KEYNOTE ADDRESS

Organizational Capabilities in American Industry: The Rise and Decline of Managerial Capitalism

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Organizational Capabilities

Organizational capabilities represent the power of planned and coordinated specialized divisions of labor to achieve organizational goals. Through planned coordination, the specialized productive activities of masses of individuals can coalesce into a coherent collective force. Through planned coordination, organizations can integrate the various types of knowledge needed to develop new products and processes. Through planned coordination, organizations can speed the flow of work from purchased inputs to sold outputs, thereby enabling the enterprise to achieve lower unit costs.

Over the past century the growing technical and social complexity of the specialized divisions of labor that must be planned and coordinated to achieve economic success have made organizational capabilities ever more critical for attaining and sustaining competitive advantage. Increasingly and across a widening range of industries, the benefits of planned coordination in developing and utilizing productive resources have justified the high fixed costs of building the organizations that can plan and coordinate.

Organization building is a social phenomenon that can be supported or hindered by the particular political, cultural, and economic environments in which any given business enterprise purchases its inputs, produces its goods, and markets its products. It is therefore possible to characterize not only particular enterprises but also the national economies in which those enterprises operate by the existence of more or less powerful organizational capabilities. From the late nineteenth century, when international industrial

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leadership passed from Britain to the United States and Germany, superior organizational capabilities were critical. So too with the rise to dominance of Japan over Britain in cotton textiles in the 1920s and 1930s--a shift in international competitive advantage that rehearsed the more recent and more broad-based successes of Japanese industry against American and European competitors [6, 16, 17].

My purpose here is to provide an outline of the development and erosion of organizational capabilities in American industry during the twentieth century--a century that has witnessed the rise and relative decline of U.S. "managerial capitalism." The general historical perspective that I shall sketch out is by no means definitive. Only in recent years has scholarly research begun to discover and comprehend the internal evolution of business organizations. There is much more detailed research to be done. My hope is that a synthesis of existing knowledge on the development and erosion of organizational capabilities in the United States will be helpful for undertaking that research, as well as for stimulating debate over the institutional dynamics of capitalist development in the late twentieth century.

The Rise of Managerial Capitalism

Since the early nineteenth century, the geographic, occupational, and social mobility of labor in the United States has placed a premium on the building of managerial structures for successful industrial enterprise. The U.S. experience contrasted with that of Britain where geographic concentrations of skilled labor, reproduced on the job and in local communities from generation to generation, made it possible to conduct a successful business enterprise with little in the way of managerial planning and coordination. In Britain, capital could move to existing supplies of labor. In the United States, capital had to entice labor to move to it or alternatively develop and utilize technologies that made the enterprise less dependent on skilled manual labor that was in scarce supply. To solve the labor problem, U.S. industrialists had to build managerial structures that could ensure the sustained availability of the requisite labor services and that could plan and coordinate the development and utilization of labor-displacing technologies [4, 15, 16].

In the nineteenth century, as today, building a managerial structure meant training personnel in relevant industrial knowledge and motivating them to use that knowledge to further the goals of the enterprise. Higher education was as yet unimportant in the training of managers. They acquired relevant knowledge on the job--typically on the shop floor--and often moved from firm to firm to expand their knowledge base, bringing with them the skills as well as business connections that they already had acquired.

The interfirm, and interindustry, mobility of such technically trained personnel was a major factor in the diffusion of new technology in the nineteenth-century United States [10, 24]. With enough acquired experience, and some financial backing, some technologists would start their own firms. But if an entrepreneur wished to take advantage of expanding market

opportunities in the nineteenth century, he had to create incentives for technical specialists to remain in his employ rather than go to work for the competition. To retain these specialists, and to ensure that they used their positions of responsibility and authority for the benefit of the firm, the entrepreneur often gave key personnel stakes in the enterprise in the forms of equity shares and promises of promotion to positions of greater power and pay. Gaining the commitment of managerial personnel to the firm was a cumulative dynamic process: the more successful the firm, the greater its ability to retain and reward key managerial personnel and the more the personnel would seek to further the interests of the firm [5, 6, 14].

The building of managerial structures was, therefore, both an effect and cause of the growth of American enterprises. Extensive managerial structures evolved in industries in which high fixed costs of technology and organization could, through planned coordination and the resultant achievement of large market shares, be transformed into low unit costs. The Lowell textile firms that launched the industrial revolution in the United States had managerial structures that were more extensive and costly than those that existed in the dominant British cotton industry. But it was the growth of the railroads from the 1840s that launched the managerial revolution in the United States. Particularly as the railroads evolved into regional and national systems, it became necessary to build managerial structures to plan and coordinate the flow of people and goods [5].

The railroads not only provided a school for industrial managers--Andrew Carnegie was the most famous "graduate"--but also gave industrial enterprises the ready access to national supply and product markets that could make high fixed-cost investments in productive technology and managerial organization potentially worthwhile. Through planned coordination, enterprises that undertook these high fixed-cost investments in organization and technology could surge ahead of their rivals in the development and utilization of productive resources. For example, with railroads providing access to national markets for materials and finished products, the leading steel and oil refining companies--Carnegie Steel and Standard Oil in particular--made huge investments in plant and equipment as well as raw materials, and then, through the planned coordination of productive activities, captured the large market shares that enabled the transformation of these high fixed costs into low unit costs. As a result, these enterprises were able to underprice their competitors and emerge as dominant in their respective industries [5, 6].

Dominant firms also emerged in machinery manufacture, such as sewing machines (Singer) and agricultural equipment (McCormick). To compete in these industries required large investments not only in production facilities but also in marketing capabilities. To be competitive, companies had to invest in the training and motivation of knowledgeable and reliable salesmen who could provide after-sales service to the equipment users and who could also supply information from the field to manufacturing personnel concerning the need and potential for product development. As product innovation became central to successful industrial enterprise, the building of an effective marketing organization became as important, if not more important, to commercial success as the building of an effective

production organization. In a growing number of industries, the planned coordination of production and distribution activities within an organization provided the basis for attaining and sustaining competitive advantage. To accomplish the necessary planned coordination required the building of managerial structures--firm-specific investments in, and long-term commitments to, highly trained personnel [14].

The building of organizational capabilities became even more important in the next wave of managerial enterprises that emerged from the last decades of the nineteenth century in the science-based electrical and chemical industries. As these industries developed it became apparent that the integration of production and distribution facilities would not be sufficient for a firm to sustain whatever initial competitive advantage it may have had. The further growth of the enterprise required continuous innovation, which in turn required investments in research and development facilities. Firms such as General Electric, American Telephone and Telegraph, and Du Pont led the way in establishing R & D capabilities and integrating scientific personnel into the managerial structure [11, 23].

With the rise of the science-based industries came the growing need for personnel who had attained a conceptual comprehension of science and technology prior to taking up positions in industry. Following the successful German example of wedding higher education and industrial development, American businesspeople began to look to the educational system to provide their firms with the requisite personnel. Prior to the 1890s the U.S. system of higher education, like the British Oxbridge system on which it originally was modeled, was not integrated into the industrial sphere. Even the land-grant college system that had come into being in the 1860s and that would play a key role in the integration of higher education into the economy had been created primarily to enhance the social stature of America's farmers and artisans rather than to improve their productive capabilities. As individuals trying to make a living off the land or in their workshops, however, farmers and artisans had little use for the land-grant colleges [14].

These institutions only became integrated into economic activity from the late 1880s as the United States Department of Agriculture, with the subsequent support of rural bankers, agricultural machinery makers, and mail-order houses (all interested in rural prosperity), began using the land-grant colleges to develop new agricultural technologies and train agricultural "salesmen" who, through university extension courses, could help diffuse the new technologies to the farmers. At about the same time, some land-grant colleges--most notably M.I.T.--began training mechanical, electrical, and chemical engineers and scientists ready and willing to take up employment in managerial enterprises. Many of these engineers and scientists went on to climb the managerial hierarchy to positions of industrial leadership [14, 21].

Increasingly, after the turn of the century, major firms adopted the practice of regularly recruiting most new managerial personnel--and not just scientists and engineers--from the system of higher education. At the same time, dominant business interests--Carnegie and Rockefeller to name just two of the most important--pumped financial resources back into the system of higher education to ensure that, among other things, it would be able to

fulfill its new-found function of peopling the burgeoning managerial structures. The competition for business funding ultimately forced the elite institutions such as Harvard and Yale to direct some of their educational attention toward servicing the personnel needs of managerial capitalism [14].

By the 1920s the U.S. system of higher education had taken its present form and had become deeply integrated into the economic system. Higher education provided future managerial personnel not only with the basic cognitive equipment needed to comprehend the nature of increasingly complex technology but also with the behavioral socialization needed to function within the new managerial organizations. As a result, higher education became a standard credential for embarking on a managerial career. It provided the pre-employment foundations for the development of managerial personnel within the firm. Educated recruits could be expected to have the cognitive capabilities for acquiring industry-specific technical knowledge as well as the behavioral characteristics required to interact within the organizational context and respond positively to organizational incentives.

American industry now had available the semi-processed human resources on which the organizational capabilities of U.S. corporate enterprises would be built. The graduates of higher education entered the firm as lower-level technical specialists, and over the next several years were rotated from one department and function to another to enable them to gain the experience necessary to move up the corporate ladder into positions requiring general managerial capabilities. In the process the corporation determined who would move up the hierarchy furthest and fastest. But even for the most promising of managers, the climb to the top was a career-long process, during which the employee had to demonstrate continuously his (until recent years rarely her) commitment to the organization. Compared to many of the fast tracks of today, rewards for devoted performance would come slowly, but steadily and surely. With the widespread separation of ownership from control that had occurred in American industry by the first decades of this century, moreover, an ambitious managerial employee ostensibly could envision ending his career at the pinnacle of the company's hierarchy of status and power [14].

In return for the employee's long-term commitment to the organization, the enterprise made a long-term commitment to the "organization man" to provide him with employment security and social status. The firm also had a strong incentive to invest in the productive potential of the career manager. A precondition for the firm to make this commitment was an entrenched position in its relevant product markets. The firm could only offer the employee long-term security, and would only make long-term investments in human resources, if the firm itself had sound prospects for long-term survival as a productive entity.

Enterprises that experienced sustained growth, moreover, could continually create new opportunities for the exercise of authority and responsibility that could be offered to loyal managerial employees. Hence the importance for personnel management of a diversification strategy that would continually take the firm into new product and geographic markets in which it could make use of the organizational capabilities it already had

developed in capturing existing markets. By generating not only employment stability but also new opportunities and rewards, the continuous growth of the firm was critical to creating incentives for career managers to contribute their skills and efforts to the pursuit of organizational goals. Success bred success.

The successful implementation of a diversification strategy required the building of an appropriate organization structure. The ability to integrate technical specialists into the organization and transform some of them into general managers was the key to the success of the multidivisional structures, which, as Alfred Chandler has shown, emerged in the 1920s and diffused rapidly in the 1930s and 1940s across dominant firms in American industry [4]. The multidivisional structure enabled the firm to augment its organizational capabilities for the purpose of expanding the scope of its activities to a wider range of product lines and more geographically extensive markets.

By separating strategic from operating decision-making, top management could focus all of its attention on planning long-term investment strategies. But in focusing on strategic decision-making top management had to ensure that the operating divisions would respond to the overall goals of the firm--top management had to delegate authority to middle managers without losing control over the pursuit of the strategic objectives that had been set at the top. Essential to the superior performance of the enterprise that adopted the multidivisional structure was the organizational integration of the managerial structure through the training and motivation of salaried personnel.

Centralized control facilitated the planning and coordination of management development programs that fostered organizational integration. Management development built on the pre-employment technical and social training that managerial personnel had acquired in the nation's education system. The training acquired through management development was not confined to particular functional activities, product divisions, or geographic regions of the firm. Enterprise-wide management development programs made it possible to adopt job-rotation schemes that were part of a continuous process of transforming specialists into generalists. Often the schemes involved the movement of people not only between divisions but also from divisions to centralized staff functions and back.

Besides providing training, management development also became integral to the incentive system within the managerial structure. Management development programs expanded the potential for advancement within the firm, while encouraging junior and middle managers to conform to enterprise goals rather than to the goals of particular workgroups, functions, divisions, or regions. Given the dependence of top management on salaried employees to whom it had delegated considerable authority and in whose training the firm had made significant investments, positive incentives of promotion up the hierarchy were much more powerful inducements to securing superior performance than were negative sanctions of demotion and dismissal.

Just as the delegation of authority extended decision-making responsibility down the firm's hierarchy, so did open lines of promotion help

to ensure that the loyalty of managerial personnel would extend up the hierarchy. Moreover, the very possibility for moving up the hierarchy made middle managers willing to pass on information and delegate authority to subordinates who might one day take their places, thus extending appropriate training and effective incentives further down the organizational structure. At the same time, by separating control of key staff functions from the divisions, top management ensured that critical information would not become the property of self-serving entities within the firm [14].

The Managerial Structure and the Shop Floor

The long-term attachment of salaried employees to particular organizations in effect made managerial personnel members of the firm. Not so for shop-floor workers who, even to the present in the United States, generally have the status of hourly workers who are paid set rates for performing particular jobs. A blue-collar worker may spend a "lifetime" with the firm, especially when employment operates under seniority-based union rules. But American ideology has it that the shop-floor worker is a dispensable cog in the productive machine.

Indeed, since the late nineteenth century American management has sought to put this ideology into practice through the structuring of the hierarchical and technical divisions of labor [16]. The very formation of coherent managerial structures in U.S. firms created a clear-cut segmentation between salaried managers and wage workers that contrasted sharply with the integrated character of the managerial structures themselves. The process of segmentation between managers and workers began in the late nineteenth century, and its impetus was an obsession of American managers with taking skills off the shop floor. Up until the 1870s, American industrialists, and particularly those in metal and wood manufactures, relied extensively on craft workers to organize productive activities on the shop floor. These workers often were immigrants from Britain and Germany who had acquired their skills within the more traditional workplaces of Europe. But in the last decades of the nineteenth century, the combination of expanding national markets and rapid changes in process technology gave American managers both the incentive and ability to dispense with skilled craft workers [16].

Through the planned coordination of mechanized production processes, American managers could achieve the high rates of throughput that made it possible to gain competitive advantage or were essential just to remain competitive in capital-intensive industries. The attempts by craft workers to maintain their traditional shop-floor prerogatives, even in the face of deskilling technological change, threatened the achievement of what Alfred Chandler has called economies of speed [5]. Having invested in interconnected and expensive process technologies that were capable of high levels of throughput, management did not want to be bound by traditional craft norms concerning the allocation and pace of work as well as rates of pay.

It was the challenge to the position of craft control that prompted the workers to form the American Federation of Labor in the late 1880s.

The rise of craft unionism, however, only strengthened the resolve of U.S. mass producers to rid their workplaces of craft control. This they did not only by the violent suppression of strikes and the victimization of union labor but also by the cooptation of some of the more skilled craftsmen--particularly those engaged in the set-up and maintenance of machinery---into the managerial structure as engineers and supervisors. At the same time, American managers found ready at hand a massive influx of unskilled immigrant labor, primarily from southern and eastern Europe, eager to work in the mechanized factories.

A portion of these workers were assigned to unskilled heavy labor that had not yet been mechanized. But an increasing proportion found themselves assigned to "semi-skilled" operations. The cognitive requirements of semi-skilled jobs were minimal. Besides eliminating heavy labor, machines performed what for human minds and hands had previously been complex technical functions. Meanwhile a small group of elite, skilled personnel set up and maintained the machines. Left to semi-skilled workers were routine operative functions required to maintain the flow of work. What made these jobs demanding, both physically and mentally, was the pace of work, as managers tried to extract the maximum output from the high-throughput technologies in which their firms had invested. To avoid costly downtime on, and damage to, the expensive high-throughput machinery, it was essential that the semi-skilled operatives remain attentive and cooperative on the shop floor.

Not all machine operatives obliged. In the last two decades of the nineteenth century "scientific management" arose in enterprises that had invested in modern equipment. The goal of "scientific managers" was to get these workers to cooperate in the generation of high levels of throughput. The new technologies that were being put in place were not only skill-displacing but also *effort-saving*--the same amount of output could be produced with less effort on the part of the shop-floor worker, so that generating high levels of throughput no longer *necessarily* required that the operative actually work harder and longer. If only workers would trust "scientific managers" to set output norms consistent with the effort-saving capabilities of the new technologies and to fix piece rates that would give workers a fair share of the productivity gains, both capital and labor could, as Frederick Taylor put it, "together turn their attention toward increasing the size of the surplus until this surplus becomes so large that it is unnecessary to quarrel over how it shall be divided" [16, 19].

Taylor and his disciples had little success in gaining the cooperation of workers in the generation of high levels of throughput. Workers were disinclined to place their trust in the "scientific managers," because the industrial capitalists who really ran the factories were committed to extending and prolonging the "non-union era." The capitalists simply refused to bargain with the workers' representatives. Undermining even further the quest for high throughput was the rise after the turn of the century of a more militant labor movement, headed by the Industrial Workers of the World who advocated sabotage of the flow of work in order to pose a threat to the capitalists and thereby protect the interests of shop-floor labor.

With the struggle over "restriction of output" taking center stage in capital-labor relations, industrial managers became even more insistent that skill and initiative not be left on the shop floor, and that, by the same token, shop-floor workers not have control over the reproduction of relevant skills through craft-regulated apprenticeship training. Fearful that skilled shop-floor workers would use their scarce resources to reduce their effort and increase their pay, management deemed that knowledge of the shop-floor production process must reside within the managerial structure. In the short run, as already mentioned, management transformed skilled workers into managerial personnel. In the long run, management invested in new machine technologies that displaced shop-floor skills. In the process, the semi-skilled positions were increasingly filled by new immigrants who had arrived with few skills or by blacks who had left the South in search of a better living. Ethnically as well as organizationally and economically, a social gulf separated shop-floor workers from the managers who planned and coordinated their work [16, 19].

To get these increasingly alienated shop-floor workers to supply sufficient effort to maintain the flow of work, management turned in the early decades of this century to an extensive reliance on supervisory labor --a strategy that, however, often served to exacerbate the conflict on the shop floor, especially when labor markets were tight. In its reliance on the "drive system," moreover, management had not yet resolved the problem of how to ensure that supervisors, typically recruited from among the shop-floor workers and with meager prospects for rising further up the managerial hierarchy, would act in ways that furthered organizational goals [12, 16].

From the late 1910s, pressured by the exigencies of wartime labor shortage, the mass producers began to solve the problem of restriction of output on the shop floor. With the support of a repressive state, management attacked and eliminated the radical elements in the labor movement. In the aftermath of World War I, management also rebuffed large-scale efforts--in particular the Great Steel Strike of 1919--by the more conservative AFL to organize mass-production workers. By removing the possibility for workers to gain their ends through collective union voice, the demonstration of capitalist power set the stage for more progressive measures, particularly in firms that had attained dominant market shares, to gain a degree of cooperation from semi-skilled workers.

Personnel departments were put in place to rationalize labor policies, thereby eroding the autonomy of the foremen to whom management had been obliged to delegate substantial control. "Company unions" or "employee representation committees" were set up to provide an institutional context for workers to air their grievances to management. Attention was paid to the training of foremen to promote rather than undermine cooperative shop-floor relations, and lines of authority were put in place to ensure that foremen exercised control in accordance with company personnel policy [12].

Most important, during the boom of the 1920s, a significant number of dominant enterprises began to provide their shop-floor workers with "good jobs"--employment that offered higher pay and more job security than

could be found in the more competitive sectors of the economy. The managements of entrenched firms began, however modestly, to share with workers the huge surpluses that their firms were accumulating, and in an era during which the labor movement was in any case weakened, workers who landed the "good jobs" were inclined to cooperate in ensuring the rapid flow of work through the production process. With effective managerial coordination of high-throughput production processes now extending down to the shop floor, the 1920s saw phenomenal productivity growth in American manufacturing. Skills had been taken off the shop floor and production workers remained but "hourly," and ostensibly dispensable, labor. Nevertheless the planned coordination of the specialized division of labor was enabling dominant managerial enterprises to win a measure of cooperation from these workers. As a result, these firms were able to transform the high fixed costs of their investments in organization and technology into low unit costs, large market shares, and huge profits [16].

Managerial Capitalism in the Age of Mass-Production Unionism

With the depression of the 1930s, the "good jobs" of shop-floor workers vanished. At the beginning of the downturn, dominant enterprises sought to maintain employment for their shop-floor workers. But as the depression deepened in the early 1930s, massive layoffs of production workers became the rule. It appears, however, that dominant enterprises made greater efforts to keep their managerial structures intact. Top executives recognized that it would be difficult to recreate integrated managerial organizations that had taken decades to build if they were permitted to break apart. The economic success of the 1920s meant that most dominant firms had the financial power to take the long view in maintaining the integrity of their managerial organizations; they came into the 1930s with huge surpluses and little debt. It also appears that many dominant firms used the doldrums of the 1930s to create new products and search for new markets, and to implement multidivisional organizational structures to carry these strategies through. If, in the crisis of the 1930s, deskilled shop-floor workers were deemed dispensable, integrated managerial structures were not [15].

As good jobs vanished, shop-floor workers sought to remake their relations with their capitalist employers. Supported by a government that recognized the political and economic advantages of a viable union movement in the mass-production industries, workers successfully put an end to the "non-union era." The major objective of the mass-production unions that arose in the last half of the 1930s was "security"--the assurance that their members would enjoy both employment stability and substantial shares in their firms' prosperity.

The key to security was seniority. Unionized mass-production workers continued to be paid hourly rates attached to jobs, the form of payment suggesting that any individual worker was dispensable to the firm. But, barring another Great Depression, seniority provisions gave workers the prospects of steady employment as well as protection against discriminatory treatment for their involvement in unions. Indeed, over time, and typically

through plant-level bargaining, seniority became the basis on which shop-floor workers moved up internal job ladders to positions that paid progressively higher hourly rates. Mass-production unionism gave workers substantially more collective power that could be used to challenge managerial prerogatives to control conditions of work and pay. But by giving workers employment security mass-production unionism also helped to overcome the legacy of workers' mistrust of corporate management created by the massive layoffs during the Great Depression. The accord between organized labor and corporate management created a basis for labor-management cooperation in creating value on the shop floor [3, 6].

U.S. industrial corporations also ensured that unionization did not extend too far up the organizational hierarchy. Specifically, in the mid-1940s attempts at unionization by foremen were stifled, helped by a legal ruling that declared that foremen were part of management, and hence could not demand union recognition under the National Labor Relations Act. With well-developed personnel departments in place--and extending a process of organizational integration that had already begun in the non-union era of the 1920s--corporate management was able to delegate supervisory authority to foremen without fear that these recruits from the shop floor would abuse their managerial power. By definitively according managerial status to foremen, moreover, corporations extended a powerful positive incentive to shop-floor workers by giving them the opportunity of rising to managerial positions, even if there was little chance of promotion beyond the level of first-line supervisor. In the 1940s the problem of "the man in the middle" was resolved in a way that established effective lines of authority and communication between the higher management levels and the shop floor. These organizational linkages enhanced managerial control [16, 18].

This modified structure of managerial capitalism enabled U.S. mass producers to take advantage of the propitious macroeconomic conditions of the 1940s and dominate the international economy into the 1960s. But it is important to note that the organizational structures available to U.S. mass producers were not creations of the post-World War II era. Rather they were extensions of a process of organization building that had begun in the late nineteenth century and that permitted most of the enterprises that had emerged as dominant in the rise of managerial capitalism to remain dominant into the second half of the twentieth century. Although unions now shared power with management in bargaining over shares of value gains, workers left investment decisions to management; unlike the earlier craft organizations, their unions were not inherently opposed to technological change and redivisions of labor on the shop floor. In the postwar era of economic growth and U.S. international dominance, mass-production unionism showed itself to be compatible with the transformation of high fixed costs into low unit costs in mass-production enterprises.

Ensuring the continued dominance of the U.S. economy in the 1940s and 1950s was the movement of many U.S. firms into new product and geographic markets. The growth of multinational operations would not have been possible if the U.S.-based enterprises that went multinational had not already developed the organizational capabilities needed to dominate the

vast U.S. domestic market. The continued growth of many of these firms, and their ability to share the gains of success with their managers and workers, would not have been possible without huge investments in research and development--activities that enabled enterprises to build on their existing technological capabilities to generate product innovations. In the United States during the 1940s and 1950s, these firm-level investments in R & D received substantial support from private and public funding that enabled a vast expansion of the system of higher education, as well as from direct government financial support, generally justified as military expenditures, but with apparently significant spillovers into commercial uses [20].

The Decline of Managerial Capitalism

Since the 1960s U.S. industry has entered into a period of long-term relative decline, not unlike the experience of British industry since the late nineteenth century. As both cause and effect of this decline has been the erosion of the organizational capabilities that U.S. industrial corporations had built up over the previous half century, if not longer. During the 1960s the erosion of the organizational capabilities of U.S. industrial enterprises began on the shop floor--the weakest link in the structure of organizational integration that had been achieved previously. Shop-floor workers had never been extended "membership" in the firms for which they labored; in their work they had been reduced to "appendages of the machines" (to use Karl Marx's apt phrase), and they belonged to powerful union organizations that could refuse to cooperate with management in the bargaining process if workers' interests were not being met. During the 1970s and 1980s, however, the erosion of the organizational capabilities of the major U.S. industrial corporations has gone much further than loss of control over the shop-floor labor force. As we shall see, the erosion of organizational capabilities has also occurred within the managerial structures themselves.

The result has been the waning of "managerial capitalism" as a dominant force in international industrial competition. The decline of managerial capitalism has not occurred in a competitive vacuum. The U.S. economy has been in *relative* decline. That is, the dominant managerial enterprises that form the core of the U.S. economy have continued to grow, and in many cases even innovate, but in their competitive capabilities, these enterprises have been surpassed by more powerful modes of business organization, particularly those emanating from the Japanese economy.

Elsewhere I have elaborated on the characteristics of the organizational capabilities of Japanese "collective capitalism" that have made the institutions of "managerial capitalism" obsolete [16, 17]. Suffice it to say here that the strength of Japanese enterprise derives from organizational integration that extends beyond the limits of the planned coordination of the specialized division of labor as practiced under U.S. managerial capitalism. First, organizational integration in Japan extends across horizontally and vertically related *firms* to a much greater extent than in the United States (where such integration is indeed often illegal) so that planned coordination spans units of financial control to encompass multifirm business organizations. Second, within dominant Japanese enterprises, organizational

integration extends further down the organizational hierarchy, beyond the managerial structure itself, to include male blue-collar workers.

Both these extensions of organizational integration significantly enhance the organizational capability available to Japanese industry while significantly increasing the risks confronted by American firms that would attempt to make the huge investments in facilities and personnel necessary to remain competitive. Confronted by an international economy that they no longer dominate, many major U.S. enterprises have sought to adapt on the basis of the past successes, thereby reaping the returns on their prior investments without committing sufficient resources to ensure their future prosperity. Short-run adaptive responses inevitably lead to the erosion of organizational capabilities as the business enterprise can no longer maintain the incentives for key employees to remain committed to the organization --even if, as is increasingly less likely to be the case, these employees have the training and the physical facilities available that are necessary to enable the enterprise to remain at the forefront of innovation.

Deskilling on the Shop Floor

As already indicated, the vulnerability of American industrial enterprises to superior organizational capabilities from abroad was greatest on the shop floor. With a few exceptions such as IBM and Kodak, U.S. industrial enterprises had never made long-term employment *commitments* (as distinct from implicit promises) to their shop-floor workers. Inherent in insistence by American managers of their "right to manage" the shop floor was the ideology that, at any time and for any job, any individual shop-floor worker was dispensable--paid by the "hour" for the job at hand and no more.

In terms of workers' *skills*, managerial ideology could claim some relevance. Intent on taking skills off the shop floor where workers might use them to control the pace of work, U.S. managerial enterprises had not made significant investments in the skills of shop-floor workers. Management tended not to count the deskilled shop-floor worker among the firm's valued assets. But in terms of workers' *efforts*, this managerial ideology was much less well-founded. In practice, to gain the cooperation of shop-floor workers in maintaining the rapid and steady flow of work so essential to achieving low unit costs, management had to offer them a measure of employment security and a share (however indirect) in the prosperity of the enterprise [16].

Prior to the Great Depression, some of the more farsighted industrial managers had systematized their personnel policies to provide hardworking shop-floor workers with realistic promises of economic security. As we have seen, when the promises were not kept during the Great Depression, workers took the matter of economic security into their own hands. Once the major industrial corporations had recognized the new mass-production unions, it was not managerial personnel policy but rather the workers' own collective organizations with their emphasis on seniority rights that would provide workers with the employment security and economic gains critical for gaining their cooperation in the workplace. In effect managers of most

of the great U.S. industrial corporations came to rely on independent union organizations to ensure the stability of the long-term relation between shop-floor workers and the firms for which they worked.

This institutional arrangement remained viable as long as the U.S. industrial corporations continued to dominate their markets. But when, in the 1960s and 1970s, the corporations stumbled in the face of international competition and sought to roll back the bargaining gains that workers had made over the previous decades, the adversarial character of U.S. labor-management relations broke through the cooperative veneer. In industries such as steel and automobiles that were dominated by adaptive (as distinct from innovative) oligopolists, the costs of the accord with labor that had been struck in the 1940s began to outstrip productivity gains. As long as there was no serious foreign competition and the U.S. national firms in an industry did not engage in significant price competition among themselves, U.S. corporations were able to pass off higher labor costs to consumers in the form of higher prices. By the late 1960s, however, the limits of the adaptive strategy had been reached. With powerful international competitors on the scene, domestic inflation only served to erode U.S. international competitive advantage [16].

The U.S. competitiveness problem was not only higher wages but also lagging productivity growth. High wages, tight labor markets, and the availability of unemployment benefits--not to mention the restiveness of younger blue-collar workers, both black and white, in the wake of the civil rights and antiwar movements--had weakened managerial control over shop-floor workers. Alienated in any case by the routine nature of their work and without any formal power to influence the nature of the work environment, blue-collar workers sought to control their expenditure of effort by unauthorized work stoppages, work to rule, and absenteeism, all of which had adverse consequences for productivity.

In the 1970s many observers of American industry pointed to the alienated shop-floor worker, confined to routine and repetitive tasks requiring little skill development, as an explanation of the slowdown in the growth of labor productivity in American manufacturing that had begun in the mid-1960s. In many plants around the country, experiments in job enlargement and job enrichment were undertaken to try to enhance "the quality of worklife" (as it was called) in order to elicit more effort from workers. Although the initial impacts of these programs were generally positive, many of the experiments in the early 1970s were cut short when the workers whose jobs had been enriched and enlarged began questioning traditional managerial prerogatives. In the long run, attempts such as these at piecemeal transformation of the organizational structure may well have reduced rather than enhanced organizational capability by creating expectations for more meaningful work which in the end were not fulfilled [13, 16, 25].

In the 1980s Japanese success in taking market share away from once-dominant U.S. mass producers made it clear that the prime source of Japanese competitive advantage was not low wages (as many Americans had chosen to believe in the 1970s) but superior organizational capabilities. Many American industrial managers also came to recognize that the major

difference between the internal organization of U.S. and Japanese enterprises was the extent to which Japanese managers *developed* skills on the shop floor and delegated authority to blue-collar workers to use those skills to ensure a rapid flow of high-quality work. As a result of the Japanese challenge, American industrial managers began to realize that enhancing "the quality of worklife" was not just a means of eliciting effort from workers (as had been the case in the failed experiments of the 1970s).

Rather industrial managers came to recognize that upgrading the skills of the shop-floor labor force was an end in itself because it augmented the firm's human-resource "assets." To maintain the rapid flow of high-quality work using new, automated manufacturing technologies requires shop-floor workers with the cognitive capabilities to ensure that the machines work properly with a minimum of downtime. U.S. mass-production industries can no longer compete using workers whose own mechanical motions merely complement those of the machine, as previously has been the case. The effective use of the new technologies requires shop-floor workers who can ensure the quality, as well as the quantity, of work [16, 22].

As a precondition for technology-specific training for workers under the auspices of the employing enterprise itself, the large-scale adoption of new "flexible" technologies requires a supply of more highly educated shop-floor workers than U.S. industry has used or has had available in the past. To generate a large supply of workers capable of acquiring the requisite training both within and outside the manufacturing enterprise, institutional rigidities in the U.S. educational system must be confronted. When, in the early twentieth century, vocational schooling entered U.S. secondary education to track youths away from college and into the blue-collar labor force, the resultant segmentation of the labor force was consistent with the social division of labor between managers and workers in the world of work [2]. But in recent decades the same educational system has lost touch with the changing human-resource needs of an industrial era in which the potential for automation has created a new role for shop-floor workers in monitoring the quality, as well as ensuring the quantity, of work [22].

Mass Education and Deskilled Labor

What is now needed is an educational system that rejects the conception of the worker as a mere appendage of the machine and prepares future workers for active involvement in speeding the flow of work while maintaining its quality in the "flexible" factory. There is no point, however, in building new organizational structures and educational systems if those who run the largest industrial corporations eschew innovative investment strategies that can make use of skilled workers who are encouraged to exercise initiative on the shop floor. Yet prevailing organizational structures within U.S. manufacturing enterprises may be inhibiting the adoption of innovative investment strategies because they reflect a century-long managerial obsession with taking skills, and initiative, off the shop floor. It would appear that even entering the 1990s many, if not most, American

managers are reluctant to develop skills on the shop floor for fear of losing control of the flow of work [16].

Despite conservative investment strategies in the mass-production industries, the 1980s witnessed, somewhat belatedly, the widespread recognition of the need to improve the quality of mass education in the United States. At the same time, however, blue-collar workers have experienced massive, and typically permanent, layoffs in the face of international competition. Good blue-collar jobs have vanished in the United States, not because of a lack of effective demand as in the 1930s but because of the supply-side effectiveness of international competitors. Youths in working-class schools and communities see that the good jobs are no longer there. Yet they are confronted with an educational system that is geared toward generating blue-collar workers who will be able and willing to spend their lives doing routine work. The system no longer has a hold on them. Particularly in black communities, class discipline, a modicum of which was previously secured by the prospects of steady and well-paying blue-collar jobs, has broken down.

The Decline of Innovation

Although mass education for blue-collar workers has been deteriorating, the United States still possesses a powerful system of higher education, capable of generating technical specialists required for innovation in the late twentieth century. But the system of higher education is less integrated into the U.S. industrial economy than it used to be. For one thing, international competitors, with their powerful organizational capabilities in place, are able to make ample use of the open U.S. system of higher education. One reason why U.S. industrial corporations are having increasing difficulty in maintaining control over intellectual property is that they have become too reliant on the publicly funded educational institutions to foot the bills for R & D, rather than, as they did in the past, use the higher educational system as the foundation for investments in in-house R & D. In addition, over the post-World War II decades, the spillover of military R & D expenditures to civilian uses appears to have diminished [20].

At the same time, the evolution of U.S. financial institutions has generated strong disincentives for highly educated Americans to become technical specialists and pursue the types of managerial careers with particular enterprises that, as outlined above, were critical to the building of organizational capabilities in the era of U.S. industrial dominance. The deregulation movement of the 1970s and the related financial revolution of the 1980s opened up new opportunities for the graduates of higher education to make large sums of money quickly with little experience in either technology or the organizations for which they worked. The new opportunities made the slow climb up the managerial hierarchy of an industrial corporation distinctly less attractive for these educated personnel. When combined with the rise of formidable international competition, moreover, the financial revolution has placed the long-term existence of many once-stable industrial corporations in jeopardy, so that the firm-

specific career that a college graduate could once take for granted is now by no means assured [15].

More generally, the domination of financial interests over industrial interests has been eroding U.S. organizational capabilities even at the managerial level where historically organizational integration in the United States had been most complete. To be innovative in the late twentieth century requires not only appropriate human-resource development and far-reaching organizational integration but also massive financial commitments in the face of returns that are more uncertain than ever. In general, financial commitment means that those who, as employees, creditors, or owners, can lay claim to the revenues of the firm will not enforce those claims in ways that undermine the development and utilization of the firm's organizational capabilities [15]. In the private-sector enterprise, financial commitment generally means the retention of earnings for the sake of developing the resources of the firm. High degrees of financial commitment characterize those industrial enterprises in Japan and Germany that are the major international competitors in the late twentieth century. In international competition, financial commitment has become ever more critical to the development and utilization of organizational capabilities. Yet since the 1950s a number of forces in the U.S. economy have been eroding financial commitment.

The erosion began within the industrial enterprise itself. During the first half of the century when the major U.S. industrial corporations rose to international dominance, ownership was increasingly separated from control. Stockholding was widely dispersed among portfolio investors who, by virtue of the fragmentation of ownership, ceded to professional managers the right to determine the allocation of the firm's financial resources. The interests of these top managers were bound up with the interests of their managerial organizations. They had typically pursued their careers with the firms that they now ran. As salaried managers, moreover, their only claims to higher levels of remuneration derived from the long-run competitive performance of the enterprise.

During the 1950s, however, top managers ceased to be merely salaried employees. Through stock-based compensation systems, they became substantial owners, and hence the beneficiaries of the prolonged run up in stock prices that ended only at the close of the 1960s. During the 1950s and 1960s, the incentives increased for top managers of the major corporations to identify with the short-run market performance of their companies' stocks. The methods for improving short-run performance often conflicted with the long-term financial requirements for building organizational capability for the sake of sustained innovation.

By the same token, top managers now had vastly more scope than previously to use their positions of strategic management as the basis for their own individual aggrandizement rather than as the basis for the development of the organizational capabilities of their enterprises as a whole. Hence as an alternative to engaging in innovative investment strategies in their current or technologically related lines of business, many top managers of the 1960s became conglomerateurs, each one with financial control over a multitude of industrial enterprises in which he had neither

organizational roots nor technological expertise. These conglomerate managers controlled the financial resources required to undertake innovative investment strategies. But the planning and coordination of these strategies was the task of the new "middle" managers--often (initially at least) the former top managers of the acquired companies who now headed the conglomerate divisions and who had the requisite understanding of the division's organizational capabilities to manage the innovation process.

Besides knowledge of products, processes, and people, however, the management of innovation requires financial commitment--and more specifically control over the allocation of enterprise earnings--which is precisely what the new "middle" managers whose role it was to manage innovation within the conglomerate structure no longer had the power to provide. Moreover, evaluated by the head office on the basis of their short-term performance, the divisional heads who indeed pursued innovative investment strategies quickly learned (if they were still around to make use of their knowledge) that adaptive behavior--managerial behavior that did not make large and sustained demands on enterprise earnings--got a better reception from the conglomerate bosses.

Although the conglomerate movement abated and indeed reversed itself somewhat in the 1970s as many ill-managed divisions were sold off, considerable damage to the organizational capability of many U.S. industrial corporations had been done. At the same time, increasingly powerful international competitive challenges made the top managers of U.S. industrial enterprises think twice about committing their firms' resources to long-run innovative strategies. Instead the tendency was for these firms to try to adapt on the basis of their successful investments of the past. In this adaptive mode, the rewards of promotion to top management positions went to those who displayed the most talent for improving the "bottom line." We can conjecture that it was this type of top manager, driven by financial goals, who was most likely to cooperate with the raiders in the hostile takeover movement of the 1980s. The popularity of "golden parachutes" and other compensation schemes designed to bribe top management to make way for corporate raiders revealed that America's industrial leaders could pursue their own individual ends not only through the medium of the securities markets but also by selling their very offices of financial control.

The use of securities markets to buy and sell industrial enterprises for the sake of individual gain has often torn apart U.S. organizational capabilities without creating the conditions for putting more powerful organizational capabilities in their place. The problem is not mergers and acquisitions per se, but the purposes for which, and the conditions under which, they are undertaken. It may make strategic sense for an innovative firm to acquire or merge with other existing enterprises which have already developed unique capabilities rather than adopt the much slower and more uncertain strategy of developing these operations from the ground up. The success of such mergers and acquisitions in permitting the production of higher quality goods at lower unit costs depends on the willingness and the ability of the previously distinct and separate enterprises to integrate their capabilities so as to join forces in pursuit of a common organizational goal.

As demonstrated by the history of British economic decline, however, the simple vertical or horizontal amalgamation of firms or operations without organizational integration does not result in sustained competitive advantage--a lesson that was repeated in the United States with the rise and fall of the conglomerate movement in the 1960s and 1970s [6]. Financial integration does not imply organizational integration. And as demonstrated by the organizational advantages of the Japanese system of enterprise groups, organizational integration can occur across units of distinct financial control [1].

As financial commitment and organizational capability have eroded, the United States has lost competitive advantage not only in the "mature" industries of the Second Industrial Revolution but also in the high-technology industries of the Third Industrial Revolution [7, 8]. The formation of Sematech as a consortium of the major U.S. electronic firms to combine resources in the research and development of semiconductors was a step in the direction of a more collective capitalism that might have been able to respond to the new competition. Yet even IBM--the U.S. industrial organization par excellence--is so consumed with its struggles for restructuring its own product lines that it has been unable to provide effective leadership in restructuring the supply of its industry's vital capital inputs. The example of Japan suggests that the generation of innovation and the attainment of competitive advantage in such technologically complex and high fixed-cost industries require thoroughgoing vertical integration of the industry's productive capabilities as well as a degree of horizontal cooperation among major competitors in ensuring the supply of high-quality capital goods.

In the high fixed-cost, high-technology industries, it is only such collectivized organizations that can effectively nurture and sustain innovative new ventures into dynamic going concerns. The experience of the 1980s showed that the mode of venture capital that provided the financial commitment to innovative new ventures in the past is no longer adequate to meet the exigencies of the new international competition. Although the venture capital funds grew enormously during the 1980s, a plethora of venture capital firms competing for scarce high-technology personnel and eager for short-term returns have undermined the building of the organizational capabilities that the success of innovative investment strategies requires [15].

The comparative history of capitalist development--and in particular the successful Japanese challenge to the once-dominant United States, not to mention the previously dominant Britain--shows that now more than ever industrial leadership requires the long-term commitment of resources to organizations that can plan and coordinate the development and utilization of productive capabilities. In developed capitalist economies, however, those who control wealth can choose to live off the past rather than invest in the future. A necessary condition for continued investment in innovation, marked by the building of organizational capabilities, is that such adaptive behavior be constrained. A sufficient condition is that the economic uncertainty inherent in innovative investments be reduced by means of

policies that educate the labor force, mobilize committed financial resources, and coordinate interdependent innovative efforts [17].

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