The Chandlerian Corporation and the Theory of Innovative Enterprise

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Abstract

Through the synthesis of business history into a coherent and powerful analytical framework, Alfred Chandler made an enduring intellectual contribution to the social sciences. This essay outlines the implications of Chandler’s perspective for the theory of innovative enterprise, embeds that theory in the “social conditions of innovative enterprise” analytical framework, demonstrates the illogic of the neoclassical “monopoly model”, and contends that the analysis of the dynamics and performance of industrial capitalism requires a methodology that integrates theory and history.
1. The Chandlerian Corporation

Through the synthesis of business history into a coherent and powerful analytical framework, Alfred Chandler made an enduring intellectual contribution to the social sciences. Chandler (1984, 3) saw his task as “the development of generalizations and concepts which, although derived from events and actions that occur at a specific time and place, are applicable to other times and places, and are, therefore, valuable as guideposts for or as tools of analysis by other historians as well as economists, sociologists, anthropologists and other scholars.” In this essay I draw on Chandler’s generalizations and concepts to consider the implications of his analytical framework for what economists call “the theory of the firm”. More specifically, since, as Joseph Schumpeter (1934; 1950) recognized, innovation drives economic development, I consider the implications of Chandler’s perspective for what I call “the theory of innovative enterprise” (Lazonick 1991, ch.3; 2002a, 2003, and 2007).

Chandler’s subject matter was, of course, the large industrial enterprise. His most influential work synthesized the experience of the rise and consolidation of managerial capitalism in the United States in the last half of the nineteenth and the first half of the twentieth centuries. He developed his analytical framework in his trilogy of great books, *Strategy and Structure* (1962), *The Visible Hand* (1977), and *Scale and Scope* (1990).

In *The Visible Hand* – the first book of the trilogy in historical chronology – Chandler sought to explain the rise of the large industrial corporation in the United States in, roughly, the period 1870 to 1920. By the end of the 1910s, in Chandler’s view, the managerial revolution was complete. US business enterprises that had built cohesive managerial structures had made strategic, and synergistic, investments in production and distribution that enabled them to generate economies of scale.

In *Strategy and Structure*, published 15 years before *The Visible Hand*, Chandler took the completion of the managerial revolution as his starting point, asking how it was that the corporate headquarters of major US corporations had been able to manage the further growth of these already large corporations. His answer was the multidivisional structure, which enabled top executives at corporate headquarters to focus on long-run strategic planning while leaving the managers of the company’s divisions to ensure the profitability of their respective lines of business. By leveraging technological capability and/or market access, the corporation would use its success in one line of business to move into related lines of business, thus enabling it to reap economies of scope.

*Scale and Scope*, the final book in Chandler’s trilogy, represented his attempt to use the comparative development of the large industrial corporation in the United States, Britain, and Germany to uncover “the dynamics of industrial capitalism”. “At the core of this dynamic,” wrote Chandler (1990, 594) in the conclusion to *Scale and Scope*, “were the organizational capabilities of the enterprise as a whole.”

These organizational capabilities were the collective physical facilities and human skills as they were organized within the enterprise. They included the physical
facilities in each of the many operating units – the factories, offices, laboratories – and the skills of the employees working in such units.

Chandler warned:

But only if these facilities and skills were carefully coordinated and integrated could the enterprise achieve the economies of scale and scope that were needed to compete in national and international markets and to continue to grow.

Chandler (1990, 594) then goes on to articulate in two paragraphs, which I quote in full, what I consider to be the essence of his theory of innovative enterprise, including its contribution to the growth of the economy as a whole, that he had distilled from his trilogy.

Such organizational capabilities, of course, had to be created, and once established maintained. Their maintenance was as great a challenge as their creation, for facilities depreciate and skills atrophy. Moreover, changing technologies and markets constantly make both existing facilities and skills obsolete. One of the most critical tasks of top management has always been to maintain these capabilities and to integrate these facilities and skills into a unified organization – so that the whole becomes more than the sum of its parts.

Such organizational capabilities, in turn, have provided the source – the dynamic – for the continuing growth of the enterprise. They have made possible the earnings that supplied much of the funding for such growth. Even more important, they provided the specialized facilities and skills that gave the enterprise an advantage in foreign markets and in related industries. Because of these capabilities the basic goal of the modern industrial enterprise became long-term profits based on long-term growth – growth that increased the productivity, and so the competitive power, that drive the expansion of industrial capitalism.

In this essay I show the implications of Chandler’s perspective for the theory of innovative enterprise, and of the economy in which it operates. My approach is not to derive this theory out of Chandler’s work, but rather to build on his general understanding of the relation between organizational capabilities and economic performance, as well as his appreciation of the need to integrate theory and history in analyzing the corporate economy.1 In the next section of this paper, I contrast the theory

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1 Many of the theoretical constructs presented in this paper had their origins during the last half of the 1980s when I was closely associated with Al Chandler and the “business history group” at Harvard Business School. I first got to know Al in the early 1980s when I was an associate professor in the Harvard Economics Department and he was a professor at Harvard Business School. After Lazonick (1983) won the Newcomen Prize for best article in Business History Review in 1983, Al invited me to spend a year in 1984-85 at HBS as the Newcomen Fellow in Business History. During the ensuing years, as Al was writing Scale and Scope, I learned an immense amount about US business history through both my discussions with him and my participation in the HBS business history seminar. I am grateful to Tom McCraw, Al Chandler’s successor in the business history chair at HBS, for making that ongoing association with the business history seminar possible.
of the innovating firm, which is consistent with Chandler’s analysis of the “managerial revolution”, with the theory of the optimizing firm that is found in virtually every economics textbook and that dominates the way in which neoclassically-trained economists think about the firm as an economic entity. In the following section, I situate the theory of innovative enterprise in an analytical framework based on “social conditions of innovative enterprise” that can guide the rigorous cross-national study of the relations among economic institutions, business enterprises, and industrial sectors. I then turn to the failure of neoclassical economics to comprehend the historical significance of the “Chandlerian corporation”, positing instead the fundamentally flawed “monopoly model” as the relevant depiction of big business for the sake of economic policy. Finally, in the concluding section of this paper, I address the methodological question of the integration of theoretical analysis and historical research in understanding the role of business enterprise in what Chandler called “the dynamics of industrial capitalism”.

2. The Theory of Innovative Enterprise

A business enterprise seeks to transform productive resources into goods and services that can be sold to generate revenues. A theory of the firm, therefore, must, at a minimum, provide explanations for how this productive transformation occurs and how revenues are obtained. These explanations must focus on three generic activities in which the business enterprise engages: strategy, organization, and finance.\(^2\) Strategy allocates resources to investments in developing human and physical capabilities that, it is hoped, will enable the firm to compete for chosen product markets. Organization transforms technologies and accesses markets, and thereby develops and utilizes the value-creating capabilities of these resources to generate products that buyers want at prices that they are willing to pay. Finance sustains the process of developing technologies and accessing markets from the time at which investments in productive resources are made to the time at which financial returns are generated through the sale of products.

The neoclassical theory of the firm, found in any microeconomics textbook (see the left-hand side of Figure 1), trivializes the content of these three generic activities. The rule of profit maximization, imposed on the firm by given technological and market constraints, determines the firm’s strategy about the industry in which the firm should compete and the quantity of output that the firm should produce. The appearance of supernormal profits in a particular industry as a result of exogenous changes in technology and markets induces “entrepreneurs” to allocate resources to produce in that industry. Having invested in an industry, the management of the firm reduces to an exercise in

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\(^2\) In his 1962 book, Chandler linked investment strategy and organizational structure in the growth of the multiproduct enterprise. In his trilogy, he largely ignored the role of finance, viewing it as non-problematic as profitable firms leveraged their retentions with highly-rated and hence low-interest long-term bonds issues. In his last two books on the electronics and chemical industries, Chandler did not consider the problem of the finance of new ventures (neither “finance” nor “venture capital” appear in the indexes of these books), notwithstanding the importance of startups in the evolution of these industries, especially since the 1960s. Nevertheless, in his Ph.D. dissertation on nineteenth-century US railroads, published as Henry Varnum Poor: Business Editor, Analyst, and Reformer (1981), Chandler focused squarely on the issue of corporate finance, as Mary O’Sullivan (2010) shows in her paper for this special issue.
“substitution at the margin” in the choice of its profit-maximizing output. Financing the transformation of productive resources into revenue-generating products is non-problematic because the theory assumes that at each and every point in time the firm can borrow capital at the prevailing market rate and can sell all of the output that maximizes its profits, covering the cost of capital.

Figure 1. Comparing the optimizing and innovating firm

While the neoclassical theory of the firm trivializes the problems of strategy, organization, and finance, the particular formulation of the theory by post-Marshallian economists from the 1920s embodied a number of realistic assumptions about the factors that could influence the relation between the costs of production and the amount of output produced. These realistic assumptions have made the theory credible as a depiction of the way in which an actual firm operates. Analytically, these assumptions have provided the basis for a reasoned account of why the firm might have a U-shaped cost curve that, through the profit-maximization rule, enables it to choose an optimal level of output. The problem is, however, that the optimizing firm is not an innovating firm; indeed it can be characterized as an un-innovating firm.

In terms of strategy, the theory of the optimizing firm posits that an “entrepreneur” chooses the industry in which he wants to compete by allocating resources to any industry in which, because of the exogenous appearance of a disequilibrium condition, there are supernormal profits to be made. The disequilibrium condition disappears as entrepreneurs reallocate resources to this particular industry, and, as long as equilibrium conditions persist across all industries, there will be no incentive for the entrepreneur to shift resources from one industry to another.
There are two assumptions of the neoclassical theory of the firm that limit its ability to understand innovative enterprise. First, the neoclassical theory assumes that the entrepreneur plays no role in creating the disequilibrium condition that triggers the reallocation of resources from one industry to another. In the theory of the innovating firm, by contrast, entrepreneurs create new profitable opportunities, and thereby disrupt equilibrium conditions. Second, the neoclassical theory assumes that the entrepreneur requires no special expertise to compete in one industry rather than another. All that is required of the entrepreneur is that he follow the principle of profit maximization in the choice of industry in which to compete. In the theory of the innovating firm, in contrast, the entrepreneur’s specialized knowledge of the industry in which he chooses to compete is of utmost importance for his firm’s ability to be innovative in that industry.

Once the industry has been chosen, the neoclassical theory assumes that there are certain fixed costs, exogenously determined by existing technology and prevailing factor prices, that must be incurred by each and every firm that chooses to compete in the industry. These fixed costs are typically attributed to lumpy investments in plant and equipment, although it is also sometimes recognized that the entrepreneur’s salary represents an element of fixed costs. These costs are fixed because they are incurred even if the firm produces no output. As the firm expands its output, the average cost curve slopes downward as fixed costs are spread over a larger volume of output. The limiting assumption here is that the entrepreneur does not choose the firm’s level of fixed costs and the particular productive capabilities embodied in them as part of his firm’s investment strategy. In the theory of the innovating firm, the level of fixed costs manifests strategic decisions to make investments that are intended to endow the firm with distinctive productive capabilities compared with its competitors in the industry (see the right-hand side of Figure 1).

Given the firm’s fixed costs, the entrepreneur purchases that quantity of complementary variable inputs at prevailing factor prices in accordance with the technological requirements of the amount of output at which profits are maximized. Thus variable costs per unit of output are added to the fixed costs per unit of output to yield total unit costs, with the average cost curve mapping these total unit costs for different levels of output. If variable costs were to remain constant as output expands, the average cost curve would

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3 This entrepreneurial disruption of the “circular flow” was Schumpeter’s basic contribution to the theory of the innovating firm in The Theory of Economic Development (1934). Over the course of his career, Schumpeter came to see the entrepreneurial function as a collective rather than individual endeavor.

4 In a manner consistent with neoclassical theory, Austrians such as Israel Kirzner (1997) define the entrepreneur as one of the first to notice the appearance of disequilibrium conditions somewhere in the economic system. Hence he is among the first to reallocate resources from one use to another to take advantage of the existence of supernormal profits during the fleeting period during which these supernormal profits exist. His reallocation of resources to capture these supernormal profits begins the process of reducing them to normal levels, thus re-establishing equilibrium conditions. But the Austrians make no attempt to explain why disequilibrium conditions appear in the first place. Their “entrepreneur” is in effect an arbitrageur, who has little in common with the Schumpeterian entrepreneur whose actions create disequilibrium conditions, and who, as Schumpeter (1965) recognized, could have motives other than profits and could even be a representative of the state.
slopes downwards continuously (although at a declining rate) as fixed costs are spread over more units of output.

At this point, however, the neoclassical theory makes a critical assumption that causes the average cost curve to change direction and slope upwards, thus yielding the well-known U-shaped cost curve. The assumption is that the addition of variable factors of production to the firm’s fixed factors of production results in a declining average productivity of these combined factors (that is, the firm’s technology, which is also the industry’s technology). In deriving the U-shaped cost curve, neoclassical theorists give two quite plausible reasons why productivity declines as output expands. Both reasons assume that the key variable factor is labor. One reason is that as more variable factors are added to the fixed factors, increasingly crowded factory conditions reduce the productivity of each variable factor as, for example, workers continuously bump into one another. The other reason is that as more workers are added to the production process, the entrepreneur, as the fixed factor whose role it is to organize productive activities, experiences a “control loss” because of the increasing number of workers that he has to supervise and monitor.

Hence organization – in this case the relation between the entrepreneur as manager and the work force that he employs – becomes central to the neoclassical theory of the firm. Within the theory of the optimizing firm, the constraining assumption is that the entrepreneur passively accepts this condition of increasing costs, and optimizes subject to it as a constraint. In sharp contrast, in the theory of the innovating firm, the experience of increasing costs, as shown on the left-hand side of Figure 2, provides the firm’s strategic decision-makers with an understanding of the limits of the initial investment strategy, and with that information they make additional new investments for the strategic purpose of taking control of the variable factor that was the source of increasing costs (for an elaboration of this argument, see Lazonick 1991, ch. 3, and 1993). An innovating firm would not take a condition of overcrowding or control loss that results in increasing costs as a “given constraint”, but rather would make investments in organization and technology to change that condition. In effect, for the sake of improving its capability to develop and utilize productive resources, the innovating firm makes strategic investments that transform variable costs into fixed costs, which the firm, in order to innovate successfully, must now endeavor to transform into low unit costs.

What is the role of finance in the theory of the optimizing firm? A firm needs to finance fixed-cost investments because, by definition, the returns from these investments are generated over time. The theory of the optimizing firm posits that, at any given point in time, the firm can sell all the output that it wants according to a known industry demand schedule. Hence, in theory, there are no risks entailed in the financing of investments over the period of time that it takes to amortize the investments. The cost of capital is built into the firm’s cost structure, and simply reflects the market price of finance.

Neoclassical theorists have recognized the adjustment problem that faces an industry when there is a reduction in demand. With market prices depressed, some firms should exit the industry. But given the assumption that all firms in the industry have identical cost structures, it is not clear why some firms would drop out of the industry, leaving the
remaining firms to enjoy the restoration of “normal” profits. Rather all firms in the industry, viewing their fixed costs as sunk costs, would continue to produce at the profit-maximizing level as long as the market price at least enables them to cover their variable costs. Under such conditions of “cut-throat competition”, firms in effect live off their existing investments while they lack the prospective returns to justify the financing of new investments (see Reynolds 1940 for a classic article).

In contrast, in the theory of the innovating firm, the uncertainty inherent in fixed costs is central to the analysis rather than being a by-product of ad hoc concessions to reality. The theory of the innovating firm assumes that the investments that the firm makes must be developed and utilized over time, as the firm transforms technologies and accesses markets, before returns from those investments can be generated, or indeed before the rate of return can even be known. The problem is not, as in the theory of the optimizing firm, whether the prevailing return on investment provided by existing technological and market conditions will continue in the future. Since the return on investment depends on the extent of the market that the innovating firm actually attains, a return on investment does not even prevail in the present; that is, at the time when the investments in innovation are made.

An innovative investment strategy is inherently uncertain, and investments in innovation must be made despite the existence of uncertainties concerning prospective returns. Any strategic manager who allocates resources to an innovative strategy faces three types of uncertainty: technological, market, and competitive. Technological uncertainty exists because the firm may be incapable of developing the higher quality processes and products envisaged in its innovative investment strategy; if one already knew how to generate a new product or process at the outset of the investment, it would not be innovation. Market uncertainty exists because, even if the firm is successful in its development effort, future reductions in product prices and increases in factor prices may lower the returns that can be generated by the investments. Moreover, the innovative enterprise must access a large enough extent of the product market to transform the fixed costs of developing a new technology into low unit costs. Like transforming technology, accessing the market is an integral part of the innovation process, and, at the time when resources are committed to an innovative strategy, it is impossible to be certain, even probabilistically, about the extent of the market that will be accessed. Finally, even if a firm can overcome technological and market uncertainty, it still faces competitive uncertainty: the possibility that a competitor will have invested in a strategy that generates an even higher quality, lower cost product.

The optimizing firm may calculate, on the basis of prior experience, the risk of a deterioration of current market conditions, but it has no way of contemplating, let alone calculating, the uncertainty of returns for conditions of supply and demand that, because innovation is involved, have yet to be created. The fact, moreover, that the optimizing firm will only finance investments for which an adequate return already exists creates an opportunity for the innovating firm to make innovative investments that, if successful, can enable it to outcompete optimizing firms. Indeed, in the future optimizing firms may find that the cause of the “poor market conditions” that they face is not the result of an
exogenous shift in the industry demand curve but rather the result of competition from innovating firms that have gained competitive advantage while their own managers happily optimized (as indeed the economics textbooks instructed them to do) subject given technological and market constraints.

The task for a theory of innovative enterprise, therefore, is to explain how, by generating output that is higher quality and/or lower cost, a particular enterprise can differentiate itself from its competitors and emerge as dominant in its industry. Unlike the optimizing firm, the innovating firm does not take as given the fixed costs of participating in an industry. Rather, given prevailing factor prices, the level of fixed costs that it incurs reflects its innovative strategy. Neither indivisible technology nor the “entrepreneur” as a fixed factor (typical assumptions, as we have seen, in the neoclassical theory of the optimizing firm) dictates this “fixed-cost” strategy. An innovative strategy, with its fixed costs, results from the assessment by the firm’s strategic decision-makers of the quality and quantity of productive resources in which the firm must invest to develop higher quality processes and products than those previously available or that may be developed by competitors. It is this development of productive resources internal to the enterprise that creates the potential for an enterprise that pursues an innovative strategy to gain a sustained advantage over its competitors and emerge as dominant in its industry.

Such development of productive resources, when successful, becomes embodied in products, processes, and people with superior productive capabilities than those that had previously existed. But the high fixed costs that such investments entail mean that in and of themselves these investments place the firm at a competitive disadvantage until such time that, by developing and utilizing these investments, it can transform the technologies and access the markets that can generate returns. An innovative strategy that can eventually enable the firm to develop superior productive capabilities may place that firm at a cost disadvantage because such strategies tend to entail higher fixed costs than the fixed costs incurred by rivals that choose to optimize subject to given constraints.

For a given level of factor prices, these higher fixed costs derive from the size and duration of the innovative investment strategy. Innovative strategies will entail higher fixed costs than those incurred by the optimizing firm if the innovation process requires the simultaneous development of productive resources across a broader and deeper range of integrated activities than those undertaken by the optimizing firm. But in addition to, and generally independent of, the size of the innovative investment strategy at a point in time, high fixed costs will be incurred because of the duration of time that is required to develop productive resources until they result in products that are sufficiently high quality and low cost to generate returns. If the size of investments in physical capital tends to increase the fixed costs of an innovative strategy, so too does the duration of the investment required for an organization of people to engage in the collective and cumulative – or organizational – learning that is the central characteristic of the innovation process.

The high fixed costs of an innovative strategy create the need for the firm to attain a high level of utilization of the productive resources that it has developed. As in the
neoclassical theory of the optimizing firm, given the productive capabilities that it has developed, the innovating firm may experience increasing costs because of the problem of maintaining the productivity of variable inputs as it employs larger quantities of these inputs in the production process. But rather than, as in the case of the optimizing firm, take increasing costs as a given constraint, the innovating firm will attempt to transform its access to high-quality productive resources at high levels of output. To do so, it invests in the development of that productive resource, the utilization of which as a variable input has become a source of increasing costs (see Figure 2).

Figure 2. Innovative strategy and the reshaping of the cost curve

The development of the productive resource adds to the fixed costs of the innovative strategy. Previously this productive resource was utilized as a variable factor that could be purchased incrementally at the going factor price on the market as extra units of the input were needed to expand output. Having added to its fixed costs in order to overcome the constraint on enterprise expansion posed by increasing variable costs, the innovating firm is then under even more pressure to expand its sold output in order to transform high fixed costs into low unit costs. As, through the development and utilization of productive resources, the innovating firm succeeds in this transformation, it in effect “unbends” the U-shaped cost curve that the optimizing firm takes as given (see Figure 2). By shaping the cost curve in this way, the innovating firm creates the possibility of securing competitive advantage over its “optimizing” rivals.

As indicated in Figures 3a and 3b, the dynamics of the innovation process depend on the evolution of not only product costs but also product demand. Indeed, the two are interdependent because the attainment of low unit costs depends on the extent of the market that the firm accesses, and the extent of the market that the firm is able to access
depends on the productive capabilities that it develops. At a point in time there exists a potential demand for a good or service that is dependent on both the incomes and wants of buyers. The innovative firm, however, must access these markets, a process that generally entails investments of considerable size and duration in sales forces, distribution and servicing facilities, advertising, and branding.

These investments, which add to the fixed costs of the innovative investment strategy, are necessary because of the need to inform and convince potential buyers that the product is in fact (given their wants) “higher quality” than alternative goods or services that could satisfy those wants. These investments in accessing markets can shape the demand curve for the firm’s product by increasing the quantity of the product that buyers will demand at a given price. To some extent, this demand will become “dedicated” as buyers come to view the firm’s product as higher quality relative to those of competitors; that is, buyers will be willing to pay a premium price for the firm’s brand. Market investments can also shape the price elasticity of demand for the firm’s product, as the buyers’ perception of its higher quality makes them less willing than they would have otherwise been to reduce the quantity demanded in response to an increase in price.

The dynamics of the innovation process can enable the innovating firm to capture progressively a number of market segments based on different income levels of buyers (see Figures 3a and 3b). Especially at the initial stages of the innovation process, the innovating firm may not have sufficiently developed its capabilities to gain access to all of these market segments simultaneously. Cumulatively, however, the ability of the innovating firm to access one market segment may provide a foundation on which it can develop capabilities to access other market segments.

**Figure 3a. Accessing market segments: product innovation**
As a general rule, product innovation will proceed from the higher income segments to the lower income segments (see Figure 3a), while process innovation will proceed in the other direction (see Figure 3b). By meeting demand for a new product in the high-income market in the early stage of the innovation process, the firm generates revenues that help sustain the process, while, through the iterative investment process that I described earlier, the firm learns how to mass produce and mass market, thus gaining access to buyers who are lower income and, hence, more price sensitive. Innovation in consumer electronics provides a number of examples from calculators in the 1970s to plasma television screens in the 2000s of the progression from higher income to lower income segments, and from product innovation to process innovation. Alternatively, an innovating firm may seek to capture existing mass markets through process innovation that, if it can attain a sufficient extent of the market, makes existing products lower cost. In this case, as illustrated in Figure 3b, the innovative strategy will target lower income markets in the first phase. In subsequent phases, however, the innovating firm will seek to move into higher income segments of the market that can afford higher quality products by adding new product features to the advantages it has already gained through process innovation. Japanese entry and growth in automobiles, from the 1950s in Japanese markets and then from the 1970s in global markets, provides an excellent example of this progression.

The innovating firm generates revenues when, as a result of developing and utilizing productive resources, it can offer buyers a product of a quality that they want at a price that they are willing to pay. What then determines output and price in a theory of innovative enterprise? The answers are not straightforward because the innovating firm’s pricing strategy and its investments designed to shape market demand are endogenous to

Figure 3b. Accessing market segments: process innovation

output (units of quality)
The Chandlerian Corporation and the Theory of Innovative Enterprise

the innovation process itself (see Spence 1981). The innovating firm will have a strong interest in increasing the extent of the market to which it has access. Greater market share increases the learning experience of the innovating firms, while it helps to prevent rivals from gaining access to buyers not only at present but also in the future as buyers become customers who repeat their purchases of, and upgrade their demand for, the innovating firm’s products (see Christensen 1997).

The revenues (and not just the profits) that the innovating firm generates can be critical to maintaining its organization intact. When the innovating firm generates revenues, it has financial resources that can be allocated in a number of ways. If the gains from innovation are sufficient, the firm’s revenues create the possibility for self-financing. The firm may leverage this financing with bonded and bank debt on favorable terms, depending on its relations with the financial sector and its need for finance. For the innovating firm, financial resources not only fund new investment but also enable the firm to keep its “learning” organization intact. The innovating firm can use the gains of innovative enterprise to reward its employees for their application of skill and effort to transforming technology (unbending the cost curve) and accessing markets (shifting out the demand curve).

It may be that, as a result of sharing the gains of innovative enterprise with its employees, the firm’s wage bill is higher than those dictated by labor markets. Yet, depending on the extent of the changes in the supply and demand curves that result from the innovation process, its profits may be higher because of its higher wage bill. The gains of enterprise that the innovating firm has shared with its employees may have been critical inducements for gaining their cooperation in implementing its innovative investment strategy. In dynamic perspective, the innovating firm’s high wages may be integral to its dynamic capabilities that generate competitive advantage.

The innovating firm becomes dominant, therefore, by transforming the industry cost structure, shaping market demand, and producing a larger volume of output that it can sell at lower prices than optimizing firms in the industry. By confronting and changing technological and market conditions rather than accepting them as constraints on its activities, the innovating firm, that is, can outperform the optimizing firm in terms of both output and cost. Unlike the optimizing firm, the innovating firm has an interest in lowering prices as part of a strategy to increase the extent of the market available to it, which in turn lowers unit costs further as the enterprise reaps economies of scale. The economies of scale are not given to the industry but reflect the innovating firm’s ability to transform the high fixed costs of its innovative investment strategy into the low unit costs that give it competitive advantage.

Indeed, given the high fixed costs of its innovative investment strategy, if economies of scale are not attained the innovating firm will be at a competitive disadvantage relative to the optimizing firm. Yet when the innovative strategy is successful, the innovating firm has the potential of not only outperforming the optimizing firm in terms of product quantity and price but also generating sufficient surplus revenues to pay higher wages to employees and higher returns to other stakeholders such as suppliers, stockholders, and,
through taxation, governments. The innovation process, that is, can potentially overcome the “constrained-optimization” trade-offs between consumption and production in the allocation of resources as well as between capital and labor, and even between enterprise and society, in the allocation of returns. It is for this reason that innovation can form the foundation for equitable and stable economic growth, or what I have called “sustainable prosperity” (Lazonick and O’Sullivan 2002; Lazonick 2009a).

3. Social Conditions of Innovative Enterprise

The theory of innovative enterprise provides a framework for analyzing the roles of strategy, organization, and finance in generating the competitive advantage of one firm over another within the same industry (see, for example, Carpenter et al. 2003; Lazonick and Prencipe 2005; Lazonick, 2009a, ch. 2). At the same time, much of the discourse on competition among firms posits “nations” as a source of competitive advantage. Such has been in the case my own work on the relative decline of Britain (Elbaum and Lazonick 1986), the competitive power of the Chandlerian corporation in the United States (Lazonick 1992 and 2002a), the challenge of Japanese competition (Lazonick 1999 and 2005), and the rise of the US “New Economy business model” (Lazonick 2009a, ch. 2). As I have shown in this work (for syntheses, see Lazonick 2003, 2004b, and 2007), the theory of innovative enterprise permits us to identify three social conditions that may support the transformation of strategy, organization, and finance into innovation across the industries and constituent enterprises that characterize the national economy. Even in the highly globalized world of the twenty-first century, the social conditions of innovative enterprise differ across nations characterized by distinctive economic institutions for governing the allocation of resources, employing labor, and financing investment.

In the framework that I have developed, the social condition that can transform strategy into innovation is strategic control: a set of relations that gives decision-makers the power to allocate the firm’s resources to confront the technological, market, and competitive uncertainties that are inherent in the innovation process. For innovation to occur, those who occupy strategic decision-making positions must have both the abilities and incentives to allocate resources to innovative investment strategies. Their abilities to do so will depend on their knowledge of how the current innovative capabilities of the organization over which they exercise allocative control can be enhanced by strategic investments in new, typically complementary, capabilities. Their incentives to do so will depend on the alignment of their personal interests with the interests of the business organization in attaining and sustaining its competitive advantage.

The social condition that can transform organization into innovation is organizational integration: a set of relations that creates incentives for people to apply their skills and efforts to organizational objectives. The need for organizational integration derives from the developmental complexity of the innovation process – that is, the need for organizational learning – combined with the imperative to secure high levels of utilization of innovative investments if the high fixed costs of these developmental investments are to be transformed into low unit costs. Modes of compensation (in the
forms of promotion, remuneration, and benefits) are important instruments for integrating individuals into the organization. To generate innovation, a mode of compensation cannot simply manage the labor market by attracting and retaining employees. It must be part of a reward system that manages the learning processes that are the essence of innovation; the compensation system must motivate employees as individuals to engage in collective learning. This collective learning, moreover, cumulates over time, thus necessitating the sustained commitment of financial resources to keep the learning organization intact.

The social condition that can transform finance into innovation is financial commitment: a set of relations that ensures the allocation of funds to sustain the cumulative innovation process until it generates financial returns. What is often called “patient” capital enables the capabilities that derive from collective learning to cumulate over time, notwithstanding the inherent uncertainty that the innovation process entails. Strategic control over internal revenues is a critical form of financial commitment, but such “inside capital” must often be supplemented by external sources of finance such as stock issues, bond issues, or bank debt that, in different times and places, may be more or less committed to sustaining the innovation process.

The “social conditions of innovative enterprise” perspective asks how and under what conditions the exercise of strategic control ensures that the enterprise seeks to grow using the collective processes and along the cumulative paths that are the foundations of its distinctive competitive success. Of central importance to the accumulation and transformation of capabilities in knowledge-intensive industries is the skill base in which the firm invests in pursuing its innovative strategy (see Figure 4). Within the firm, the division of labor consists of different functional specialties and hierarchical responsibilities.

At any point in time a firm’s functional and hierarchical division of labor defines its skill base. In the effort to generate collective and cumulative learning, those who exercise strategic control can choose how to structure the skill base, including how employees move around and up the enterprise’s functional and hierarchical division of labor over the course of their careers. At the same time, however, the organization of the skill base will be constrained by both the particular learning requirements of the industrial activities in which the firm has chosen to compete and the alternative employment opportunities of the personnel whom the firm wants to employ. The innovative enterprise requires that those who exercise strategic control be able to recognize the competitive strengths and weaknesses of their firm’s existing skill base and, hence, the changes in that skill base that will be necessary for an innovative response to competitive challenges. These strategic decision-makers must also be able to mobilize committed finance to sustain investment in the skill base until it can generate higher quality, lower cost products than were previously available.

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In cross-national comparative perspective, the skill base that enterprises employ to transform technologies and access markets can vary markedly even in the same industrial activity during the same historical era, with different competitive outcomes. Precisely because innovative enterprise depends on social conditions, the development and utilization of skill bases that occur in one institutional environment may not, at a point in time at least, prevail in another institutional environment. Moreover, even within the same industry and same nation, dynamic capabilities that yielded innovative outcomes in one historical era may become static capabilities that inhibit innovative responses in a subsequent historical era.

If one accepts that business enterprises are social structures that are in turn embedded in larger (typically national) institutional environments, a theory of innovative enterprise must itself be embedded in a model of the relations among industrial sectors, business enterprises, and economic institutions that can support the processes that can transform technologies and access markets to generate products that are higher quality and/or lower cost than those that had previously existed. Figure 5 provides a schematic perspective on the interactions among sectors, enterprises and institutions in shaping the social conditions of innovative enterprise.
Innovation differs across industrial sectors (lower-left section of Figure 5) in terms of the technologies that are developed and the markets that are accessed. In the theory of the optimizing firm, business enterprises take technologies and markets as given: they constrain the “strategy” of the business enterprise to be like that of each and every other firm in the industry. In the theory of the innovating firm, in contrast, enterprise strategy transforms technology and markets. In doing so, strategy confronts technological uncertainty – the possibility that an innovative investment strategy will fail to develop higher quality products or processes – and market uncertainty – the possibility that the strategy will fail to access a large enough extent of the market to transform the high fixed costs of developing these products and processes into low unit costs. But, as indicated in the lower part of Figure 5, the innovating firm must also confront competitive uncertainty – the possibility that even if the firm is successful in transforming technology and accessing markets to develop higher quality, lower cost products than were previously available, competitors will do it better and cheaper.

The rise of new competition poses a challenge to the innovating firm. It can seek to make an innovative response or, alternatively, it can seek to adapt on the basis of the investments that it has already made by, for example, obtaining wage and work concessions from employees, debt relief from creditors, or tax breaks or other subsidies from the state (see Lazonick 1993). An enterprise that chooses the adaptive response in effect shifts from being an innovating to an optimizing firm. How the enterprise responds will depend on not only the abilities and incentives of those who exercise strategic control but also the skills and efforts that can be integrated in its organization and the
committed finance that, in the face of competitive challenges, can be mobilized to sustain the innovation process.

If and when innovation is successful in a particular nation over a sustained period of time, the types of strategic control, organizational integration, and financial commitment that characterize the nation’s innovating firms will constitute distinctive social conditions of innovative enterprise. Why, one might ask, would the social conditions of innovative enterprise exhibit similar characteristics across firms in a nation, particularly when they are engaged in different industries? And why, for a given industry, would the social conditions of innovative enterprise differ across nations? The answer to both questions is that historically nations differ in their institutions. At any point in time these institutions both enable and proscribe the activities of firms, while over time distinctive elements of these institutions become embedded in the ways in which firms function. Of particular importance in influencing the social conditions of innovative enterprise are economic institutions related to governance, employment, and investment. Through a historical process, the strategic, organizational, and financial activities of a nation’s innovative enterprises shape the characteristics of these economic institutions, but these institutions also exist and persist independently of these enterprises as part of the “social fabric” – the rules and norms of the nation applicable to economic activity that find application in the social relations of that nation’s firms.

Governance institutions determine how a society assigns rights and responsibilities to different groups of people over the allocation of its productive resources and how it imposes restrictions on the development and utilization of these resources. Employment institutions determine how a society develops the capabilities of its present and future labor forces as well as the level of employment and the conditions of work and remuneration. Investment institutions determine the ways in which a society ensures that sufficient financial resources will be available on a continuing basis to sustain the development of its productive capabilities. These economic institutions both enable and proscribe the strategic, organizational, and financial activities of business enterprises, thus influencing the conditions of innovative enterprise that characterize social relations within any given firm at any point in time. As these business enterprises succeed at innovation, they may reshape the conditions of innovative enterprise; for example, their strategic decision-makers, acting collectively, may take steps to reform these institutions to suit the new needs of their enterprises.

This highly schematic perspective, therefore, posits a dynamic historical relation between organizations and institutions in the evolution of the social conditions of innovative enterprise. To go beyond this schema requires the integration of the theory of innovative enterprise with comparative research on the evolution of the conditions of innovative enterprise in different times and places. To study the innovative enterprise in abstraction from the particular social conditions that enable it to generate higher quality, lower costs products is to forego an understanding of how a firm becomes innovative in the first place and how its innovative capabilities may be rendered obsolete. A comparative-historical analysis enables us to learn from the past and provides working hypotheses for ongoing research (for an explication of this integrative methodology, see Lazonick
2002a; for a comparative-historical synthesis of the innovative firm, see Lazonick 2004b).

For a first example of such a working hypothesis, the comparative-historical experience of innovative enterprise suggests that, contrary to a common belief that has persisted since the late nineteenth century, the form of firm ownership is not the critical issue for understanding the type of strategic control that supports innovative enterprise. Critical are the abilities and incentives of those managers who exercise strategic control. Whether they are majority owners of the firm, state employees, or employees of publicly listed companies, one needs to know whether these strategic managers possess the cognitive capabilities to allocate resources to the innovation process, and whether their personal rewards from exercising strategic control depend on the firm’s innovative success.

Secondly, the most fundamental, if by no means the only, source of financial commitment for the innovating firm is to be found in those revenues that are generated by the firm itself. Retentions form the foundation of corporate finance (Corbett and Jenkinson 1997; O’Sullivan 2004). The use of bank finance to leverage internal funds in providing financial commitment requires close relations between financial institutions and innovating firms, as for example in the Japanese model. In certain times and places, the stock market can provide some well-positioned firms with financial commitment (see Lazonick and Prencipe 2005). In other times and places, a highly speculative stock market can fund highly uncertain R&D (see Lazonick and Tulum 2009). Generally, however, as an investment institution, the major role of the stock market is to provide liquidity to productive investments that have already been made, not commitment to finance new productive investments. It enables owner-entrepreneurs and venture capitalists to cash out of their investments in startup companies, and it enables households to diversify their savings portfolios so that they can (hopefully) tap into the yields of the stock market, either directly or by entrusting their savings to institutional investors, without having to devote time and effort to understanding and monitoring the innovative capabilities of the companies that have listed their equities on it.

Thirdly, while strategic control and financial commitment are essential to innovative enterprise, it is organizational integration that determines the innovative capability that a firm actually possesses. The types of organizational integration that result in innovation vary across industries and institutional environments as well as over time. The hierarchical and functional divisions of labor that, when integrated into learning processes, have generated innovation in the past cannot necessarily be expected to do so in the future when faced with changes in technology, markets, and competition – changes that to some extent successful innovation in itself brings about.

In a theory of innovative enterprise, strategy, finance, and organization are interlinked in a dynamic process with learning as an outcome. To fully comprehend innovative enterprise, there is a need to understand the actual learning processes: the relation between tacit knowledge and codified knowledge, between individual capabilities and collective capabilities, and between what is learned at a point in time and how that learning cumulates over time (see Lazonick and O’Sullivan 2000). The prevailing social
conditions of innovative enterprise provide the context for those learning processes, shaping the types of learning that are attempted, the extent to which these processes are sustained, and the ways in which people interact both cognitively and behaviorally in the process of organizational learning. The influence of the social context is manifested by the functional and hierarchical integration of skill bases that can vary dramatically across industries and institutional environments as well as over time, with, as I have shown elsewhere through comparative-historical analysis, implications for economic performance in international competition (see Lazonick 2004b and 2007).

4. The Illogic of the “Monopoly Model”

Chandler portrayed the industrial corporation as a value creator that, in the aggregate, drove the development of the economy. From the perspective of the theory of innovative enterprise, this value-creating corporation embodied a combination of strategic control, organization integration, and financial commitment that enabled it to generate higher quality products at lower unit costs than had previously been possible. For historical reasons, these social conditions of innovative enterprise and their interaction are bound to vary across firms even within the same industry, thus explaining the differentiation among companies in strategy, structure, and performance. It was these particular value-creating capabilities – or “dynamic capabilities” as Teece (2009 and 2010) would have it – that, I would argue, enabled some firms to emerge as dominant over others in their industries.6

In the first decades of the twentieth century, the reality of the rise of the innovative managerial enterprise confronted the theory of the optimizing firm. Neoclassical economists responded by depicting the “monopoly model” as the analytical basis for assessing the performance of “big business”. Indeed, in the post-World War II decades, the monopoly model became the theoretical foundation of the “structure-conduct-performance” school of industrial organization, a neoclassical perspective rooted in the “ideal” of perfect competition. According to the monopoly model, a firm that dominated its industry would raise price and restrict output compared with the price and output under perfectly competitive conditions (see the left-hand side of Figure 6).

The comparison of constrained optimization under conditions of perfect competition and monopoly contains, however, a fundamental flaw. The problem is not with the internal logic of the constrained optimization model per se, be it in its competitive or monopoly form. Rather the problem is with the logic of comparing the competitive model with the monopoly model within the constrained-optimization framework. If technological and market conditions make perfect competition a possibility, how can one firm (or even a small number of firms) come to dominate an industry? One would have to assume that

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6 In Lazonick (1991, chs. 6 and 7; and 2002a), I have critiqued Oliver Williamson’s transaction-cost attack on the monopoly model, including his use of Chandler’s work for this purpose. In particular I show how the conditions of strategic control, organizational integration, and financial commitment transform the conditions of asset specificity, bounded rationality, and opportunism that Williamson (1985) accepts as given constraints. My critique is part of a broader analysis that posits innovation theory as a more rigorous and relevant alternative to agency theory for understanding the evolution of the modern corporation and effective public policy responses (see, for example, Lazonick 2009b and 2010).
the monopolist somehow differentiated itself from other competitors in the industry. But, the constrained-optimization comparison that yields the monopoly model argues that both the monopolist firm and perfectly competitive firms *optimize subject to the same cost structures* that derive from given technological and factor-market conditions. Indeed, except for the assumption that in one case the firm can make its profit-maximizing output decision as if it can sell all of its output at a constant price (according to a perfectly elastic demand curve) and that in the other case the firm is so large that it can only sell more output at a lower price (according to a downward sloping demand curve), there is absolutely nothing in terms of the structure or operation of the firm that distinguishes the perfect competitor from the monopolist! So how would monopoly ever emerge under such conditions?

**Figure 6. The theory of innovative enterprise and the monopoly model**

The now-standard comparison of perfect competition and monopoly within the theory of the optimizing firm was elaborated by the followers of Alfred Marshall, building on Books V and VI of *Principles of Economics*, first published in 1890 and revised in eight editions up to 1920. Yet, in his *Principles of Economics*, Marshall (1961, 484-5) himself recognized that a situation where one firm dominated an industry would not necessarily yield inferior economic outcomes than an industrial structure based on perfectly competitive firms. As he put it explicitly (with my emphasis):

"Monopoly means lower output and higher prices = inferior performance. But how did the monopolist gain a dominant market position?"

"LOGICAL FLAW: It is invalid to assume that the cost structures of “competitive” firms would be the same as those of enterprises that are dominant in an industry."
The monopolist would lose all his monopoly revenue if he produced for sale an amount so great that its supply, as here defined, was equal to its demand price: the amount which gives the maximum monopoly revenue is always considerably less than that. It may therefore appear as though the amount produced under a monopoly is always less and its price to the consumer always higher than if there were no monopoly. But this is not the case. For when the production is all in the hands of one person or company, the total expenses involved are generally less than would have to be incurred if the same aggregate production were distributed among a multitude of comparatively small rival producers. They would have to struggle with one another for the attention of the consumers, and would necessarily spend in the aggregate a great deal more on advertising in all its various forms than a single firm would; and they would be less able to avail themselves of the many various economies which result from production on a large scale. In particular they could not afford to spend as much on improving methods of production and the machinery used in it, as a single large firm which knew that it was certain itself to reap the whole benefit of any advance it made. This argument does indeed assume the single firm to be managed with ability and enterprise, and to have an unlimited command of capital – an assumption which cannot always be fairly made. But where it can be made, we may generally conclude that the supply schedule for the commodity, if not monopolized, would show higher supply prices than those of our monopoly supply schedule; and therefore the equilibrium amount of the commodity produced under free competition would be less than that for which the demand price is equal to the monopoly supply price.  

For a discipline that prides itself on its use of logical analysis, the comparison between monopoly and perfect competition represents an enormous logical error. It is an error that, in Capitalism, Socialism, and Democracy, prompted Schumpeter (1950, 106) to state:

What we have got to accept is that [the large-scale enterprise] has come to be the most powerful engine of [economic] progress and in particular of the long-run expansion of total output not only in spite of, but to a considerable extent through, the strategy that looks so restrictive when viewed in the individual case and from the individual point in time. In this respect, perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency.

7 Marshall (1961, 485n) added in a footnote: “Something has already been said ([Book] IV, [Chapters] XI, XII; and [Book] V, [Chapters] XI), as to the advantages which a single powerful firm has over its smaller rivals in those industries in which the law of increasing return acts strongly; and as to the chance which it might have of obtaining a practical monopoly of its own branch of production, if it were managed for many generations together by people whose genius, enterprise and energy equalled those of the original founders of the business.” It was the “managerial revolution” that is the essence of the “Chandlerian corporation” that overcame the constraint that the “many generations” of managers had to come from the same family, as Marshall assumed.
Of course, economists have long argued that natural monopoly characterizes some industries, as exemplified by electric utilities. Relative to the size of the market to be served, the fixed costs of setting up an enterprise in an industry are so high that it is uneconomical to have more than one firm serving a particular market area. But, if that is the case, then the comparison of output and price under natural monopoly with the “optimal” levels of product price and product output under competitive conditions is irrelevant. If one opts for the “natural monopoly” explanation for the concentrated structure of an industry, one cannot then logically invoke the “perfect competition” comparison to demonstrate the inefficiency of monopoly.

Recognizing the irrelevance of the competitive alternative under certain technological and market conditions, governments have long regulated utilities by (in principle at least) setting output prices that can balance the demands of consumers for reliable and affordable products with the financial requirements of utility companies for developing and utilizing the productive resources that will enable the delivery of such products to consumers. The analysis of the conditions for evaluating such long-term projections concerning the evolving relation of supply of and demand for such products requires a theory of the innovating firm that can transform technological and market conditions, not a theory of the optimizing firm that takes these conditions as given constraints.

To draw conclusions concerning the relative economic performance of the optimizing firm of neoclassical theory, its output and price should be compared with those that can be achieved by an innovating firm that, as we have seen, transforms technological and/or market conditions to generate higher quality, lower cost products than had previously been available at prevailing factor prices (see Figure 1). As a general rule, the innovating firm has an interest in lowering prices in order to increase the extent of its market, thus driving down unit costs and expanding industry output. The overall gains from innovation will depend on the relation between the innovating firm’s cost structure and the industry’s demand structure, while the distribution of those gains among the firm’s various “stakeholders” will depend on their relative power to appropriate portions of these gains. What is important in the first instance is that, as a result of the transformation of technological and market “constraints”, there are gains to innovative enterprise that can be shared. In expanding output and lowering cost, it is theoretically possible (although by no means inevitable) for innovative enterprise to result, simultaneously, in higher pay and better work conditions for employees, a stronger balance sheet for the firm, more secure paper for creditors, higher dividends and/or stock prices for shareholders, more tax revenues for governments, and higher quality products at lower prices for consumers.

The theory of innovative enterprise permits the analysis of the conditions under which the high fixed costs of an innovative investment strategy are in fact transformed into higher quality, lower cost products than had previously been available. Rather than engage in the illogical comparative statics of the monopoly model, the theory of innovative enterprise provides the researcher with a tool for undertaking the rigorous analysis of the roles of strategy, organization, and finance in the evolution of the firm, within the context of
specific industrial and institutional conditions. Central to this research agenda is a methodology that integrates theory and history.

5. Theory and History

Writing at the end of a long and illustrious career, Joseph Schumpeter (1954, 12-13) advised (with his emphasis): “Nobody can hope to understand the economic phenomena of any, including the present, epoch who has not an adequate command of the historical facts and an adequate amount of historical sense or of what may be described as historical experience.” By “historical experience” Schumpeter meant the ability of the economist to integrate theory and history (see also Schumpeter 1950, Part I; and 1965). For theory to be relevant to real-world phenomena, it must be derived from the rigorous study of historical reality. To develop relevant theory requires an iterative methodology; one derives theoretical postulates from the study of the historical record, and uses the resultant theory to analyze history as an ongoing and, viewing the present as history, unfolding process. Theory, therefore, serves as an abstract explanation of what we already know, and as an analytical framework for identifying and researching what we need to know.

Chandler’s work is important not because it was Schumpeterian (although Chandler did his early work in the 1950s at the Schumpeter-inspired Harvard Research Center in Entrepreneurial History) but because it focused on the role of the firm in the allocation of resources in the economy and on the relation between strategy and structure in the growth of the firm. Sociological in its orientation (having been influenced by the structural-functionalist approach of Talcott Parsons), Chandler’s work made business history relevant and accessible to the social sciences, demonstrating as it did the powerful generalizations and hypotheses that could be derived from a combination of primary research and historical synthesis. At the same time, by focusing on the growth of the major firms in the rise of the world’s most powerful economy, Chandler’s business history cried out for a theory of innovative enterprise.

Key elements of that theory, rooted in the same history of US managerial enterprise that was the focus of Chandler’s studies, can be found in the work of Edith Penrose (see Lazonick 2002a and 2002b; Pitelis 2002; Teece 2009, ch. 4). An economist whose career overlapped Chandler’s, Penrose did pioneering work on the evolution of the international patent system for her Johns Hopkins Ph.D. thesis, before undertaking the work that led to her 1959 book, The Theory of the Growth of the Firm. Like Chandler, Penrose was not overly influenced by the work of Schumpeter. But more than any other economist in the post-Schumpeter generation, Penrose’s work elaborated the foundations of a theory of innovative enterprise.

In The Theory of the Growth of the Firm, Penrose conceptualized the modern corporate enterprise as an organization that administers a collection of human and physical resources. People contribute labor services to the firm, not merely as individuals, but as members of teams who engage in learning about how to make best use of the firm’s productive resources – including their own. This learning is organizational; it cannot be
done all alone, and hence is collective, and it cannot be done all at once, and hence is cumulative (see Best 1990, 125). At any point in time, this organizational learning endows the firm with experience that gives it productive opportunities unavailable to other firms, even in the same industry, that have not accumulated the same experience. The accumulation of innovative experience enables the firm to overcome the “managerial limit” that in the neoclassical theory of the optimizing firm causes the onset of increasing costs and constrains the growth of the firm. The innovating firm can transfer and reshape its existing productive resources to take advantage of new market opportunities. Each move into a new product market enables the firm to utilize unused productive services accumulated through the process of organizational learning. These unused productive services can provide a foundation for the growth of the firm, through both in-house complementary investments in new product development and the acquisition of other firms that have already developed complementary productive resources.

Like Chandler’s work, Penrose’s book reflected a combination of primary research (see Penrose 1960) and the synthesis of the work of others, including a body of research in business history. During the 1960s and 1970s, Penrose became a leading expert on the international oil industry, spending considerable time in Iraq. She also deepened her understanding of the integral relation between theory and history, as is evident in a highly perceptive essay, written in the late 1980s, entitled, “History, the Social Sciences and Economic ‘Theory’, with Special Reference to Multinational Enterprise” (Penrose 1989). Quoting from Schumpeter’s statement on the paramount importance of “historical experience” for economic analysis, Penrose (1989, 11) argued that “universal truths without reference to time and space are unlikely to characterise economic affairs.”

Penrose’s warning needs to be applied to the analysis of the Chandlerian corporation itself. As an innovative enterprise, the Chandlerian corporation was a phenomenon that achieved its peak in the middle decades of the twentieth century. Already in the conglomerate movement of the 1960s, the social conditions of innovative enterprise were breaking down (Lazonick 2004a). The indiscriminate buying and selling of companies, based on the newly emerged ideology that “a good manager can manage anything” (O’Sullivan 2000, ch. 4), had the effect of segmenting the conglomerate executives who exercised strategic control over the allocation of corporate resources from the organizational structures on which the development and utilization of productive resources relied.

Then in the 1970s, the Chandlerian corporation was confronted by the Japanese challenge based on a triad of institutions – stable shareholding, permanent employment, and main-bank lending – that created new standards of, respectively, strategic control, organizational integration, and financial commitment in mass production industries (see Lazonick 2005). On the basis of a much more thoroughgoing process of organizational integration than the Chandlerian corporation had achieved, the Japanese developed and utilized innovative capabilities that enabled them to outcompete the United States in the very mass-production industries – consumer electronics, motor vehicles, machine tools, steel, and memory chips -- in which coming into the 1970s the United States had been the world leader (Lazonick 1998, 2004b and 2007). In effect, through the hierarchical
The Chandlerian Corporation and the Theory of Innovative Enterprise

integration of shop-floor workers into the organizational learning process and through the functional integration of the activities of technical specialists, the Japanese perfected what I have called the US “Old Economy business model” (OEBM) that had characterized the Chandlerian corporation.

With strategic control compromised by conglomeration and the efficacy of US organizational integration challenged by Japanese competition, the 1980s witnessed a decline of financial commitment in the Chandlerian corporation (Lazonick 2009a and 2009b). Elsewhere I have described this change as a shift from a “retain-and-reinvest” allocation regime to a “downsize-and-distribute” allocation regime (Lazonick and O’Sullivan 2000; Lazonick 2004a). Corporations that had retained corporate earnings and reinvested in the growth of the firm now downsized their labor forces and distributed corporate earnings to shareholders in the forms of both cash dividends and stock repurchases.

The particular impacts of Japanese competition on investments in innovative enterprise varied markedly across US industries. It virtually wiped out the US-based consumer electronics industry. For example, in 1981 RCA was the one of the leading consumer electronics company in the world, and the 44th largest US industrial company by revenues and employed 119,000 people. By 1986 it had been taken over by General Electric and sold off in pieces (Chandler 2001, ch. 2 and 3). During the 1980s the US automobile manufacturers attempted to learn from the Japanese, but in the 2000s they were still producing lower quality, higher cost cars, and, not surprisingly, had lost significant market share (Platzer and Harrison 2009; WardsAuto.com 2009). In the machine tool industry, the overwhelming success of the Japanese against the major US companies was followed from the 1990s by the emergence of export-oriented SMEs producing for specialized niche markets (Kalafsky and MacPherson 2002). In the steel industry, the innovative response of the United States was the emergence of independent minimills, using electric arc furnaces and scrap metal. In the 1980s the minimills were only technologically capable of producing long products, but, led by Nucor, the introduction of compact strip production technology from 1989 enabled the minimills to compete with integrated mills in flat products as well (Giarratani et al. 2007).

From the perspective of the dynamics of innovative enterprise, the most important US response to Japanese competition was in the semiconductor industry. By the middle of the 1980s, the Japanese had used their integrated skill bases to lower defects and raise yields in the production of memory chips, forcing major US semiconductor companies to retreat from this segment of the market (Burgelmann 1994; Okimoto and Nishi 1994). Led by Intel and its microprocessor for the IBM PC and its clones, US companies became world leaders in chip design. Indeed, the IBM PC and its “Wintel” architecture laid the basis for the rise of what I have called the “New Economy business model” (NEBM) which by the 2000s had relegated the “Old Economy” Chandlerian corporation to history.

As I have shown in my book, Sustainable Prosperity in the New Economy? Business Organization and High-Tech Employment in the United States (Lazonick 2009a), NEBM differed markedly from OEBM in terms of strategy, organization, and finance. Product
strategy under NEBM is highly focused, in contrast to the multidivisional structure emphasized by Chandler under OEBM. With the advent of “open systems”, process strategy came to rely on global supply chains, often served by vertically specialized firms, in contrast to the vertical integration based on proprietary technologies that was fundamental to Chandler’s analysis. Whereas the Chandlerian corporation typically offered employees a career with one company, with one’s salary increasing over the course of one’s career, NEBM has relied on interfirm mobility of labor, with a broad-based stock option plan commonly used as mode of compensation for attracting and retaining personnel. In the evolution of NEBM, venture capital emerged as an industry in its own right, dedicated to nurturing startup firms. Central to the growth of venture capital was the founding in 1971 of NASDAQ as a stock exchange on which venture-backed companies can do a relatively quick initial public offering because of its much less stringent listing requirements than the “Old Economy” New York Stock Exchange. Companies that trade on NASDAQ tend not to pay dividends during their first decade or two as publicly listed companies, reinvesting virtually all their profits in the growth of the firm.

With the maturation of NEBM, however, companies have engaged in the practice of large-scale stock repurchases to support their stock prices, a practice that was begun by Old Economy companies in the 1980s as part of the shift to a “downsize-and-distribute” allocation regime. During the mid-2000s, stock repurchases escalated dramatically, quadrupling for the S&P 500 companies from a per company average of almost $300 million in 2003 to $1.2 billion in 2007 – before being constrained by the financial meltdown of 2008 (Lazonick 2009b). I have argued that the only purpose of stock repurchases is to manipulate a company’s stock price, and that executive stock options, the main source of the ongoing explosion of US executive pay since the 1970s, serve as the prime inducement to this mode of corporate resource allocation (Lazonick 2010). I have also documented, on an industry-by-industry basis, the ways in which these manipulative attempts to “maximize shareholder value” have undermined investments in innovative enterprise.

In the 2000s, it can fairly be said that the Chandlerian corporation has ceased to exist. In historical retrospect, Alfred Chandler uncovered the dynamics of a historically-specific business model that drove the development of the world’s richest economy. The essence of capitalism is, however, as Schumpeter recognized, change. The work of Chandler has provided us with a deep understanding of the foundations of US economic power in the middle decades of the last century. His work does not provide us with a roadmap for understanding the business models that have become dominant in the first decades of the twenty-first century. There is a need for us, who seek to build on the Chandlerian legacy, to remain committed to the integration of theory and history. My claim is that,

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8 It is beyond the scope of this paper to engage in the debate over Richard Langlois’ (2003) provocative “vanishing hand” thesis. See, however, Dosi et al. (2008), Lazonick (2008), and Langlois (2008) as well as my arguments in Lazonick (2002a).

9 Unfortunately, Chandler’s two “pathways of learning” books, one on consumer electronics and computers (Chandler 2001) and the other on chemicals and pharmaceuticals (Chandler 2005) did not accomplish this task.
The Chandlerian Corporation and the Theory of Innovative Enterprise

with its focus on strategic control, organizational integration, and financial commitment, “the theory of innovative enterprise” is a potent framework for analyzing the process of change. It is a framework that, through the integration of theory and history, can enable us to “catch up with history” so that we can analyze the present as an evolving reality before the present as history passes us by.
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