

# The Emergence of Managerial Capitalism

ALFRED D. CHANDLER, JR.

¶ *In this article, Professor Chandler compares and contrasts the emergence of managerial capitalism in the United States, Great Britain, Germany, and Japan. Though he observes that large firms tended to evolve according to a common pattern, he is equally impressed by international differences in the pace, timing, and character of change.*

In the late nineteenth and early twentieth centuries, a new type of capitalism emerged. It differed from traditional personal capitalism in that basic decisions concerning the production and distribution of goods and services were made by teams, or hierarchies, of salaried managers who had little or no equity ownership in the enterprises they operated. Such managerial hierarchies currently govern the major sectors of market economies in which the means of production are still owned privately, rather than by the state.

Managerial hierarchies of this kind are entirely modern. As late as the 1840s, with very few exceptions, owners managed and managers owned. There were salaried managers before the nineteenth century, primarily on plantations and estates, but they worked directly with owners. There were no hierarchies of managers comparable to that depicted in Figure 1. By the 1840s personally managed enterprises—those that carried out the processes of production and distribution in market economies—had become specialized, usually handling a single function and a single product. They operated a factory, mine, bank, or trading office. Where the volume of activity was not yet large enough to bring such specialization, merchants often remained involved in manufacturing and banking, as they had in the early years of capitalism. Some had partnerships in distant lands. But even the largest and most powerful of early capitalist enterprises were tiny by modern standards.

For example, the Medici Bank of the fifteenth century and that of the Fuggers in the sixteenth were far more powerful financial institutions in their day than the giant nonstate banks in America, Europe, and Japan are today. Yet the Medici Bank in 1470 operated only seven branches. The total number of individuals working in the branches and

ALFRED D. CHANDLER, JR., is Isidor Straus Professor of Business History at Harvard Business School. Financial support for this article was provided by the Harvard Business School's Division of Research and the German Marshall Fund.

*Business History Review* 58 (winter 1984). © 1984 by The President and Fellows of Harvard College.

the home office in Florence was fifty-seven. Of these a dozen were considered managers. They were not salaried employees, however, but partners, albeit junior ones, who shared in the profits and who had “joint and unlimited liability” for losses.<sup>1</sup> Today’s middling-size state banks each have as many as 200 branches, 5,000 employees, 300 salaried managers (who have no liability at all), and handle over a million transactions a day. They handle more transactions in a week than the Medici Bank processed in the century of its existence. Today, too, small industrial enterprises handle a far greater volume of transactions than did those giants of an earlier capitalism—the Hudson’s Bay, the Royal African, or even the East India Company.

What made the difference was, of course, the technological revolution of modern times—an even more profound discontinuity in the history of civilized man than the urban revolution of the eleventh to thirteenth centuries that created the first modern market economies and with them modern capitalism. The enormous increase in the volume of output and transactions was not an inevitable consequence of the First Industrial Revolution, which began in Britain at the end of the eighteenth century. That is, it was not the result of the initial application of the new sources of energy—fossil fuel, coal—to the processes of production. A much more important cause was the coming of modern transportation and communication. The railroad, telegraph, steamship, and cable made possible the modern mass production and distribution that were the hallmarks of the Second Industrial Revolution of the late nineteenth and early twentieth centuries. These new high-volume technologies could not be effectively exploited unless the massive flows of materials were guided through the process of both production and distribution by teams of salaried managers.

The first such managerial hierarchies appeared during the 1850s and 1860s to coordinate the movements of trains and flow of goods over the new railroad networks, and messages over the new telegraph system.<sup>2</sup> They then quickly came into use to manage the new mass retailing establishments—the department stores, mail order houses, and chains or multiple shops—whose existence the railroad and the telegraph made possible. For example, by 1905 such an organization permitted Sears, Roebuck in Chicago to fill 100,000 mail orders in a single day—more than the average earlier American merchant filled in a life-

<sup>1</sup> Raymond de Roover, *The Rise and Decline of the Medici Bank, 1397–1494* (Cambridge, 1963), 87, 91. The earlier Peruzzi bank had branches managed by employees (*fattore*). “However, all branches of major importance were managed by partners” (80).

<sup>2</sup> Alfred D. Chandler, Jr., *The Visible Hand* (Cambridge, 1977), chaps. 3–6 for the coming of such hierarchies to manage railroad and telegraph systems, and chap. 7 for their use in the management of mass distribution. Pages 231–32 describe the organization of Sears Roebuck.

time. These administrative hierarchies grew to a still much greater size in industrial enterprises that, again on the basis of modern transportation and communication, integrated mass production and mass distribution within a single business enterprise.

One way to review the emergence of managerial capitalism is thus to focus on the evolution of this largest and most complex of managerial institutions, the integrated industrial enterprise. Whether American, European, or Japanese, these integrated enterprises have had much in common. They appeared at almost exactly the same moment in history in the United States and Europe and a little later in Japan, only because Japan was later to industrialize. They clustered in much the same types of industries, and they grew in much the same manner. In nearly all cases they became large, first, by integrating forward (that is, investing in marketing and distribution facilities and personnel); then, by moving backward into purchasing and control of raw and semifinished material; and sometimes, though much less often, by investing in research and development. In this way they created the multifunctional organization depicted in Figure 1. They soon became multinational by investing abroad, first in marketing and then in production. Finally they continued to expand their activities by investing in product lines related to their existing businesses, thus creating the organization depicted in Figure 2.

#### THE SIMILARITIES

Tables 1 through 5 document the similarities among the large integrated industrial enterprises of the United States, Europe, and Japan. Almost all are clustered in a limited number of industries. Table 1 identifies the country and industry of all industrial corporations in the world that in 1973 employed more than 20,000 workers. (The industries are those defined as two-digit industrial groups by the U.S. Census Standard Industrial Classification [SIC]). Of these 401 companies, 263 (65 percent) were in food, chemicals, oil, machinery, and primary metals. Just under 30 percent more, although in other two-digit groups, were in three-digit subcategories that had the same characteristics as those in which the 65 percent clustered—for example, cigarettes within the tobacco category; tires in rubber; newsprint in paper; plate glass in stone, glass, and clay; cans and razor blades in fabricated metals; and mass-produced cameras in instruments. Only twenty-one companies (5.2 percent) were in remaining two-digit categories—apparel, lumber, furniture, leather, publishing and printing, instruments, and miscellaneous.

**TABLE I**  
**The Distribution of the Largest Manufacturing Enterprises (more than 20,000 Employees), by Industry and Nationality, 1973**

SIC GROUP	U.S.	U.K.	GERMANY	JAPAN	FRANCE	OTHERS	TOTAL NON-U.S.	GRAND TOTAL
20 Food	22	13	0	1	1	2	17	39
21 Tobacco	3	3	1	0	0	0	4	7
22 Textiles	7	3	0	2	1	0	6	13
23 Apparel	6	0	0	0	0	0	0	6
24 Lumber	4	0	0	0	0	2	2	6
25 Furniture	0	0	0	0	0	0	0	0
26 Paper	7	3	0	0	0	0	3	10
27 Printing	0	0	0	0	0	0	0	0
28 Chemical	24	4	5	3	6	10	28	52

29 Petroleum	14	2	0	0	2	8	12	26
30 Rubber	5	1	1	1	1	1	5	10
31 Leather	2	0	0	0	0	0	0	2
32 Stone, clay, and glass	7	3	0	0	3	2	8	15
33 Primary metal	13	2	9	5	4	15	35	48
34 Fabricated metal	8	5	1	0	0	0	6	14
35 Machinery	22	2	3	2	0	5	12	34
36 Electrical machinery	20	4	5	7	2	7	25	45
37 Transportation equipment	22	3	3	7	4	6	23	45
38 Measuring instruments	4	0	0	0	0	0	1	5
39 Miscellaneous	2	0	0	0	0	0	0	2
Diversified/conglomerate	19	2	1	0	0	0	3	22
TOTAL	211	50	29	28	24	59	190	401

Source: *Fortune*, May 1974 and August 1974.

Note: In 1970 the 100 largest industrials accounted for more than a third of net manufacturing output in the United States and over 45 percent in the United Kingdom. In 1930 they accounted for about 25 percent of total net output in both countries.

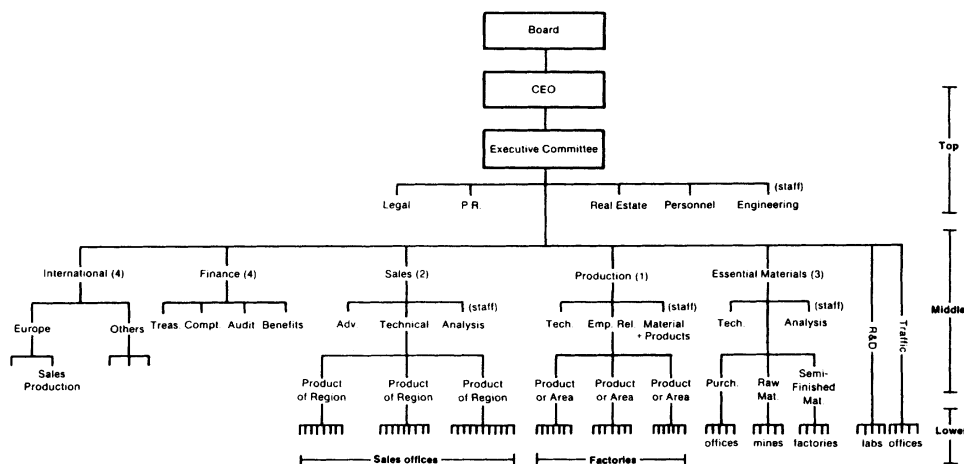


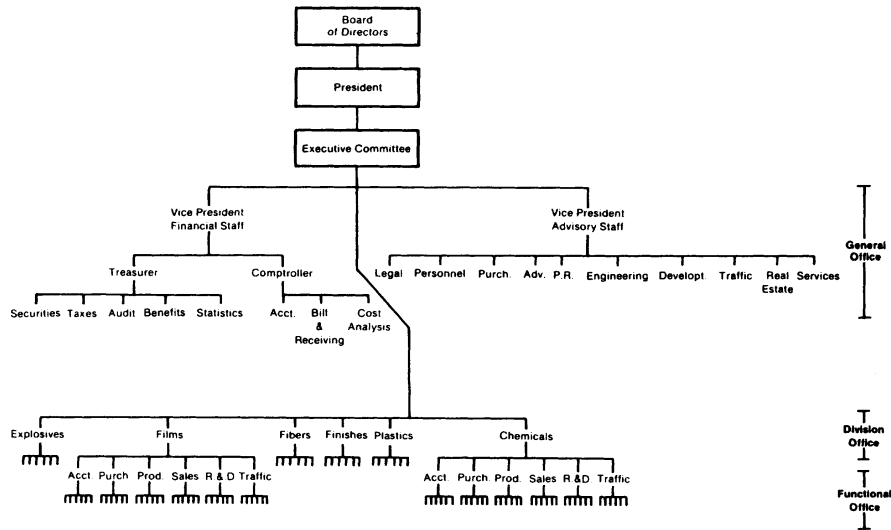
FIGURE 1

### The Multifunctional Structure

American firms predominate among the world's largest industrial corporations—an observation central to an understanding of the evolution of this institution. Of the 401 companies shown in Table 1, more than half (211 or 52.6 percent) were American. The United Kingdom followed with 50 (12.5 percent), Germany with 29 (7.2 percent), Japan with 28 (7.0 percent), and France with 24 (6.0 percent). Only in chemicals, metals, and electrical machinery were there as many as four or five more firms outside the United States than there were within it.

Throughout the twentieth century, Table 2 shows, large U.S. industrial corporations clustered in the same industries in which they were concentrated in 1973. Much the same pattern is observed for Britain, Germany, and Japan (Tables 3, 4, and 5). The American firms were larger, as well as more numerous, than those in other countries. For example, in 1948, only 50 to 55 of the British firms had assets comparable to those of the top 200 in the United States. In 1930, the number was about the same. For Germany and Japan it was smaller. Well before World War II the United States had many more and many larger managerial hierarchies than did other nations—underlining the fact that managerial capitalism first emerged in the new world.

These tables also suggest (though only barely so) basic differences within the broad pattern of evolution. For example, large enterprises



**FIGURE 2**  
**The Multidivisional Structure**

in the United States were active throughout the twentieth century in the production of both consumer and industrial goods. Britain had proportionately more large firms in consumer goods than the United States, while the largest industrials in Germany and Japan concentrated much more on producers' goods. Even as late as 1973 (as Table 1 shows), 13 of the 50 U.K. firms employing more than 20,000 persons were involved in the production and distribution of food and tobacco products; whereas Germany, France, and Japan each had only one such firm. Before World War II, Germany had many more firms in chemicals and heavy machinery than did the British; Japan, the late industrializer, still had a greater number of textile firms than did the other nations in its top 200. As Japan's economy grew, the number of chemical and machinery enterprises on that list increased substantially.

**EXPLANATION OF THE EVOLUTIONARY PROCESS**

Why have these large integrated hierarchical enterprises appeared in some industries but rarely in others? And why did they appear at almost the same historical moment in the United States and Europe?

**TABLE 2**  
**The Distribution of the 200 Largest Manufacturing Firms in the United States, by Industry<sup>a</sup>**

SIC GROUP	1917	1930	1948	1973
20 Food	30	32	26	22
21 Tobacco	6	5	5	3
22 Textiles	5	3	6	3
23 Apparel	3	0	0	0
24 Lumber	3	4	1	4
25 Furniture	0	1	1	0
26 Paper	5	7	6	9
27 Printing and publishing	2	3	2	1
28 Chemical	20	18	24	27
29 Petroleum	22	26	24	22
30 Rubber	5	5	5	5
31 Leather	4	2	2	0
32 Stone, clay, and glass	5	9	5	7
33 Primary metal	29	25	24	19
34 Fabricated metal	8	10	7	5
35 Machinery	20	22	24	17
36 Electrical machinery	5	5	8	13
37 Transportation equipment	26	21	26	19
38 Instruments	1	2	3	4
39 Miscellaneous	1	1	1	1
Diversified/conglomerate	0	0	0	19
TOTAL	200	200	200	200

<sup>a</sup>Ranked by assets.

Why did they grow in the same manner, first integrating forward into volume distribution, next taking on other functions, and then becoming multinational and finally multiproduct?

Because these enterprises initially grew by integrating mass production with volume distribution, answers to these critical questions require a careful look at both these processes. Mass production is an attribute of specific technologies. In some industries the primary way to increase output was to add more workers and machines; in others it was to improve and rearrange the inputs, by improving the machinery, furnaces, stills, and other equipment, by reorienting the process of production within the plant, by placing the several intermediate processes of production required for a finished product within a single works, and by increasing the application of energy (particularly fossil fuel energy). The first set of industries remained "labor intensive"; the second set became "capital intensive." In the latter category, the tech-



**TABLE 3**  
**The Distribution of the 200 Largest Manufacturing Firms in the**  
**United Kingdom, by Industry<sup>a</sup>**

SIC GROUP	1919	1930	1948	1973
20 Food	63	64	52	33
21 Tobacco	3	4	8	4
22 Textiles	26	24	18	10
23 Apparel	1	3	3	0
24 Lumber	0	0	0	2
25 Furniture	0	0	0	0
26 Paper	4	5	6	7
27 Printing and publishing	5	10	7	7
28 Chemical	11	9	15	21
29 Petroleum	3	3	3	8
30 Rubber	3	3	2	6
31 Leather	0	0	0	3
32 Stone, clay, and glass	2	6	5	16
33 Primary metal	35	18	28	14
34 Fabricated metal	2	7	8	7
35 Machinery	8	7	7	26
36 Electrical machinery	11	18	13	14
37 Transportation equipment	20	14	22	16
38 Instruments	0	1	4	3
39 Miscellaneous	3	4	3	1
Diversified/conglomerate	0	0	0	2
TOTAL	200	200	204	200

<sup>a</sup>Ranked by sales for 1973 and by market value of quoted capital for the other years.

nology of production permitted much greater economies of scale than were possible in the former. That is, the cost per unit of output declined much more as volume increased. So in these capital-intensive industries with large batch or continuous process technologies, large works operating at minimum efficient scale (the scale of operation that brought the lowest unit costs) had a much greater cost advantage over small works than was true with labor-intensive technologies. Conversely, in comparison with labor-intensive industries, cost per unit rose much more rapidly when volume of production fell below minimum efficient scale (perhaps 80 to 90 percent of rated capacity).

The cost advantage of scale cannot be fully realized unless a constant flow of materials through the plant or factory is maintained to assure effective capacity utilization. The decisive figure in determining costs and profits is thus not rated capacity but throughput—the amount actually processed in a specified time period. Throughput is the proper

**TABLE 4**  
**The Distribution of the 200 Largest Manufacturing Firms in**  
**Germany, by Industry<sup>a</sup>**

SIC GROUP	1913	1928	1953	1973
20 Food	23	28	23	24
21 Tobacco	1	0	0	6
22 Textiles	13	15	19	4
23 Apparel	0	0	0	0
24 Lumber	1	1	2	0
25 Furniture	0	0	0	0
26 Paper	1	2	3	2
27 Printing and publishing	0	1	0	6
28 Chemical	26	27	32	30
29 Petroleum	5	5	3	8
30 Rubber	1	1	3	3
31 Leather	2	3	2	1
32 Stone, clay, and glass	10	9	9	15
33 Primary metal	49	47	45	19
34 Fabricated metal	8	7	8	14
35 Machinery	21	19	19	29
36 Electrical machinery	18	16	13	21
37 Transportation equipment	19	16	14	14
38 Instruments	1	2	4	2
39 Miscellaneous	1	1	1	1
Diversified/conglomerate	0	0	0	1
TOTAL	200	200	200	200

<sup>a</sup>Ranked by sales for 1973 and by assets for the other three years.

economic measure of capacity utilization. In the capital-intensive industries the throughput needed to maintain minimum efficient scale requires careful coordination of not only the flow through the processes of production but also the flows of inputs from the suppliers and the flow of outputs to the retailers and final consumers. Such coordination cannot happen automatically. It demands the constant attention of a managerial team, or hierarchy. Scale is only a technological characteristic; the economies of scale, measured by throughput, are organizational. Such economies depend on knowledge, skills, and teamwork—on the human organization essential to exploit the potential of technological processes.

A well-known example illustrates these generalizations. In 1882 the Standard Oil “alliance”—a loose federation of forty companies, each with its own legal and administrative identity but tied to John D. Rock-

**TABLE 5**  
**The Distribution of the 200 Largest Manufacturing Firms in Japan,**  
**by Industry<sup>a</sup>**

SIC GROUP	1918	1930	1954	1973
20 Food	31	30	26	18
21 Tobacco	1	1	0	0
22 Textiles	54	62	23	11
23 Apparel	2	2	1	0
24 Lumber	3	1	0	1
25 Furniture	0	0	0	0
26 Paper	12	6	12	10
27 Printing and publishing	1	1	0	2
28 Chemical	23	22	38	34
29 Petroleum	6	5	11	13
30 Rubber	0	1	1	5
31 Leather	4	1	0	0
32 Stone, clay, and glass	16	14	8	14
33 Primary metal	21	22	28	27
34 Fabricated metal	4	3	6	5
35 Machinery	4	4	10	16
36 Electrical machinery	7	12	15	18
37 Transportation equipment	9	11	18	20
38 Instruments	1	1	3	5
39 Miscellaneous	1	1	0	1
Diversified/conglomerate	0	0	0	0
TOTAL	200	200	200	200

<sup>a</sup>Ranked by assets.

efeller's Standard Oil Company through interchange of stock and other financial devices—formed the Standard Oil Trust.<sup>3</sup> The purpose was not to obtain control over the industry's output, for the alliance already controlled close to 90 percent of the American output of kerosene. Instead the trust was formed to provide a legal instrument to rationalize the industry and to exploit economies of scale more fully. The trust provided the essential legal means to create a corporate or central office that could, first, reorganize the processes of production by shutting down some refineries, reshaping others, and building new ones; and, second, coordinate the flow of materials, not only through the several

<sup>3</sup> Details and documentation are given in a case by Alfred D. Chandler, Jr., "The Standard Oil Company—Combination, Consolidation and Integration," in *The Coming of Managerial Capitalism: A Casebook on the History of American Economic Institutions*, eds. Alfred D. Chandler, Jr., and Richard S. Tedlow (Homewood, Ill., 1985).

refineries, but from the oil fields to the refineries and from the refineries to the consumers. The resulting rationalization made it possible to concentrate close to a quarter of the world's production of kerosene in three refineries, each with an average daily charging capacity of 6,500 barrels, with two-thirds of their product going to overseas markets. (At this time the refined petroleum products were by far the nation's largest nonagricultural export.) Imagine the diseconomies of scale—the great increase in unit costs—that would result from placing close to one-fourth of the world's production of shoes, or textiles, or lumber in three factories or mills!

This reorganization of the trust's refining facilities brought a sharp reduction in the average cost of producing a gallon of kerosene. It dropped from 1.5 cents a gallon before reorganization to 0.54 cents in 1884 and 0.45 cents in 1885 (while profits rose from 0.53 to 1.003 cents per gallon), with costs at the giant refineries being still lower—far below those of any competitor. Maintaining this cost advantage, however, required that these large refineries have a continuing daily throughput of from 5,000 to 6,500 barrels—a three- to fourfold increase over their earlier daily flow of 1,500 to 2,000 barrels, with concomitant increases in the number of transactions handled and in the complexity of coordinating the flow of materials through the process of production and distribution.

The Standard Oil story was by no means unique. In the 1880s and 1890s new mass production technologies—those of the Second Industrial Revolution—brought sharp reduction in costs as plants reached minimum efficient scale. In many industries the level of output was so high at that scale that a few plants could meet existing national and even global demand. The structure of these industries quickly became oligopolistic. Their few large enterprises competed worldwide. In many instances the first enterprise to build a plant with a high minimum efficient scale and to recruit the essential management team has remained the leader in its industry until this day. A brief review of Tables 1 through 5 illustrates this close relationship between scale economies, the size of the enterprise, and industrial concentration in the industries in which large enterprises cluster.

In SIC groups 20 and 21—food, drink, and tobacco—brand new production processes in the refining of sugar and vegetable oils, in the milling of wheat and oats, and in the making of cigarettes brought rapid reductions in costs. In cigarettes, for example, the invention of the Bonsack machine in the early 1880s permitted the first entrepreneurs who adopted the machine—James B. Duke in the United States and the Wills brothers in Britain—to reduce labor costs sharply, in the

Wills' case from 4 shillings per 1,000 to 0.3 pence per thousand.<sup>4</sup> Understandably Duke and the Wills soon dominated and then divided the world market. In addition, most companies in group 20, and also those producing consumer chemicals, such as soap, cosmetics, paints, and pills, pioneered in the use of new high-volume techniques for packaging their products in small units that could be placed directly on retailers' shelves. The most important of these was the "automatic-line" canning process invented in the mid 1880s, which permitted the filling of 4,000 cans an hour. The names of these pioneers—Campbell Soup, Heinz, Borden's, Carnation, Nestlé, Cadbury, Cross and Blackwell, Lever, Procter & Gamble, Colgate, and others—are still well known today.

In chemicals (group 29) the new technologies brought even sharper cost reductions in industrial than in packaged consumer products. The mass production of synthetic dyes and synthetic alkalis began in the 1880s. It came a little later in synthetic nitrates, synthetic fibers, plastics, and film. The first three firms to produce the new synthetic blue dye, alizarine, reduced their production costs from 200 marks per kilogram in the 1870s to 9 marks by 1886; and today, a century later, those three firms—Bayer, BASF, and Hoechst—are still the three largest German chemical companies.<sup>5</sup>

Rubber production (group 30), like oil, benefited from scale economies, even more in the production of tires than in rubber footwear and clothing. Of the ten rubber companies listed in Table 1, nine built their first large factory between 1900 and 1908.<sup>6</sup> Since then the Japanese company, Bridgestone, has been the only major new entrant into the global oligopoly.

In metals (group 34) the scale economies made possible by maintaining a high volume throughput were also striking. Andrew Carnegie was able to reduce the cost of making steel rails by the new Bessemer steel process from close to \$100 a ton in the early 1870s to \$12 by the late 1890s.<sup>7</sup> In nonferrous metals, the electrolytic refining process invented in the 1880s brought even more impressive cost reductions, permitting the price of a kilogram of aluminum to fall from 87.5 francs

<sup>4</sup> B. W. E. Alford, *W.D. & H.O. Wills and the Development of the U.K. Tobacco Industry* (London, 1973), 143–49. Also Chandler, *Visible Hand*, 249–58.

<sup>5</sup> Sachio Kahu, "The Development and Structure of the German Coal-Tar Dyestuffs Firms," in *Development and Diffusion of Technology*, ed. Akio Okochi and Hoshimi Uchida (Tokyo, 1979), 78.

<sup>6</sup> This statement is based on a review of histories of and internal reports and pamphlets by the leading rubber companies.

<sup>7</sup> Harold Livesay, *Andrew Carnegie and the Rise of Big Business* (Boston, 1975), 102–6, 155. When in 1873 Carnegie opened the first works directed entirely to producing rails by the Bessemer process, he reduced cost to \$56.64 a ton. By 1895, with increase in sales, the costs fell to \$25 a ton.

in 1888 to 47.5 francs in 1889, 19 francs at the end of 1890, and 3.75 francs in 1895.<sup>8</sup>

In the machinery-making industries (groups 35–37) new technologies based on the fabricating and assembling of interchangeable metal parts were perfected in the 1880s. By 1886, for example, Singer Sewing Machine had two plants, one in New Jersey and the other in Glasgow, each producing 8,000 machines a week.<sup>9</sup> To maintain their output, which satisfied three-fourths of the world demand, required an even more tightly scheduled coordination of flows of materials into, through, and out of the plant than did the mass production of packaged goods, chemicals, and metals. By the 1890s a tiny number of enterprises using comparable plants supplied the world demand for typewriters, cash registers, adding machines, and other office equipment; for harvesters, reapers, and other agricultural machinery; and for the newly invented electrical and other volume-produced industrial machinery. The culmination of these processes came with the mass production of the automobile. By installing the moving assembly line in his Highland Park plant in 1913, Henry Ford reduced the labor time used in putting together a Model T chassis from 12 hours 28 minutes to one hour 33 minutes.<sup>10</sup> This dramatic increase in throughput permitted Ford to drop the price of the touring car from more than \$600 in 1913 to \$490 in 1914 to \$290 in the 1920s; to pay the highest wages; and to acquire one of the world's largest fortunes in an astonishingly short time.

In the older, technologically simple, labor-intensive industries such as apparel, textiles, leather, lumber, and publishing and printing, neither technological nor organizational innovation substantially increased minimum efficient scale. As the tables show, few large firms appeared in these SIC groups. In these industries the opportunities for cost reduction through material coordination of high volume throughput by managerial teams remained limited. Large plants could not achieve significant cost advantages over small ones.

The differentials in potential scale economies of different production technologies indicate not only why the large hierarchical firms appeared in some industries and not in others, but also why they appeared suddenly in the last decades of the nineteenth century. Only with the completion of the modern transportation and communication networks—those of the railroad, telegraph, steamship, and cable—

<sup>8</sup> L. F. Haber, *The Chemical Industry during the Nineteenth Century* (Oxford, 1958), 92.

<sup>9</sup> Chandler, *Visible Hand*, 302–14.

<sup>10</sup> Allan Nevins, *Ford: The Times, the Man, the Company* (New York, 1954), chaps. 18–20 (esp. 473, 489, 511); Alfred D. Chandler, Jr., *Giant Enterprise: Ford, General Motors and the Automobile Industry* (New York, 1980), 26.

could materials flow into a factory or processing plant and the finished goods move out at the speed and volume required to achieve substantial economies of throughput. Transportation that depended on the power of animals, wind, and current was too slow, too irregular, and too uncertain to maintain a level of throughput necessary to achieve modern economies of scale.

However, such scale and throughput economies do not in themselves explain why the new mass producers elected to integrate forward into mass distribution. Coordination might have been achieved through contractual agreement with intermediaries, both buyers and sellers. Such an explanation requires a more precise understanding of the process of volume distribution, particularly why the wholesaler, retailer, or other commercial intermediaries lost their cost advantage vis-à-vis the volume producer.

The intermediaries' cost advantage lay in exploiting both economies of scale and what have been termed "economies of scope." Because they handled the products of many manufacturers, they achieved a greater volume and lower unit cost (i.e. scale) than any one manufacturer in the marketing and distribution of a *single* line of products. Moreover, they increased this advantage by the broader *scope* of their operation, that is, by handling a number of *related* product lines through a single set of facilities. This was true of the new volume wholesalers in apparel, dry goods, groceries, hardware, and the like, and even more true of the new mass retailers—the department store, the mail order house, and the chain or multiple-shop enterprise.

The commercial intermediaries lost their cost advantages when manufacturers' output reached a comparable scale. As one economist has pointed out, "The intermediary will have a cost advantage over its customers and suppliers only as long as the volume of transactions in which he engages comes closer to that [minimum efficient] scale than do the transactions volumes of his customers or suppliers."<sup>11</sup> This rarely happened in retailing, except in heavily concentrated urban markets, but it often occurred in wholesaling. In addition, the advantages of scope were sharply reduced when marketing and distribution required specialized, costly, product-specific facilities and skills that could not be used to handle other product lines. By investing in such product-specific personnel and facilities, the intermediary not only lost the advantages of scope but became dependent on what were usually a small number of producers.

All these new high-volume enterprises created their own sales or-

<sup>11</sup> Scott J. Moss, *An Economic Theory of Business Strategy* (New York, 1981), 110–11.

ganizations to advertise and market their products nationally and often internationally. From the start they preferred to have their own sales forces to advertise and market their goods. Salesmen of wholesalers and other intermediaries who sold the products of many manufacturers, including those of their competitors, could not be relied upon to concentrate on the single product of a single manufacturer with the intensity needed to attain and maintain the market share necessary to keep throughput at minimum efficient scale.

Equally important, mass distribution of these products—many of them quite new—often required extensive investment in specialized, product-specific facilities and personnel. Because the existing wholesalers and mass retailers made their profits from handling related products of many manufacturers, they had little incentive to make large investments in facilities and personnel that could only be useful for a handful of specialized products processed by a handful of producers on whom they would become dependent for the supplies essential to make this investment pay.

Of all the new mass producers, those making packaged food products and consumer chemical products required the least in the way of product-specific distribution facilities and personnel. The new canning and packaging techniques, however, immediately eliminated one of the major functions of the wholesaler, that of converting large bulk shipments into small packages. Because the manufacturers now packaged, they, not the wholesalers, began to brand and to advertise on a national and global scale. Their sales forces now canvassed the retailers. But because mass sales of these branded packaged products demanded little in the way of specialized facilities and personnel, the processor typically continued to use the wholesaler to physically distribute the goods (for a fixed markup or commission) until the manufacturer's output became large enough to cancel out the wholesaler's scale advantages.

All other industrial groupings in which large firms clustered required major investments in either specialized distribution facilities or specialized personnel, and often both. The producers of perishables—meat, beer, and dairy products—particularly those in the United States, made the massive investment required in refrigerated or temperature cars, ships, and warehouses.<sup>12</sup> Gustavus Swift, an inventor of the refrigerator car, realized that effective distribution of fresh meat required the building of a national network of refrigerated storage facilities. When he began to build his branch house network in the mid 1880s, other leading meat packers quickly followed suit, racing Swift

<sup>12</sup> Chandler, *Visible Hand*, 299–302, 391–402.



for the best sites. Those packers who had made the investment in refrigerated cars and storage facilities before the end of the decade continued as the “Big Five” to dominate the industry for a half-century. In the 1880s neither the railroad nor the wholesale butchers had an incentive to invest in this equipment. Indeed, they had a positive disincentive. The railroads already had a major investment in cattle cars to move live animals; this business was, next to wheat, their largest traffic generator. The wholesale butchers were organized specifically to handle the cattle delivered to them by the railroad. Both fought the packers and their new product vigorously, but with relatively little success. In this and the next decade, the producers of bananas—primarily United Fruit—and the makers of beer for the national market, including Pabst, Schlitz, and Anheuser-Busch, made comparable investment in refrigerated distribution facilities.

Refined petroleum as well as vegetable or animal oil could be shipped more cheaply in specialized tank cars and ships, stored in local tank farms, and then packaged close to the final markets. Wholesalers hesitated to make such extensive investments as they would be wholly dependent for their continued use and profitability on a small number of high-volume suppliers.<sup>13</sup> When the coming of the automobile required still another new and costly distribution investment in pumps and service stations to provide roadside supplies to motorists, wholesalers were even less enthusiastic about making the necessary investment. On the other hand, the refiners, by making the investment, were able not only to control the scheduling of throughput necessary to maintain their high minimum efficient scale but also to guard against adulteration, a danger if packaging were done by independent wholesalers. In the case of gasoline, in order to avoid the costs of operating the pumps and service stations, most oil companies preferred to lease the equipment they purchased or produced to franchised dealers. In tires, similarly, mass production benefited from the economies of throughput and mass sales required a specialized product-specific distribution network. Although tire companies occasionally owned their retail outlets, they preferred to rely on franchised retail dealers.

The mass marketing of new machines that were mass produced through the fabricating and assembling of interchangeable parts required a greater investment in personnel to provide the specialized

<sup>13</sup> Standard Oil only began to make an extensive investment in distribution after the formation of the Trust and the resulting rationalization of production and with it the great increase in throughput. Harold F. Williamson and Arnold R. Daum, *The American Petroleum Industry, The Age of Illumination, 1859–1899* (Evanston, Ill., 1959), 687–96. For investment in gasoline pumps and service stations see Harold F. Williamson et. al. *The American Petroleum Industry: The Age of Energy, 1899–1959* (Evanston, Ill., 1963), 217–30, 466–87, 675–86.

marketing services than in product-specific plant and equipment.<sup>14</sup> The mass distribution of sewing machines for households and for the production of apparel; typewriters, cash registers, adding machines, mimeograph machines, and other office equipment; harvesters, reapers, and other agricultural machines; and, after 1900, automobiles and the more complex electrical appliances all called for demonstration, after-sales service, and consumer credit. As these machines had been only recently invented, few existing distributors had the necessary training and experience to provide the services, or the financial resources to provide extensive consumer credit.

On the other hand, the manufacturer had every incentive to do both. By providing repair and service, it could help ensure that the product performed as advertised; control of the wholesale organization assured inventory as well as quality control. However, as a great many retailers were needed to cover the national and international markets, the manufacturers preferred to rely, as did the oil and tire companies, on franchised dealers. These retail dealers, who sold their products exclusively, were supported by a branch office network that assured the provision of services, credit, and supplies on schedule. Only the makers of sewing machines, typewriters, and cash registers went so far as to invest in retail stores. They did so primarily in concentrated urban areas where, before the coming of the automobile, such stores were the only means to provide the necessary services and credit on a neighborhood basis.

The makers of heavier but still standardized machinery for industrial users had to offer their customers much the same market services and even more extensive credit. This was true of manufacturers of shoe machinery, pumps, boilers, elevators, printing presses, telephone equipment, and machinery that generated electric power and light. Manufacturers' agents and other intermediaries had neither the training nor the capital to provide the essential services and credit. For the makers of industrial chemicals, volume distribution demanded investment in product-specific capital equipment as well as salesmen with specialized skills. Dynamite, far more powerful than black powder, required careful education of customers, as well as specialized storage and transportation facilities. So too did the new synthetic dyes and synthetic fibers, whose use had to be explained to manufacturers and whose application often required new specialized machinery. On the other hand, metals produced by processes with a high minimum efficient scale required less investment in distribution. Even so, to obtain

<sup>14</sup> Chandler, *Visible Hand*, 402–11.

and fill volume orders to precise specifications on precise delivery schedules required a trained sales force and close coordination between production and sales managers.

In these ways and for these reasons, the large industrial firm that integrated mass production and mass distribution appeared in industries with two characteristics. The first and most essential was a technology of production in which the realization of potential scale economies and maintenance of quality control demanded close and constant coordination and supervision of materials flows by trained managerial teams. The second was that volume marketing and distribution of their products required investment in specialized, product-specific human and physical capital.

Where this was *not* the case—that is, in industries where technology did *not* have a potentially high minimum efficient scale, where coordination was *not* technically complex, and where mass distribution did *not* require specialized skills and facilities—there was little incentive for the manufacturer to integrate forward into distribution. In such industries as publishing and printing, lumber, furniture, leather, and apparel and textiles, and specialized instruments and machines, the large integrated firm had few competitive advantages. In these industries, the small, single-function firm continued to prosper and to compete vigorously.

Significantly, however, it was in just these industries that the new mass retailers—the department stores, the mail order houses, and the chain or multiple stores—began to coordinate the flow of goods from the manufacturer to the consumer. In industries that lacked substantial scale economies in production, economies of both scale and scope gave the mass retailers their economic advantage. In coordinating these flows the mass retailers, like the mass producers, reduced unit costs of distribution by increasing the daily flow or throughput within the distribution network. Such efficiency, in turn, further reduced the economic need for the wholesaler as a middleman between the retailer and manufacturer.

In industries that integrated mass production and mass distribution—those with significant scale economies in production and specialized requirements in distribution—the most important entrepreneurial act of the founders of an enterprise was the creation of an administrative organization. It was essential first to recruit a team to supervise the process of production, then to build a national and very often international sales network, and finally to set up a corporate office of middle and top managers to integrate and coordinate the two. Only then did the enterprise become multinational. Investment in

production abroad followed, almost never preceded, the building of an overseas marketing network. So too in the technologically advanced industries, the investment in research and development followed the creation of a marketing network. In these firms, this linkage between trained sales engineers, production engineers, product designers, and the research laboratory became a major impetus to continuing innovation in the industries in which they operated. The result of such growth was an enterprise whose characteristic organization is depicted in Figure 1. The continuing growth of the firm rested on the ability of its managers to transfer resources in marketing, research and development, and production (usually those that were not fully utilized) into new and more profitable related product lines, a move that carried the organization shown in Figure 1 to that illustrated by Figure 2. If the first step—the integration production and distribution—was not taken, the rest did not follow. The firms remained small, personally managed producing enterprises that bought their materials and sold their products through intermediaries.

Thus, in major modern economies, the large managerial enterprise evolved in much the same way in industries with much the same characteristics. However, there were striking differences among these economies in the pace, the timing, and the specific industries in which the new institution appeared and continued to grow. These differences reflected differences in technologies and markets available to the industrialists of the different nations, in their entrepreneurial organizational skills, in laws, and in cultural attitudes and values. These dissimilarities can be pinpointed by very briefly reviewing the historical experiences of the 200 largest industrial enterprises in the United States, the United Kingdom, Germany, and Japan.<sup>15</sup>

#### THE UNITED STATES

In the United States the completion of the nation's basic railroad and telegraph network and the perfection of its operating methods in the 1870s and 1880s opened up the largest and fastest-growing market in the world. Its population, which already enjoyed the highest per capita income in the world, was equal to that of Britain in 1850, twice that in 1900, and three times that in 1920.<sup>16</sup> American entrepreneurs quickly recruited the managerial teams in production necessary to exploit scale

<sup>15</sup> The analysis of these differences is based on detailed research by the author of available histories, company and government reports, business journals, and internal company documents dealing with these many enterprises.

<sup>16</sup> W. S. and E. S. Woytinsky, *World Population and Production* (New York, 1953), 383–85.

TABLE 6

American Multinationals in 1914<sup>a</sup>

SIC GROUPS 20 AND 21: FOOD AND TOBACCO	SIC GROUPS 35, 36, AND 37: MACHINERY AND TRANSPORTATION EQUIPMENT
American Chicle	American Bicycle
American Cotton Oil	American Gramophone
Armour	American Radiator
Coca-Cola	Crown Cork & Seal
H. J. Heinz	Chicago Pneumatic Tool
Quaker Oats	Ford
Swift	General Electric
American Tobacco	International Harvester
British American Tobacco	International Steam Pump (Worthington)
SIC GROUPS 28, 29, AND 30: CHEMICALS PHARMACEUTICALS, OIL, AND RUBBER	Mergenthaler Linotype
Carborundum	National Cash Register
Parke Davis (drug)	Norton
Sherwin-Williams	Otis Elevator
Sterns & Co. (drug)	Singer
United Drug (drug)	Torrington
Virginia-Carolina Chemical	United Shoe Machinery
Du Pont	Western Electric
Standard Oil of N.J.	Westinghouse Air Brake
U.S. Rubber	Westinghouse Electric
	OTHER SIC GROUPS
	Alcoa (33)
	Gillette (34)
	Eastman Kodak (38)
	Diamond Match (39)

Source: Mira Wilkins, *The Emergence of Multinational Enterprise* (Cambridge, 1970), 212–13, 216.

<sup>a</sup>American companies with two or more plants abroad or one plant and raw material producing facilities.

economies and made the investment in distribution necessary to market their volume-produced goods at home and abroad, and did so in all the industries in which large industrial firms would cluster for the following century. Most of these firms quickly extended their marketing organizations overseas and then became multinational by investing in production facilities abroad, playing an influential role in a global oligopoly (see Table 6). Indeed, in some cases, particularly in mass-produced light machinery, the Americans enjoyed close to global monopoly well before the outbreak of World War I. By that time those in the more technologically advanced industries had also begun to invest personnel and facilities in research and development.

These large manufacturing enterprises grew by direct investment in

nonmanufacturing personnel and facilities. They also expanded by merger and acquisition.<sup>17</sup> Here they began by making the standard response of manufacturers, both European and American, to excess capacity—to which, because of the high minimum efficient scale of their capital-intensive production processes, they were particularly sensitive. American manufacturers first attempted to control competition by forming trade associations to control output and prices and to allocate marketing territories. However, because of the existing common-law prohibition against combinations in restraint of trade, these associations were unable to enforce their rulings in courts of law. So manufacturers turned to the holding company device. Members of their association exchanged their stock for that of a holding company, thus giving a central office legal power to determine output, prices, and marketing areas for the subsidiary firms.

For most American enterprises the motivation for the initial incorporation as a holding company was to control competition. For some, like John D. Rockefeller, however, this move became the first step toward rationalizing the resources of an enterprise or even an industry in order to exploit the potential of scale economies fully. Even before the enforcement of the Sherman Antitrust Law in the early twentieth century made contractual cooperation by means of a holding company legally suspect, a number of American enterprises had been transformed from holding companies to operating ones by consolidating the many factories of their subsidiaries into a single production department, unifying the several sales forces into a single sales department (including an international division) and then, though less often, investing in research and development. In a word, these enterprises were transformed from a loose federation of small operating concerns into a single centralized enterprise as depicted in Figure 1. These firms competed for market share and profits, rarely on price—the largest (and usually the oldest) remained the price leader—but on productive efficiency, on advertising, on the proficiency of their marketing and distribution services, and on product performance and product improvement.

In such large, complex organizations, decisions as to both current production and distribution and the allocation of resources for future production and distribution came to be made by full-time salaried managers. At the time of World War I owners who still worked on a full-time basis with their hierarchies continued to have an influence on such decisions. By World War II growth by diversification into new

<sup>17</sup> Chandler, *Visible Hand*, Chap. 10.

product lines not only greatly increased the size and complexity of the enterprise but still further scattered stock ownership. By then owners rarely participated in managerial decisions. At best they or their representatives were “outside” directors who met with the inside directors (the full-time salaried managers) monthly at most and usually only four times a year. For these meetings the inside directors set the agenda, provided the information on which decisions were made, and of course were responsible for implementing the decisions. The outside directors still had the veto power, but they had neither the time, the information, nor the experience, and rarely even the motivation, to propose alternate courses of action. By World War I, managerial capitalism had become firmly entrenched in the major sectors of the American economy.

#### THE UNITED KINGDOM

The situation in the United Kingdom was very different. As late as World War II, the large integrated industrial enterprise administered through an extensive managerial hierarchy was still the exception. Nearly all of the 200 leading industrials in Britain had integrated production with distribution, but in a great number of these firms owners remained full-time executives. They managed their enterprises with the assistance of a small number of “company servants,” who only began to be asked to join boards of directors in the 1930s. In Britain, at the time of World II, most of the top 200 consisted of two types of enterprises, neither of which existed among the American top 200 at the time of World War I. They were either personally managed enterprises or federations of such enterprises. The exceptions were, of course, Britain’s largest and best-known industrial corporations—those that represented Britain in their global oligopolies. However, as late as 1948 these numbered less than 20 percent of the top 200 enterprises.

Large hierarchical enterprise did come when British entrepreneurs responded to the potential of new high-volume technologies by creating management teams for production and invested in distribution and research personnel and facilities. Between the 1880s and World War I such firms appeared in branded packaged products like soap, starch, biscuits, and chocolate, and in rayon, tires, plate and flat glass, explosives, and synthetic alkalis. For example, Courtaulds, the first to build a plant with a high minimum efficient scale in rayon, became and remained the largest producer of the first synthetic fiber, not only in Britain but also in the United States.

But where British industrialists failed to grasp the opportunity to make the investment and build the hierarchies, they lost not only the world market but the British home market itself. This was particularly striking in machinery, both light and heavy, and in industrial chemicals. The American firms quickly overpowered the British competitors in the production and distribution of light mass-produced machinery, including sewing, office, and agricultural machinery, automobiles, household appliances, and the like. The Germans as quickly dominated the synthetic dye business so critical to Britain's huge textile industry while the Germans and Americans shared the electrical machinery industry, the new producers of light and of the energy so critical to increased productivity in manufacturing. In 1912, for example, two-thirds of the output of the electrical manufacturing industry in Britain was produced by three companies, the subsidiaries of the American General Electric and Westinghouse and the German Siemens.<sup>15</sup> Even those few British firms that achieved and maintained their position in the domestic market and the global oligopoly created smaller hierarchies and had more direct owner management than did their American counterparts.

After World War I a few British firms in such volume producing industries began to challenge their American and German competition, but they did so only by making the necessary investment in non-manufacturing personnel and facilities and by recruiting managerial staffs. This was the case for Anglo-Persian Oil Company, for British General Electric, and Imperial Chemical Industries (ICI) in each of their industries, for Metal Box in cans, and for Austin and Morris in automobiles. Nevertheless, the transformation from personal or family management to one of salaried managers came slowly and grudgingly. In even the largest enterprises—those with sizable hierarchies, such as Courtaulds, British Celanese, Pilkington, Metal Box, Reckitts, Cadbury's, Ranks, and others—the owners continued to have a much greater say in top management decisions than did their American counterparts.

Why was this the case? The answer is, of course, complex. It lies in Britain's industrial geography and history, in its educational system, in the lack of antitrust legislation, and in a continuing commitment to personal family management. Because the domestic market was smaller and was growing more slowly than the American, British industrialists had less incentive than their American counterparts to exploit scale economies. Moreover, Britain was the only nation to industrialize before the coming of modern transportation and commu-

<sup>15</sup> I. C. R. Byatt, *The British Electrical Industry, 1875–1914* (Oxford, 1979), 150.



nication. So its industrialists had become attuned to a slower, smaller-scale process of industrial production and distribution.

Nevertheless, precisely because it was the first industrial nation, Great Britain also became the world's first consumer society. The quadrangle bounded by London, Cardiff, Glasgow, and Edinburgh remained for almost a century after 1850 the richest and most concentrated consumer market in the world. British entrepreneurs quickly began to mass-produce branded packaged consumer goods (of all the new industries these required the least in the way of specialized skills in production and specialized services and facilities in distribution). But in other new industries, it was the foreign, not the British, entrepreneur who responded to the new opportunities. Even though that golden quadrangle remained the world's most concentrated market for mass-produced sewing machines, shoe machinery, office equipment, phonographs, batteries, automobiles, appliances, and other consumer durables, as well as electrical and other new heavy machinery and industrial chemicals, Germans and Americans were the first to set up *within Britain* the production teams and to make the investment in the product-specific distribution services and facilities essential to compete in these industries. Apparently British industrialists wanted to manage their own enterprises rather than turn over operating control to nonfamily, salaried managers. They seemed to regard their companies as family estates to be nurtured and passed down to their heirs rather than mere money-making machines. As a result they and the British economy as a whole failed to harvest many of the fruits of the Second Industrial Revolution.

The commitment to family control was reflected in the nature of British mergers. As in the United States, many British firms grew large by merger and acquisition. As in America, holding companies were formed to control legally the output, price, and marketing arrangements of hitherto small competing enterprises; but British holding companies, unlike their U.S. counterparts, remained federations of family firms. Until World War I British industrialists rarely viewed merger as a forerunner to the rationalization, consolidation, and centralized administration necessary to exploit the potential of scale economies. Indeed, the very first merger to centralize and rationalize in Britain came in 1920 at Nobel Explosives, the forerunner to ICI, which borrowed the necessary organizational techniques directly from its overseas ally, the Du Pont company of Wilmington, Delaware.<sup>19</sup> As

<sup>19</sup> For Nobel, see W. J. Reader, *Imperial Chemical Industries: A History*, (London, 1970), 1:388–94; for Lever Brothers, see Charles H. Wilson, *History of Unilever* (London, 1954), 2:302, 345.

late as 1928, Lever Brothers, one of Britain's largest enterprises, had forty-one operating subsidiaries and thirty-nine different sales forces. For these reasons, then, the founders of most large British enterprises, continued to manage their enterprises directly. Hierarchies remained small and controllable. Sons and grandsons and grandsons-in-law continued to move into the top offices.

Thus Britain continued until World War II to be the bastion of family capitalism. Thereafter the large industrial enterprise was transformed by several factors: the rapid decline of the old industries; the end of the cartel system at home and abroad, and therefore the increasing need to compete through efficiency; a new emphasis on engineering and business education for managers; and even changes in attitudes about family position and control. Ownership increasingly became separated from management. By the 1970s the size of the hierarchies, their composition, the organizational structure of the enterprise, the ways of competition, and growth were comparable to those of the large American firm thirty years earlier, except that family participation in top management was probably still greater.

#### GERMANY

In Germany, unlike Britain, integrated industrial firms as large as those in the United States existed well before the coming of World War I. They were fewer in number, however, and were concentrated in metals and the technologically advanced machinery and chemical industries. Among the top 200 German firms during the interwar years, very few produced branded packaged products, except for the regional breweries. One can only locate two chocolate and confectionery and two drug companies. The remaining few were subsidiaries of Nestlé, Lever Brothers, and the two Dutch margarine makers that joined Lever in 1929 to become Unilever. Nor did the large German firms manufacture light mass-produced machinery in the American manner. Singer Sewing Machine long remained the largest sewing machine maker in Germany. Well before World War I the factories of National Cash Register and American Radiator and the sales offices of International Harvester and Remington Typewriter dominated the German market for their products. In automobiles in 1929, a year when General Motors produced 1.6 million and Ford 1.5 million cars, only one German car company made more than 10,000. That firm, Adam Opel, which produced 25,000, was a General Motors subsidiary. Even in standardized industrial machines, American firms such as

Mergenthaler Linotype (in printing presses) and Norton (in abrasives and grinding machines) dominated German markets.

The Germans did, like the British, have their one large representative in the rayon, rubber, and oil oligopolies. (The last, EPU, was dismembered during World War I.) It was in complex machinery and chemicals, however, that the Germans made their global mark. In giant production works German machinery and chemical enterprises produced in quantity a variety of complex machines and chemicals made from the same basic ingredients and processes. Managerial hierarchies even larger than those of the production departments of American firms guided the complicated flow of materials from one intermediate process to the next. In the 1880s and 1890s these enterprises built extended networks of branch offices throughout the world to market products, most of which were technologically new machinery and chemicals, to demonstrate their use, to install them where necessary, to provide continuing after-sales service, and to give customers the financial credit they often needed to make such purchases. Once established abroad they built and acquired branch factories. Finally, they invested, usually more heavily than the Americans, in research and development.

At home these large integrated enterprises reduced competition by making contractual arrangements for setting price and output and allocating markets. Because such arrangements were in Germany legally enforceable in courts of law, the arrangements became quite formal and elaborate. The IG, or the community of interest, became the closest legal form to the British and the American holding company. The difference between the British holding company and the German community of interest was that the latter involved large hierarchical firms rather than small family enterprises. Their extensive investment in marketing and distribution and in research and development permitted the large German enterprises to dominate the negotiations setting up cartels, associations, or communities of interest, and provided them the power essential to implement and enforce the contractual arrangements.

Finally, the capital requirements of these capital-intensive producers of industrial products were far greater than those of the American and British makers of branded packaged products or the American mass producers of light machinery. Because there were no highly developed capital markets in Germany comparable to those of London and New York, German banks became much more involved in the financing of large hierarchical enterprises than was true in Britain and the United States. Although the representatives of banks never sat at

the *Vorstand*, the central administrative body of top managers, as did the founder and often full-time family executives, they did become important members of the *Aufsichtsrat* or supervisory board. Because the numbers of large enterprises were small, much smaller than in the United States, and because the major banks were even fewer, the full-time salaried bank managers were probably few enough in number to exchange information. Such outside sources of knowledge about the businesses may have made them less captive to the inside management than were the part-time outside directors on American boards. Thus, those sectors in which the supervisory board included managers of the leading banks can be said to have been administered through a system of finance capitalism.

Why were the large German industrial enterprises concentrated in metals and complex industrial products rather than branded packaged goods or light mass-produced machinery? Why did the Germans build large hierarchical organizations when the British did not? In the 1870s, when the transportation and communication revolution was being completed, manufacturers in the new German empire enjoyed neither the rapidly growing continental market of America nor the concentrated consumer market of Britain. Because per capita income was lower than in the United States or Britain and because Germany was neither a large importer of foodstuffs like the United Kingdom nor an exporter like the United States, there was relatively little entrepreneurial challenge to create large enterprises in packaged and perishable foodstuffs or other consumer products. The challenge to the German entrepreneurs came instead from the demand of industrializing and industrial countries, including Britain and Germany itself, for the new specialized industrial machinery, including electrical equipment, and new industrial chemicals, including synthetic dyes. In building their technical sales and research organizations—their basic weapons in international competition—the Germans had the advantage of what had become the world's best technical and scientific educational institutions. Therefore, despite the defeat in two wars the German strength in international competition still rests on the performance of their science-based industries.

Since World War II, convergence has occurred, as it has in Britain. German industrials successfully moved into the mass production of automobiles, appliances, and other consumer durables as well as into the high-volume production of light machinery. The number of producers of branded packaged products in foods and consumer chemicals increased. As the number of firms among the top 200 in industries other than machinery and chemicals grew larger, and as the firms in those

older industries diversified into new product lines, the ability of representatives of banks to bypass the inside managers and therefore to participate in top management decisions lessened. Even so, banks still play a more significant role in German enterprises than they do in American, just as British family members are still more important in top management decisions than those in the United States.

#### JAPAN

Large industrial enterprises in Japan evolved very differently from those in the West. For Japan was just taking the first steps toward modern industrialization in the same decades that the new transportation and communication revolution was spawning the Second Industrial Revolution in Europe and the United States. Indeed, Japan's first steel mill only went into operation in 1902. Only in the years after World War II was the economy large and strong enough to support modern mass production and mass distribution. Yet even before that war, managerial hierarchies had appeared to exploit new technologies and to reach new markets.

In the early years of this century, Japan's domestic and foreign markets were of a totally different nature. At the time of the Meiji Restoration, Japanese manufacturers enjoyed a highly concentrated domestic market, comparable to Britain's during its early industrialization, with long-established channels for distribution of traditional consumer goods. As a result, only a few Japanese firms (and no foreign companies) began to create marketing networks to distribute branded packaged products within the country. By World War II a small number of makers of branded packaged products such as confectionery, soy sauce, canned sea food, beer, and soap, who advertised nationally and had their own extensive sales forces, were listed among the largest 200 Japanese industrial enterprises.

On the other hand, overseas, even in nearby East Asia, the Japanese had had no commercial contact at all for the more than 250 years of the Tokugawa period. Manufacturers using imported processes to produce textiles, fertilizers, and ceramic and metal products sought overseas as well as domestic markets, particularly in nonindustrialized East and Southeast Asia. Overseas they rarely set up their own branch offices. They had neither the volume nor the distribution needs to require large product-specific investments in distribution. They relied instead on allied trading companies to assure coordination of flow of goods from factories in Japan to customers abroad and at home, and the flow of essential materials and equipment from overseas to the

producing facilities. These trading companies set up branch offices in Japan and in all parts of the world, and built large central offices in Tokyo or Osaka. That is, they invested in an extensive marketing and distribution organization that coordinated flows, provided marketing services, and generated information, thus lowering marketing and distribution costs. They became the linchpins of groups of firms consisting of single product manufacturing enterprises—each group having its own banks and trust companies as well as its own trading and warehouse concerns.

The close relationship between the managers of the manufacturing companies and those of the trading firms, either within the giant *zaibatsu* or between cooperating manufacturers in less formal groups, permitted the Japanese to capture an increased share of world trade, particularly in the relatively low-technology industries. However, where marketing and distribution did require product-specific skills, services, and facilities, enterprises set up their own distributing network and operated outside the *zaibatsu* and other group enterprises. Before World War II, only a few such enterprises had appeared, primarily in industrial machinery and particularly in electrical machinery. The latter was especially important, for until the 1950s Japan relied heavily on hydroelectric power for its energy. Only after the war, with the rapid growth of the domestic market, did the makers of automobiles, electric appliances, radio, and television build comparable organizations. In the postwar years these enterprises have been increasingly investing in distribution abroad and have come to operate through extensive managerial hierarchies comparable to those of the West. Like their western counterparts, they began in the 1960s to grow through diversification, particularly into appliances, radio, television, and other consumer durables. So by 1970 there were two types of industrial groups in Japan. One was the descendant of the old *zaibatsu*, whose central office had been abolished by the Allied occupational authorities after the war. The other was the maker of machinery, vehicles, and electrical equipment who, after diversifying in the manner of the western companies, often spun off their different product divisions. They remained part of the group, but operated as financially independent enterprises, unlike the divisions or subsidiaries of diversified western firms.

#### CONCLUSION

As the Japanese experience illustrates, the vast increase in the number and complexity of decisions required to coordinate the activities of

a multitude of offices, plants, distribution facilities, research laboratories, and the like in different geographical areas, often for several product lines, brought a convergence in the type of enterprise and system of capitalism used by all advanced industrial economies for the production and distribution of goods. In Japan the rapid post–World War II growth of a concentrated domestic, urban, industrial market with a sharply increasing per capita income provided a base for a large integrated, hierarchical enterprise to exploit the potentials of scale economies. Such enterprises quickly took their place in the existing global oligopolies.

In this respect the Japanese challenge to the American and European industrial leadership differs markedly from the earlier challenges of the Americans and Germans to British leadership. The Americans and Germans took over world markets by creating international hierarchical enterprises producing and distributing new products because the British failed to create the organizations required for the development and exploitation of these products. The Japanese, on the other hand, have successfully moved into the international markets by using technological and organizational techniques very similar to those of the Americans and Europeans, indeed often borrowed directly from them—but using them more effectively and efficiently than the first comers.

Thus by the 1970s, in these advanced industrial economies, managers with little or no equity in the enterprises administered made the decisions about present production and distribution and the allocation of resources for future production and distribution. And they did so through much the same basic organizational forms. The type of structure depicted in Figure 2 defines in broad outline the organization of Imperial Chemical Industries, Bayer, Mitsubishi Chemical, and Du Pont. Only in rare cases are any of the top 200 in these four leading industrial economies personally managed by their owners. In fact it is exceptional for owners to participate on a full-time basis in the top management decisions of an extensive hierarchy.

Nevertheless, variations within this new brand of capitalism are still significant. Enterprises of the four countries differ in terms of size, number, industry, and systems and styles of management, reflecting the different routes by which the leading sectors of each economy reached managerial capitalism—the United States by almost revolutionary changes at the turn of the century; Britain in a much more evolutionary manner that prolonged family capitalism; Germany by way of finance capitalism; and Japan by the development of group enterprise capitalism.