involved in the development of new car models, Ford's department managers still would have had trouble keeping up with their administrative duties because of the problems described in chapter two. Towards the end of the 1930s, Ford's factories had gotten so big that they were unmanageable. Without an apparatus to coordinate their departments, managers increasingly shirked their administrative duties, causing Ford's factories to gradually become disorganized and unmanageable. This cycle continued to the point that by the time World War II started, Ford was losing millions of dollars a year (Byrne 1993, 103-104).

Henry's refusal to let Edsel deal with Ford's problems caused them to grow apart as the 1930s wore on. The company's managers became increasingly split in

their loyalties, and those who gravitated toward Edsel were often fired by Henry when Edsel was out of the office. This situation was made worse by Harry Bennett's growing influence over Henry. Bennett was hired by Henry in 1916 to work in Ford's service department, which oversaw labor relations. By the 1930s, Bennett was running the department and had a few thousand employees working under him. Gradually, Bennett had grown to be like a son to Henry, replacing Edsel as Henry's main advisor (Bak 2003, 155). Bennett used his influence to increase his own power at the company by pitting Henry against Edsel. Bennett would convince Henry to disagree with his son's decisions, even to the detriment of the company. Many of Ford's most talented people quit because the management environment was so hostile, and even Edsel contemplated quitting for a time (Bonsall 2002, 18-29).

In this environment, Edsel was crippled in his ability to deal with Ford's most pressing issue, the absence of a mid-level price brand. By the mid-1930's the economy began to recover somewhat and car sales began to rise, especially in the medium price range. This meant that while the Ford brand was doing well, Ford was unable to compete with GM or Chrysler for that growing market segment. To make things worse, Lincoln was not doing very well either, selling only a fraction of the volume of its main competitor in the luxury market, Cadillac. If Ford was to truly regain its dominance in the automobile industry, it would have to increase its offerings in higher price ranges, which meant that Ford would need to begin diversifying its offerings more than it already had.

In an attempt to fill the massive gap in Ford's lineup, Edsel began working on a new model that would be an inexpensive companion brand to Lincoln. He enlisted

the help of John Tjaarda, a designer at Ford's main body supplier, the Briggs Manufacturing Company. Tjaarda pitched the idea of building a streamlined Lincoln in 1932. Following the meeting, Edsel asked him to build a non-operational prototype, which Tjaarda completed in October of 1933. The prototype impressed Edsel enough that he ordered Ford's in-house designers to build a working version of it in 1934. The car was very popular wherever it was shown, and following some modifications by Henry, Edsel ordered the car into production for the 1936 model year (Lemm 1990, 71).

The working prototype was, from a mechanical standpoint, very ambitious for Ford, which was often held back technologically at Henry's insistence. It was designed with the engine behind the passenger cabin and used hydraulic brakes instead of mechanical ones. Edsel also wanted to design a new, more powerful V-8 engine to make it noticeably more powerful than the V-8 Fords, but less powerful than Lincoln's other model, the Model K. However, because of Henry's stubbornness, many of the new technological features were removed so the final design that went into production used mechanical brakes and had an engine similar to the Ford V-8. It is unclear why Henry would not allow some of the newer technologies to be used. Generally, his stubbornness is attributed to his desire to maintain control over his company. Whatever the reason, the main effect of Henry's changes was that the new Zephyr was underpowered and less technologically advanced than the cars it was competing with. However, largely due to its unique looks, the Lincoln-Zephyr turned out to be popular with consumers (Langworth 1987, 104-105).

The Lincoln-Zephyr was immensely successful by Lincoln's standards, selling about 15,000 units, which accounted for about 80% of Lincoln's total sales volume for 1936. Part of the reason for its success was that its lower price, which was more at the upper edge of the mid-price range than the low end of the high-price range. More to do with its success was its innovative streamlined styling. In fact, it was so successful that for the 1937 model year, all of Ford's models were redesigned to look more streamlined. Though the end result of the Zephyr's development was a success, its development highlighted even more problems due to Ford's U-form organization. The Zephyr would likely have been more successful than it was had Henry allowed his engineers to put more features in the car. The Zephyr was inferior to competitors in almost every way except for its styling (Langworth 1987, 106). Because Ford was organized in the U-form, its production lines were tied to Henry's decisions. This attribute of the U-form can be good or bad depending on the situation. If a U-form company is run by a person making good business decisions, many of the problems outlined in this section would not have occurred, as the right choices would have been made. However, since the U-form is run as a top-down organization, the entire production process is tied to what the manager decides, and in this case, Henry made the wrong choices.

While the Ford brand was doing reasonably well competing against Chevrolet, Ford itself was struggling. Even with the success of the Lincoln-Zephyr, Lincoln was selling only a fraction of the cars that Cadillac was selling, and Ford still had no car in its lineup to compete for the bulk of the mid-price range, which was still growing steadily by the end of the 1930s. The gap in the Ford Motor Company's lineup was

problematic on two fronts. First, Ford customers who wanted to move up from the Ford brand to more luxurious cars had no choice but to go to another company. Second, Lincoln had no pool of loyal customers who owned mid-range Ford cars to draw from, so the brand effectively had a smaller customer base than its main competitors (Bonsall 2002, 26). Edsel knew that sooner or later, Ford would have to deal with this problem, so he took it upon himself to develop the Ford-Mercury (later just Mercury) brand in the mid-1930s.

Because the Ford-Mercury was primarily Edsel's idea, he had to tread lightly in how he developed it so as to maintain his father's support for the idea. For this reason, Edsel developed the car as a supercharged Ford that used many of the same parts and design concepts. Edsel's fear of Henry is also why the car was initially to be called Ford-Mercury instead of just Mercury. Unlike the Zephyr, the Ford-Mercury was developed in-house under the watch of Bob Gregorie, the head of Ford's styling department. At the time, the creation of the Mercury was the largest project the department had ever undertaken since it was created in 1935 (Bonsall 2002, 27).

Given how much of the Mercury design was directly taken from the Ford design, the first few model years were hard to distinguish from the cars in the Ford brand. The Mercury was larger and had a more powerful engine, but did not have a unique look to it, and considering that Ford's main advantage at this moment in its history over its competitors was the styling of its cars, this likely hurt Mercury's sales. As a result, Mercury did reasonably well, but was unable to capture the sales volume of GM or Chrysler's mid-range brands. One major distinction present in the new Mercury brand that set it apart from Ford was the inclusion of a hydraulic

braking system. Henry refused to allow either Ford or Lincoln cars to use hydraulic braking systems, even though they were smoother, more reliable, and clearly preferred by consumers. His motives for this are unclear, but the effect of this and other similar choices about new technologies caused many customers to buy cars from other manufacturers (Langworth 1987, 111).

The Mercury introduction went relatively smoothly, except for the issue of changing the name from Ford-Mercury to simply Mercury. Edsel initially insisted that the car be branded the Ford-Mercury, in a similar fashion to the Lincoln-Zephyr. Edsel felt extremely strongly about this, despite Gregorie's insistence that having "Ford" in the name would make it difficult to differentiate it from the less expensive Ford brand, and instead of drawing customers in would push them away. It was only after Edsel was inundated by dealer requests to change the name of the car to Mercury that Edsel relented (Bonsall 2002, 30).

The problem of differentiating Mercury from Ford was largely brought on by the fact that, like with the Lincoln-Zephyr, Henry insisted that it borrow such a large proportion of its design from the Ford brand to lower costs through part standardization. However, the Mercury borrowed even more of its design and parts from Ford than the Lincoln-Zephyr did, so the problem of differentiating the car was extremely pronounced. Because of this, Mercury is an excellent example of why it is difficult to differentiate products in a U-form organization if they use similar production techniques. There were few barriers to prevent design ideas from leaking between Ford and Mercury, especially since they shared so many parts. As a result,

for the few remaining years that Ford was organized as a U-form company, Mercury struggled to find itself a place in the market.

The creation of Mercury helped set the foundation for the transformation of Ford into an M-form company after World War II. Going into the war, Ford was still functionally organized into departments such as manufacturing or advertising. With the addition of Mercury to Ford's existing U-form structure, Ford had sufficient brand diversity to split Ford from Lincoln and Mercury after the war. Without Mercury, Lincoln would have been too small to exist as its own department. However, modest as they were, Mercury's sales were many times higher than Lincoln's, so it made the extra management costs more economical.

Henry's refusal to add new technologies to his cars, such as more advanced shock absorption systems and hydraulic brakes, was the main reason for Ford's continued decline. The Ford brand itself was able to recapture the top sales spot for a time from Chevrolet when customers warmed up to the V-8 engine, but by the end of the decade, Ford slipped back to the number two spot, selling about 100,000 units fewer than Chevrolet in 1939 (Langworth 1987, 109). Lincoln and Mercury were also losing market share when the US entered the war, mostly due to Henry's stubbornness and poor management choices. The little that Edsel was able to accomplish during his time as president only brought the company short-term success, as Henry, under the influence of Bennett, would prevent Edsel and all the people involved with Edsel from effectively following up on their projects.

Despite being so dependent on Henry's decisions, Ford likely could have prospered even with its U-form inefficiencies if Henry had allowed his employees to

adapt Ford's cars to changing technology and market conditions. Because it was organized as a U-form company, Ford was not as efficiently run as its rivals. However, part of the reason that the company became unprofitable was because it was also losing market share to them, mostly due to the technological inferiority of its cars, which in turn was due to poor management decisions by Henry himself. Whatever his motives were, Henry's insistence on keeping obsolete designs and technologies cost Ford significant market share throughout the 1930s. The U-form could be blamed for making the Ford Motor Company so dependent on one man's decisions, but the aspects of Ford that made it lose market share were for the most part poor decisions made by Henry. As a result, Ford's fortunes did not turn around until after World War II, when neither Henry nor Harry Bennett had any remaining influence in the company.

Henry II's Rise to Power, and the Final Push Towards the M-form

When the US entered World War II in 1941, both Henry and Edsel Ford were in declining health. Henry had suffered several strokes between 1938 and 1941, and Edsel was ill with stomach cancer. Edsel died of his illness in 1943, at which time Henry, despite becoming increasingly senile, returned to the position of president. This effectively made Bennett the main decision maker for the company. Bennett, who had used his close relationship with the Henry to secure effective control over the company, was known by others in the industry and the government to be a vicious and ineffective manager, which would have furthered Ford's already dire financial situation had he ascended to the presidency of the company when Henry died (Rae 1984, 103).

This possibility got the attention of government officials, who knew that Ford was in trouble and that mismanagement was to blame. A smooth transition of power at the company was needed to insure that Ford, which was one of the major producers of military equipment during World War II, would continue to function. The US government considered a takeover of the company for the duration of the war to remedy this problem, but instead opted to discharge Edsel Ford's son, Henry Ford II (referred to herein as "Henry II"), from the Army in 1944 so that he could return and serve as executive vice president of Ford. After learning to run the company for a year, Henry II was promoted to the presidency in 1945. Bennett attempted to stop this from happening and assume the presidency himself, but the Henry's wife and Edsel's widow both despised Bennett, and used their control over the company's stock to vote Henry II into power (Rae 1984, 103). In fact, the same day Henry II was elected president, Bennett was fired (Rae 1965, 165). Henry II succeeded to the presidency as planned and over the coming years was able to save Ford from its decline (Drucker 1954, 116-117).

At the time Henry II took over, the company was in as bad of a position as many feared. The years of mismanagement by Henry and Bennett had left the company losing over $9 million a month (Rae 1965, 166). To save his company, Henry II knew that he needed quickly to make changes to how the company was structured. However, Henry II went a step further with his ambitions: he wanted his company to retake the top sales spot from GM. To do this, Ford needed to expand its product offerings to include more segments of the market (Langworth 1987, 173). Henry II thought that the only way for Ford to overtake GM and regain the top spot in

the industry was to counter GM one-for-one on all its product offerings, which required Ford to restructure itself into the M-form and increase the number of brands it offered.

Ford had previously begun this process by introducing the Mercury brand before the war, but as Mercury was still grouped with both Ford and Lincoln, it was limited in its ability to grow and differentiate in the market. To restructure his company to be more like GM, Henry II hired Earnest Breech away from GM's Bendix Aviation Division. Breech was hired to be executive vice president of the company in 1946 and helped guide Henry II's progress in converting Ford to the M-form. To this end, he was instrumental in hiring several managers away from GM to help with the restructuring. One of the clearest areas in which Breech's influence was felt was the creation of a separate Lincoln-Mercury division in 1947 that was to be run relatively independently of the Ford division (Langworth 1987, 146-149). This separation was strengthened in 1949 when Mercury started to use parts from Lincoln instead of Ford in its models. Ford also created a new Special Products Division to design new car lines for Ford to introduce into the market.

At the same time that he was planning Ford's restructuring, Henry II also had to find a way to stop the company from hemorrhaging money. To accomplish this, in a move that had lasting consequences for Ford for years to come, Henry II brought the "Whiz Kids" on board to help him turn Ford around in 1946. The Whiz Kids were a group of retired Air Force officers who had advised the military during World War II on cost cutting techniques such as cost/benefit analysis and price control policies to increase spending accountability. The group banded together to offer their services to

the private sector following the war. They sent out brochures to the presidents and CEOs of many prominent firms, including Ford. After some back and forth negotiations with Henry II, they agreed to work for Ford to fix its problems. After they were hired, the Whiz Kids immediately got to work (Byrne 1993, 77-88).

The Whiz Kids, led by Robert McNamara, were very methodical in their analysis of Ford's situation and what policies should be enacted to fix it. Much like the bankers who ran GM during Durant's temporary exile, they sold or shut down projects and departments on a purely statistical analysis; they did not take into account how a certain department or car model fit into Ford's overall strategy. One notable decision made by the Whiz Kids that exemplified the flaw of their strictly profit-driven governance method was their decision to drop the Continental from Lincoln's lineup (Bonsall 2002, 58-60). At the time it was dropped, the Continental was the "halo" model for the Lincoln brand, a concept that was first introduced at GM by Harley Earl for the Cadillac brand. A halo model is a high-cost/low-volume model that is at the very top of a luxury brand's price range. The idea behind it is that while a manufacturer loses money by designing and building the halo model, it gives the brand publicity which drives people to buy the more profitable, higher volume cars. Since the increased sales of lower cost Lincolns were not taken into account in the cost-benefit analysis of the Continental, the Continental appeared on paper to be losing money and was dropped after the 1949 model year.

The Whiz Kids also put into place Ford's first effective budgeting controls to force the various departments to rein in their costs. Previously, the departments would approximate their costs and revenue by methods as ridiculous as counting the number

of bills they had and approximating their costs based on that number (Byrne 1993, 105). Many of these accounting methods developed during the 1930s, when the U-form began to break down at Ford as executives and managers spent less and less of their time running their departments. To fix this problem, the Whiz Kids made the departments more accountable by making them explicitly record their costs and revenues. Using these ruthless cost cutting techniques, the Whiz Kids succeeded in bringing Ford back to profitability within a year. By better organizing Ford, the policies put in place by the Whiz Kids allowed Ford to overtake Chrysler in total company-wide sales in 1950.

The Crusoe-Reith Plan

Since the 1920's, almost all changes that took place at Ford had been geared toward emulating GM's M-form management structure, because Edsel (and to a lesser extent Henry) recognized that GM was the industry trendsetter. This was the reason for implementing the two-year model cycle, the creation of Mercury, and the splitting of Ford and Lincoln-Mercury into separate divisions. These steps were significant, but by the 1950s it became obvious to Henry II that for Ford to truly have a chance to take down GM, Ford would need to expand its lineup to match GM brand for brand. It was out of this idea that the 1955 Crusoe-Reith plan to expand Ford from two to five operating divisions emerged.

Jack Reith, who was one of the Whiz Kids, and Lewis Crusoe, who was brought in from GM by Breech to be vice president of Ford's car and truck division, presented the plan to Ford's board of directors in 1955. They argued that as people's incomes rose, they were demanding more mid-level cars than they had before World

War II. The overwhelming majority of the cars that Ford sold at this point were in the Ford brand, so the company needed to grow its mid-level entries to take advantage of this growing market (Byrne 1993, 219-227). The board of directors was sufficiently convinced following Reith and Crusoe's presentation, and began to implement the plan within weeks.

Initially, the plan was to expand Ford into five brands, which from cheapest to most expensive were: Ford, E-car, Mercury, Lincoln, and Continental. The "E" in E-car stood for "experimental." The E-car and Mercury would both come in a small and a larger size. To cut costs through part interchangeability, both the small and large E-car were to use the same parts as Ford and the smaller Mercury. Also, the larger Mercury would use share parts with Lincoln (Bonsall 2002, 81). Continental was to be adapted from Lincoln designs and would also share some parts. Following Reith and Crusoe's presentation, Lincoln-Mercury was split into separate Mercury and Lincoln divisions, and the Special Products division, which had been working for some time on a new incarnation of the Lincoln Continental, was renamed the Continental division. To develop the E-car, a new Special Products division was created to replace the old renamed one.

The implementation of the Crusoe-Reith plan was the final step in the transition of Ford from U-form to M-form. If it had been completely implemented, Ford would have been structured almost exactly like GM, at least in the marketplace. Ford would have had five main brands that varied from very cheap to very expensive, and would have had a dealer network that was at least within striking distance of GM, as part of the plan was to open up independent E-car dealerships. The Crusoe-Reith

plan also called for the most ambitious interchangeability program that Ford had ever seen, with only three bodies to be shared among all five brands. It put Ford in a position that, if everything went according to plan, Ford would have the capacity to grow and eventually catch GM.

The most important part of the Crusoe-Reith plan was the creation of the E-car brand to help fill in Ford's mid-price range gap. Mercury had helped with this problem to some extent, but to catch GM, Ford would need more offerings in that market segment so it could compete with both Pontiac and Oldsmobile. The end result of the plan was the creation of the Edsel brand, named after the late Edsel Ford. The Edsel introduction was bolder than any of Ford's previous brand introductions. Unlike Mercury, which was sold through Ford's preexisting dealership network, part of the Edsel plan was to open a completely new set of stand-alone Edsel dealerships, thus increasing the total number of Ford dealerships initially by 1,200 with the possibility of up to 2,600 dealers at a later time. This would add to Ford's existing franchise network of Lincoln-Mercury and Ford dealerships. Before adding the Edsel dealerships, Ford's franchise network consisted of about 8,000 dealerships, a little less than half of GM's 16,500 dealerships at the time.

For the first two years after the plan had been approved, it seemed to be going pretty well. The Edsel was well into the later stages of development, and the hype built around it was enormous. This good fortune came to an end, however, when the economy entered recession in 1957. When the recession began, demand for large, inefficient cars dropped precipitously, while demand for smaller, cheaper cars

skyrocketed. The mid-price market, to which the Edsel appealed, essentially disappeared overnight as people began preferring more fuel efficient cars.

The result of this shift in demand was that Ford decided to leave Mercury to cover the entire mid-level price range causing the Edsel ended up being released in 1958 without a market, competing directly with Mercury. The recession combined with competition from Mercury, a well known and established Ford brand, significantly cut into the Edsel's sales. As a result, the Edsel brand had a little over 63,000 sales its first model year, well below the 100,000 projected by the Crusoe-Reith plan (Bonsall 2002, 204). Based on the Edsel's poor performance, McNamara, who at the time was the vice president of manufacturing, decided the brand was not big enough to warrant its own division, so he ordered that Mercury, Edsel and Lincoln be consolidated into one division, denoted the MEL division, to cut costs. Edsel sales did not improve much the following year, leading to the brand being shut down in 1960. By pulling the plug on the Edsel, McNamara essentially put an end to the Crusoe-Reith expansion plan (Byrne 1993, 345).

The failure of the Edsel had many repercussions for the final organizational structure that Ford would eventually adopt. The most important effect that the Edsel fiasco had was that it taught Ford that they could not simply reorganize their company to compete one-on-one with GM by being structured in the same way in the market. The way that GM had evolved since Sloan took it over in the early 1920s was to slowly change its internal management structure towards the M-form as the market evolved. This is why it was not until the 1930s that Sloan managed to put in place all the policies that he wanted. Ford's leadership went about becoming M-form in the

opposite way; they tried to divide up their company before they had the market share to support their management structure(Bonsall 2002, 200). A key factor that allowed GM to grow all of its brands at once was that the brands were already known to the public and had reputations, and the brands were organized into price categories as the market for all price ranges was growing in the 1920s. The Edsel, on the other hand, was a new brand with no reputation, and it was introduced at a time when the mid-range car market was shrinking. It would have likely taken Ford years to make all the necessary adjustments to the brand's design for the Edsel to gain significant popularity in the marketplace (Karim 2006).

While cutting off the Edsel program may have prevented Ford from directly competing with GM, the three-brand M-form created under the influence of the Whiz Kids was arguably better suited to Ford's position as the number two manufacturer. For the Crusoe-Reith plan to have worked, Ford would have needed to have its sales grow at a much higher rate than the industry as a whole was growing. When GM grew in market share in the 1920s and 1930s, it grew at about the same rate as the industry, capturing customers that were new to the growing mid-level market segments. GM, for the most part, did not grow by stealing customers that were already in the market for mid-level cars at another company; they were simply attracting the majority of customers that were new to the mid-level price range. For the Crusoe-Reith plan to work, Ford would have needed to steal customers away from GM and Chrysler, which was a difficult feat to accomplish given that many customers had loyalty to a specific manufacturer. Had Ford tried to introduce its new brands

more slowly, the Crusoe-Reith plan may not have appeared as unsuccessful as it did (Bonsall 2002, 204).

If Ford had been more decentralized and had allowed the Edsel to continue to exist independently, it is possible that the brand could have recovered along with the rest of the car industry in the 1960s when the 1958 recession ended. Ford fell into the trap that GM narrowly avoided in the mid-1930s. Sloan saved GM's mid-level brands from being permanently consolidated into one department by arguing that the short-run costs of keeping them separate were smaller than the long-term losses from having a smaller company in the future. As Ford was heavily influenced by the Whiz Kids who emphasized short-run profits, the project was cut before it lost Ford any more money.

The end of the Crusoe-Reith plan marked the end of Henry II's quest to convert Ford into an M-form firm. While not as decentralized or expansive as GM's M-form organization, the Ford Motor Company under Henry II's leadership managed to realize most of the basic aspects of the M-form. Before World War II, all of Ford's operations were directly controlled by Henry and Edsel through an extensive U-form managerial hierarchy that was chaotic and inefficient. Following Henry II's changes, Mercury and Lincoln were separated from Ford, and price controls similar to GM's standard volume indexes had been implemented by the Whiz Kids. Following the Crusoe-Reith plan, the biggest difference between GM's and Ford's organizational structures (aside from their sizes) was what types of people were managing the divisions. Thus, while both Ford and GM converged on the M-form, their different corporate cultures led the two companies to retain some differences.

The fact that the Whiz Kids had relatively little knowledge about the operation of the divisions they oversaw (Byrne 1993, 131) made them less compatible with a decentralized M-form than GM's managers were. A key aspect to the way GM was managed was that the divisions were run by people who understood how cars were assembled and could therefore make valuable contributions to the company though innovation. The Whiz Kids did not have the capability to do this, meaning that even if Ford had become less centralized and did expand to five brands, it still may not have been as good at adapting to market conditions as GM. GM's success was due to both the way it was structured and the fact that the people running its divisions were relatively well suited to GM's organizational structure. By the end of the 1950s, Ford's upper management was made up of people better suited to a centralized organizational structure and, as a result, when Ford transformed into the M-form, it remained more centralized than GM.

Conclusion

“Forget past mistakes. Forget failures. Forget everything except what you're going to do now and do it.”

William C. Durant, Date Unknown

The preceding chapters have laid out the process by which both General Motors and the Ford Motor Company converted to the M-form organizational structure described by Oliver E. Williamson and Alfred Chandler. GM and Ford converged on the M-form organizational structure despite the fact that they reorganized from completely opposite organizational forms. Before transforming into the M-form, GM was structured as an H-form while Ford was structured as a U-form firm. GM, which was founded by William C. Durant in 1908, was completely decentralized and exerted almost no control over the assets it owned. Conversely, Ford, which was founded by Henry Ford in 1903, was completely centralized and had absolute control over its assets.

The reason that Durant founded GM as an H-form company was because he did not see GM's main function as reducing transaction costs between its subsidiaries. Rather, for him, GM's purpose was to make purchasing new companies easier. Durant wanted to gain access to as many different automobile brands and technologies as possible to hedge his bets on the future of the industry, so coordinating the companies he bought through GM was not a high priority. Thus, what the H-form lacked in coordination it made up for in flexibility. The companies purchased by GM often had little in common with one another, but since GM was an H-form company, Durant was able to keep them on even if they did not directly add to GM's profitability or manufacturing capabilities.

However, the coordination problems plaguing GM eventually outweighed the advantages brought by the H-form. GM's central office had no way of controlling the production levels of its subsidiary companies. This caused problems for Durant when

demand for automobiles stalled in 1910, causing him to be forced from the position of president. Durant managed to retake control of GM in 1916, but continued to operate GM as an H-form company without any centralized financial or inventory controls. Thus, when the economy entered a recession in 1920, Durant was unable to rein in the production at GM's divisions, causing GM to nearly go bankrupt, and Durant was once again forced out of power.

Henry founded the Ford Motor Company under the opposite philosophy. Henry believed that the best way to achieve success was to refine one technology to the point that it was cheap and reliable, borrowing ideas from Taylor's theories on scientific management. With this attitude, Ford intended to make cars cheap and reliable enough for working class customers to be able to afford them. The U-form perfectly suited Henry's idea that the way to be successful was to make a single product well instead of making several products inefficiently. Henry, however, took the idea of scientific management a step further with the development of Fordism pursuant to which he attempted to remove human error from his production processes as much as possible through social controls and the automation of his factories. Guided by this philosophy, Ford engaged in substantial backward integration in an attempt to minimize transaction costs by eliminating wasteful interactions between Ford and its supply companies.

Ford's philosophy of continually refining Model T production to drive down costs was initially tremendously successful. During the 1910s, Ford's market share grew to be well above fifty percent of all sales. Unfortunately for Ford, this success did not continue in the 1920s, for reasons relating to his factories' strict U-form

organization. Ford became overspecialized in Model T production because Henry invested heavily in the refinement of its production process. Part of this policy was that Henry refused to allow any changes to the design of Model T, be them technological or aesthetic. As a result, Model T sales plummeted in the 1920s when the economy began to grow rapidly. As people became wealthier they started to care less about the price of a car and more about its style and features.

While these changes in the automobile market were to Ford's detriment, they created the perfect environment for Alfred Sloan to reorganize GM as an M-form company. Sloan had risen through the ranks at GM, from division manager of the United Motors Company, to the presidency in 1923. While at the helm of GM, Sloan proceeded to reorganize its corporate structure into the M-form by centralizing some of GM's functions while leaving others decentralized. He realized that if GM could coordinate its brands while allowing them to remain partially autonomous, the company could produce cars at all different price levels and qualities while still cutting costs through the centralization of some steps in car production.

Through his implementation of his Organization Study of 1919-1920 and his Product Plan of 1921, Sloan successfully reorganized GM into an M-form company over a period of ten years. In his Organization Study of 1919-1920, Sloan came up with the idea to separate policy creation from its administration and the idea to create interdivisional committees (and later policy groups) to handle better coordinate GM's divisions. In the Product Plan of 1921, Sloan came up with the idea dividing the automobile industry into several price levels and putting a single brand in each price

range. All three of these policies proved to be enormously successful, propelling GM to overtake Ford as the top-selling car company in the country.

While GM was experiencing record increases in efficiency and production coordination following its transformation to the M-form, Ford was experiencing several problems stemming from its U-form corporate structure. These problems continued to mount because Henry refused to let Ford change the Model T to keep up with consumer preferences. It was only in 1927, when the Model T was overtaken by Chevrolet in total sales, that Henry finally agreed to replace the Model T. The Model T's replacement, the Model A, took almost a year to develop and put into production because of the way Ford's factories were organized under the U-form. Ford's factories were so specialized to Model T production that Ford's engineers had trouble recalibrating Ford's machinery to be compatible with the Model A. This specialization was effective for lowering Model T production costs, but made it difficult to set up Model A production because Ford's departments had no experience or capability in changing the design of the cars it produced.

Once the Model A began production, Henry realized that Ford could not wait for other companies to surpass it technologically before replacing its models, so Ford at last began investing in research and development. This only solved one of Ford's problems, however. As the company's production grew, the coordination of different stages of car assembly in Ford's factories became unmanageable because of the information bottlenecks associated with the U-form. The Model A, as well as many of its successors, was assembled at Ford's River Rouge factory, which at the time of its completion in 1928 was the biggest factory in the world. Because of the sheer volume

of cars assembled at the factory, managers of various departments within the factory became increasingly unable to keep track of all of their responsibilities as production increased during the 1930s. By the time Henry II took over Ford during World War II, Ford's factories were so disorganized and inefficient that the company was losing millions of dollars each month. To save his Ford, Henry II began to transform it into an M-form company, to be more similar to the industry's undisputed leader, GM. This attempt culminated in the Crusoe-Reith plan, which ultimately failed, forcing Ford to resign itself to being the country's second place automobile manufacturer.

The central question about the organizational development of Ford and GM is simple: why was Ford unable to emulate GM's organizational structure? The Crusoe-Reith Plan was intended to make Ford match GM's offerings on every price level, which should have solved Ford's problem of losing customers to GM when they moved out of the low-price market segment. The plan would have reorganized Ford so that each brand was its own separate, autonomous division, meaning that, from an outside perspective, Ford would have been structured as a smaller GM, with just as many car divisions that could work together to come up with product innovations. The plan itself was partially created by a former GM employee, Lewis Crusoe, and was heavily supported by Earnest Breech, whom Henry II had brought over from GM to help design Ford's transition to the M-form. Given all these advantages, however, the plan still fell flat, and is mostly remembered as the cause of one of the worst financial disasters in automobile history, the Edsel.

The Crusoe-Reith plan failed for a variety of reasons, most of which can be traced back to the different ways that GM and Ford developed their businesses. The

1957 recession was partly to blame, but it only amplified the other factors that prevented Ford from truly taking on GM. The Edsel's quality control issues and controversial styling also contributed to the brand's failure, but these are generally overemphasized as reasons for the Edsel's failure. The driving force behind the Crusoe-Reith plan's collapse was the overly concentrated distribution of power within Ford's upper management that was left over from the company's U-form days under Henry and Edsel. Because GM and Ford converged on the M-form from completely opposite sides of the firm organization spectrum, both companies had some level of inertia that guided their transformation. This is the reason that GM's final organizational form is so much more decentralized than Ford's, and has significantly less overlap between policy creation and execution.

The amount of influence that Ford's division managers had would have been unacceptable to Sloan. He repeatedly brings up in his autobiography that one of the most important accomplishments of GM's M-form is that it separated long-term policy decisions from short-term administration of those policies. Without this separation a company loses its ability to cut costs through administrative innovation, which is what happened with GM's interdivisional committees during the early 1930s and prompted Sloan to more explicitly limit the influence GM's divisions had over centralized decisions. At the time the Crusoe-Reith plan was implemented, Ford had successfully divided its brands into separate operating divisions, but was still organized as a U-form company in one very important respect: the heads of the divisions still held significant influence over long-term policy decisions made by Ford's president and the executive committee. The separation of administration and

policy creation was a central aspect of Sloan's restructuring of GM. At Ford, however, the managers of the various divisions were the people making policy and advising the president of the company.

The reason this led to the Crusoe-Reith Plan's failure was that at the time the plan was implemented, many of the Whiz Kids had been appointed division managers, including McNamara, the Whiz Kids' unofficial leader and manager of the Ford division. Because the Whiz Kids' talents were in the area accounting, not the automobile industry itself, they were more than willing to cut the Crusoe-Reith plan of early on because it had not yet produced a profit. The Whiz Kids' decision illustrates a key difference between GM and Ford. During the Depression, GM was able to resist consolidating Buick, Oldsmobile and Pontiac into a single BOP division because Sloan was concerned with GM's long-term market strategy. At Ford, the same people making long-term policy were the ones concerned with short-term profits, so Mercury, Edsel and Lincoln were consolidated into the MEL division soon after the 1957 recession began.

The fate of Ford's two most prominent executives, McNamara and Breech, speaks to the power the Whiz Kids held within the company while the Crusoe-Reith plan was in effect. In 1960, the year of the Edsel's demise, McNamara was appointed president of Ford, while Breech resigned as executive vice president. McNamara was against the Crusoe-Reith plan from its inception and after the Edsel's disastrous 1958 sales figures, he was able to use his influence over Henry II and the executive committee to get rid of the brand. Following the failure of the Crusoe-Reith plan, Ford once again was left with just three brands of cars.

The overlap between Ford's policy creators and its administrators was a relic of Ford's days as a U-form firm that Ford could not overcome in its transformation to the M-form. Because GM started out as an H-form firm in its transformation, it never really had a clear overall strategy aside from buying up as many companies as possible, and thus could more easily keep policy creation separate from administration when it did transform into a U-form company. Unlike managers at GM, managers at Ford had a history of exerting significant influence over the company's policies because they were often close friends of or advisors to Henry and Edsel. This continued to be the case after Henry II took over, preventing Ford from fully separating policy creation and administration.

The story of the M-form's evolution in the automobile industry did not end with the failure of the Crusoe-Reith plan at Ford during the 1960s. Both Ford and GM were forced to change their organizational structures in response to competition from foreign manufacturers and the issues that arise with increased globalization. In many ways, the M-form is too simplistic to deal with the coordination problems facing modern multinational enterprises like the GM and Ford of today, just as the U-form used by Ford was ill-suited to meet the demands of consumers in the 1920s. Superficially, it is easy to blame GM's current problems on poor foresight regarding the direction consumer preferences were headed. However, many of GM's problems at the end of the twentieth century can trace their roots all the way back to Sloan's Product Plan of 1921.

When Sloan rearranged GM's brands, the idea every brand having a full lineup of models did not exist. Each brand had models built around a specific engine

or set of engines, so, for example, Chevrolets felt and drove differently than GM's other brands. However, in the second half of the twentieth century, consumers began demanding a larger diversity of car types within each brand's price range (Sobel 1984, 83-84). To adapt to this change in consumer demand, GM began sharing more of its brands' aesthetic and mechanical components which meant putting less emphasis on brand distinctiveness. As GM's brands expanded their offerings, the advantages M-form's began to disappear.

GM's and Ford's brands gradually added compact, mid-size, and full size sedans, as well as different sizes of SUVs, minivans, and sports cars. The result of this was that all of GM's major brands began to have full lineups of cars with similar looks and feels as its other brands. For example, the compact sedan offered by Chevrolet during the 1980s, the Cavalier, was built on the same platform as the Cadillac compact sedan, the Cimarron. As a result, while the cars had small, superficial differences and different engines, many components were the same, so the Cadillac began to lose its appeal. Furthermore, the price range that each company's brands occupied became less concrete, with Chevrolet producing compact cars that competed with cheap import brands in addition to producing expensive sports cars such as the Corvette and Camaro which were well into Cadillac's price range.

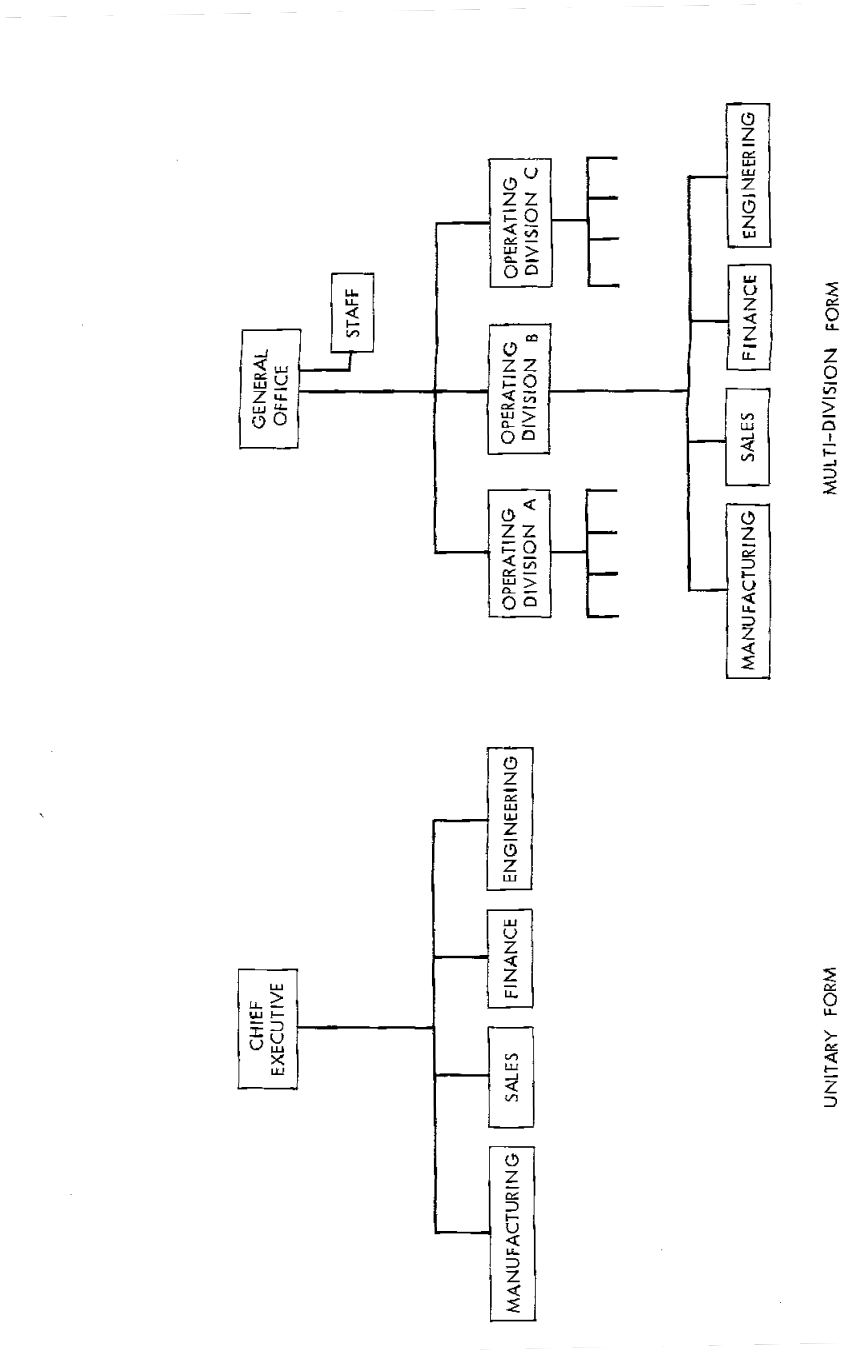
By the end of the century, GM's brands were once again competing with one another by occupying the same price ranges. The once strictly organized family of GM brands had become overstretched and redundant between brands. GM's recent restructuring and elimination of several of its brands suggests that the M-form market strategy developed by Sloan is no longer the best organizational structure for the

automobile industry. Whether GM needed to reduce its number of domestic brands or whether it could have somehow reorganized their operations, as Sloan did in the 1920s, is debatable. For example, some industry observers writing about GM's current financial state have suggested that GM could have reduced the number of models it sold at each brand, so that each brand was allocated a specific market niche instead of a specific price range. One thing is certain, however: the old way that GM was organized was obsolete, and the way that GM will be organized in ten years will be vastly different than the M-form that Sloan set up during the 1920s. Even the issue of whether a purely M-form organization for domestic operations can work at all for a multi-national carmaker like GM is unclear.

Given the developments in the past two years in the automobile industry, it is clear that the study of firm organization in the automobile industry is far from complete. Future research on this subject could look at what factors led to the need for GM to restructure and eliminate brands, or even whether it was necessary to eliminate any brands in the first place. Another subject that could be looked into is why some of GM's and Ford's brands survived and others did not given how they fit into GM's overall organizational structure. With the transformation that has occurred at Ford and GM in the past few years, they will continue to be interesting subjects to study for years to come. The dust from the recent financial crisis will need to settle before the crisis' long-term effects on the automobile industry can be assessed, but there is little doubt that the organizational forms used by Ford and GM in the future will be vastly different than the M-forms they used during the twentieth century.

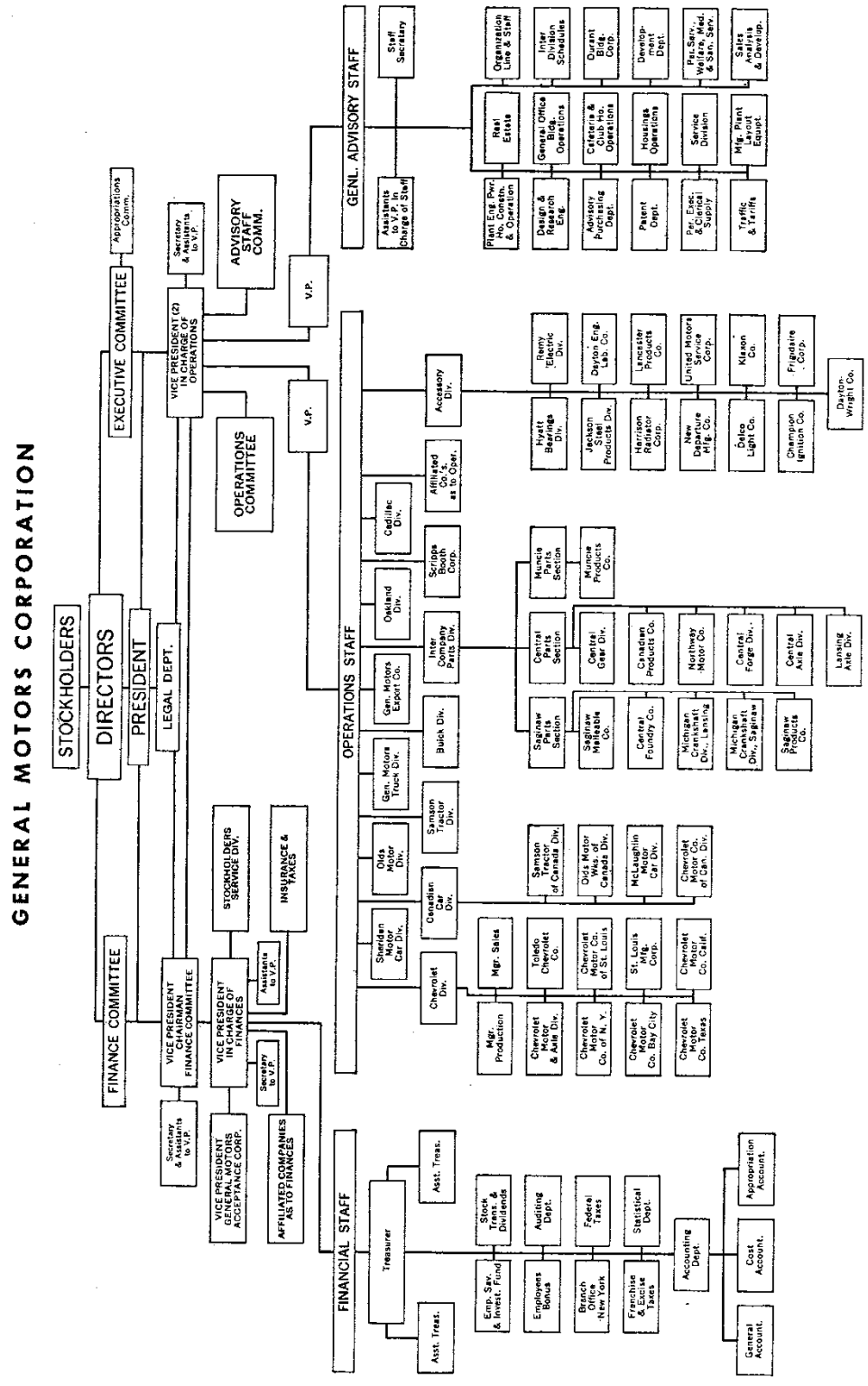
Figures

Figure 1: Comparison of the M-form and U-form



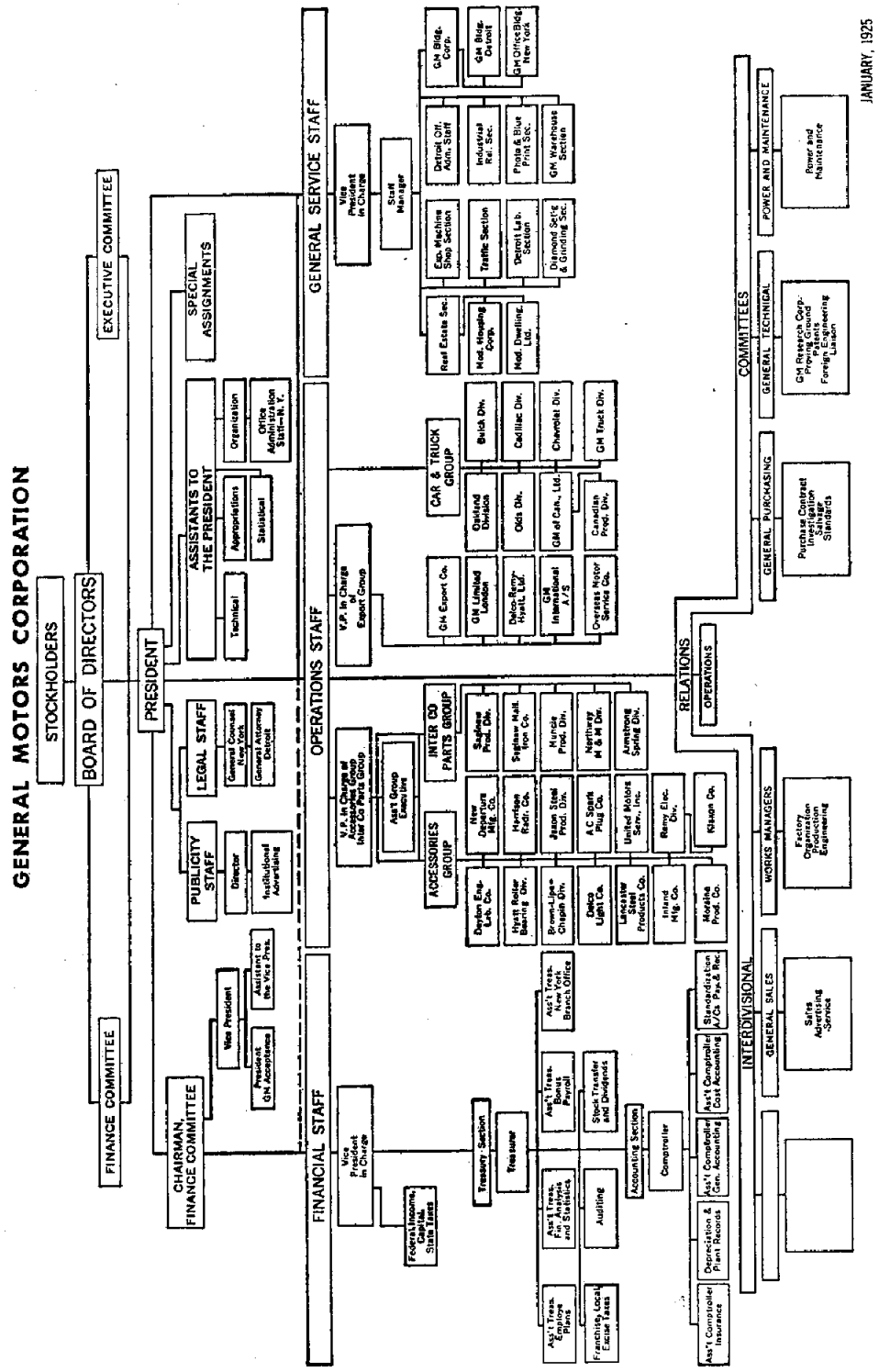
Source: (Williamson 1970, 116)

Figure 2: GM's Corporate Structure, 1920



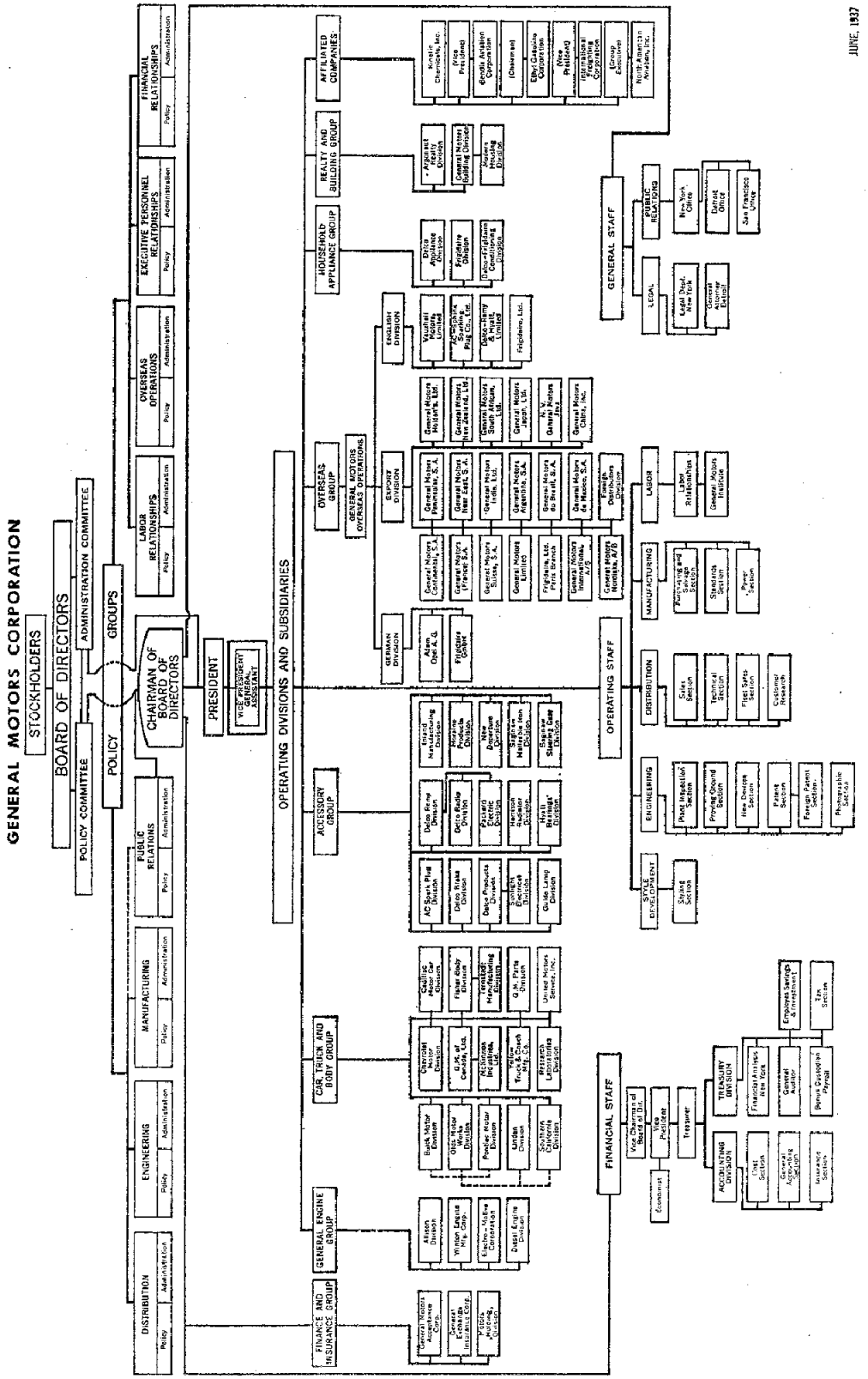
Source: (Sloan 1963, 57)

Figure 3: GM's corporate structure, 1925



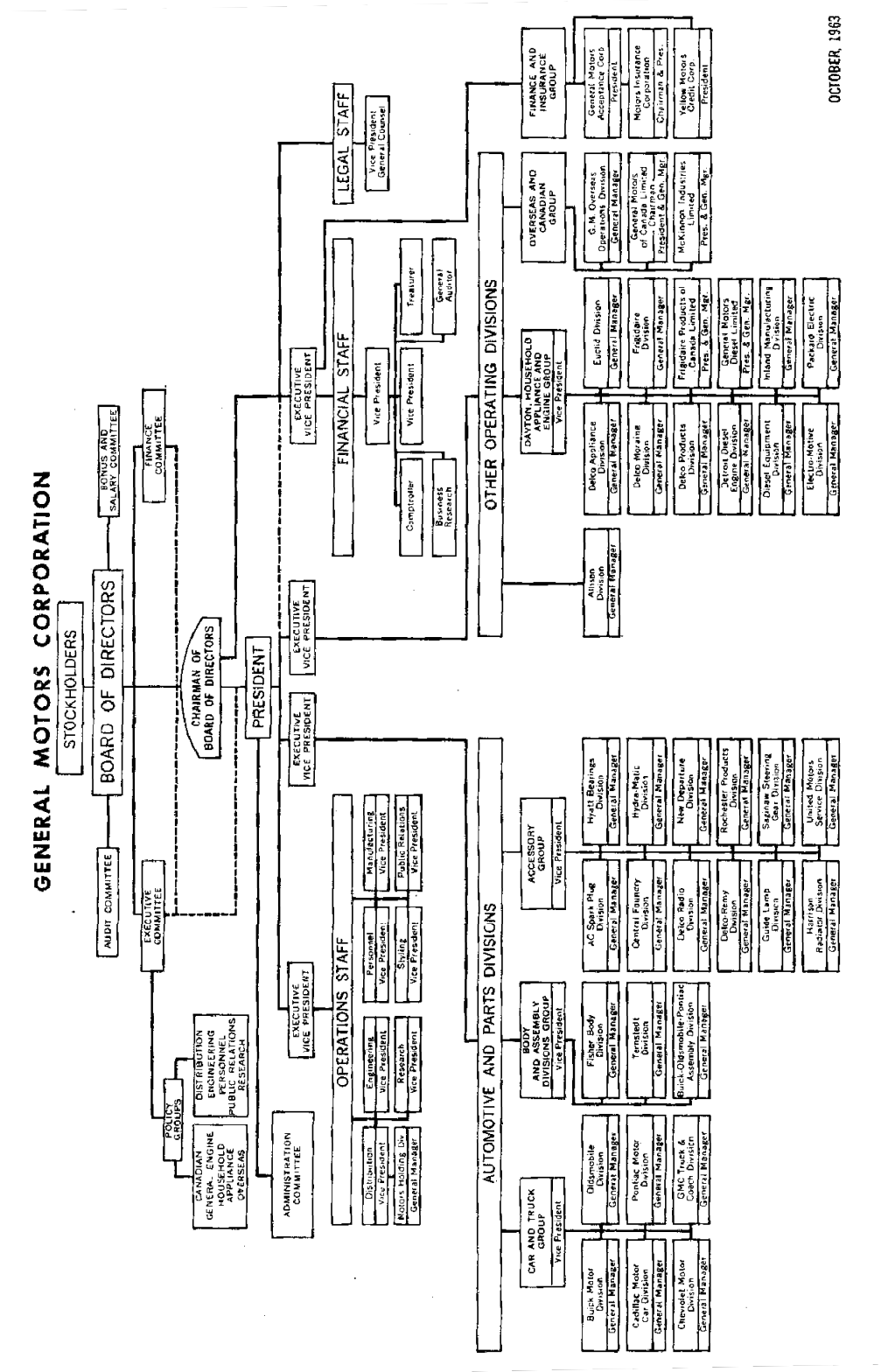
Source: (Sloan 1963, 115)

Figure 4: GM's corporate structure, 1937



Source: (Sloan 1963, 189)

Figure 5: GM's Corporate Structure, 1963



Source: (Sloan 1963, 190)

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