The Corporation and the Twentieth Century

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A note to the reader.

This was supposed to be a paper. But it has turned out to be a project: a book, ultimately, I imagine. So consider this a kind of proposal, with early versions of early chapters. I have made a stab at a provocative thesis, but it is merely sketched. I consider even the thesis itself provisional and subject to change as I sift more carefully and completely through the evidence.

Clearly, I am very much in need of your comments, suggestions, and objections. Am I on the right track? What literature have I missed?

Table of (mostly proposed) content

Introduction.

From the vantage point of today, we can see that the twentieth century was an odd period of history. The span from 1914 to 1973 or so – what Deirdre McCloskey (2006, p. 202) calls the Great European Civil War[1] – was a break from a clear trend of globalization and market integration that began at least as far back as the 1820s (O'Rourke and Williamson 2002). The period 1914-1973 was also the heyday in the United States of the large multi-unit enterprise chronicled and celebrated by Alfred Chandler (1977). Perhaps this is no coincidence.

In earlier work (Langlois 2003b, 2007a) I attempted to paint a picture of the rise and decline of the Chandlerian firm in a style faithful to Chandler's original sketch. As a result, I drew factors like technology and extent of the market in the foreground and left the role of institutions, especially regulatory institutions, as a detail in the shadows. Other writers, including those in the so-called varieties-of-capitalism literature (Hall and Soskice 2001) and in the literature on the political origins of corporate governance (Roe 2003), have theorized about the effects of institutions on corporate form. In this essay I join that conversation. I look more carefully at the institutional changes in the United States during the 1914-1973 period, and I deploy evidence from economic and business history in an attempt to sort out the contribution of those institutional changes to the rise and decline of the Chandlerian corporation – and, perhaps, vice-versa.

[1] She actually dates it to 1989, the fall of the Soviet Union.

Institutions and the corporation.

Although it may sound odd to say this, Alfred Chandler's analysis of the rise of the multi-unit enterprise is largely a-institutional. It is not that Chandler *ignores* institutions; rather, he claims affirmatively that institutions are not fundamental to the story he is telling.

This is an odd thing to say since, in one sense, Chandler's work is very much institutional. He revolutionized business history by pulling its focus back from antiquarian accounts of individual firms to encompass the history of the forms under which business had been conducted (Chandler 1971). The multi-unit managerial corporation is one such form; and whatever one's position in the debate about whether "organizations" count as institutions, the *form* of the multi-unit enterprise, as distinct from any particular instantiation of that form, is clearly an institution.[2] Nonetheless, Chandler explains the nature and rise of that form almost exclusively in terms of economic parameters (like technology, size of markets, and transportation costs) and the internal logic of organization itself. Institutions in the larger sense of legal and political arrangements are not entirely absent, as I will argue; but they remain in the background. "The modern diversified enterprise represents a calculated, rational response of technically trained professional managers to the needs and opportunities of changing technologies and markets. It is much less the product of ambitious and able individual entrepreneurs or of governmental policies" (Chandler 1969, p. 279).

Chandler's notion of institutional history derives from Max Weber, whom he absorbed via Talcott Parsons (Chandler 1971; McCraw 1988). Weber's famous account

[2] Hodgson (2006, p. 2) defines institutions as "systems of established and prevalent social rules that structure social interactions."

of bureaucracy is clearly the font of Chandler's understanding of the essence of managerial capitalism. "Administrative coordination," carried out by trained professional managers, by what are clearly bureaucrats rather than Schumpeterian entrepreneurs, is not a contingent solution to the problems of a particular time and place. Administrative coordination is *the* rational method for organizing high-throughput mass production.

> Although administrative coordination has been a basic function in the modernization of the American economy, economists have given it little attention. Many have remained satisfied with Adam Smith's dictum that the division of labor reflects the extent of the market. Like George Stigler, they see the natural response to improved technology and markets as one of increasing specialization in the activities of the enterprise and vertical disintegration in the industries in which these enterprises operate. Such an analysis has historical validity for the years before 1850 but has little relevance to much of the economy after the completion of the transportation and communication infrastructure. Besides ignoring the historical experience, such a view fails to consider the fact that *increasing specialization must, almost by definition, call for more carefully planned coordination* if volume output demanded by mass markets is to be achieved (Chandler 1977, p. 490, emphasis added).

Chandler's *magnum opus* was published in 1977, at the end of the mid-century "civil war," and at the dawn then dimly breaking of a new era of liberalization, globalization, and technological change. If the hallmark of the late nineteenth century was the rise of the large multi-unit enterprise, the hallmark of the late twentieth century was the undoing of that organizational form. The corporation in all its guises came under intense pressure; many corporations disappeared or crumbled into more specialized fragments. Of course, the late twentieth century also saw the rise of "large" corporations, but these were large in terms of output or value, not large in the sense of Coase (1937). Corporation like Apple, Dell, Intel, and Microsoft grew from tiny start-ups and remained relatively specialized even as their market cap exploded. Vertical integration is far from dead; but

the multi-unit enterprise has lost its pre-eminence and has receded into place among a wider variety of organizational forms. One could even say that, at the turn of the millennium, growth in markets was leading to a progressive division and specialization of industries (Young 1928) not entirely unlike that envisaged by Smith and Stigler.

In "The Vanishing Hand" (2003b) and follow-on work (Langlois 2007a), I attempted to understand this phenomenon from within what was essentially a Chandlerian framework. Like Chandler, I tried to explain observed changes in organizational form in terms of changes in economic parameters (like technology, size of markets, and transportation costs) and in terms of the internal logic of organization. The puzzle, of course, is that at the end of the nineteenth century larger markets and reduced transportation and communication costs led to *increased* vertical integration, whereas at the end of the twentieth century even larger markets and much lower transportation and communication costs were leading to *less* vertical integration. My solution was to remove the Weberian core of Chandler's account and replace it with the Smithian one. A growing extent of the market always leads to the division and specialization of industries; but that process works itself out only over time.[3] In the short run, "markets," and market-supporting institutions like technical standards or contract law, cannot adapt as quickly as can administrative coordination within a vertically integrated structure. Another way to put it is that vertical integration can sometimes overcome the dynamic transaction costs of economic change (Langlois 1992). In this account, unlike that of Chandler, administrative coordination

[3] This does not mean just that labor is becoming more specialized. Part of this Smithian process may involve changes in the specialization of machines, which may become *less* specialized, and that may in turn make labor less specialized (Ames and Rosenberg 1965; Langlois 2003a). But the effect of this possibility is to change what are included in the "tasks." In the large, tasks continue to become increasingly specialized.

within vertically integrated structures is not inherently superior to "market" coordination in all times and places, even for high-throughput production. As markets mature and market-supporting institutions develop, we would expect to see vertical integration play an increasingly small role in coordinating the complex matrix of production.

Notice that, like Chandler's account, my account makes no mention of larger institutional forces like government policy. I do talk about "market-supporting institutions," and in principle these could be governmental institutions of some sort. But I never really expand on the concept. My principal example is technological standardization.[4] In the end, I tended to think of market-supporting institutions as residing at some kind of "meso" level between organizational form and political institutions. Is this a problem? In comparing the effect of the turn-of-the twentieth-century globalization (the visible hand) with the effect of turn-of-the-twenty-first-century globalization (the vanishing hand), economic factors seem to take center stage: growth in the extent of the market, attendant on growing income and lower transportation and communications costs, can carry the explanatory weight. But even here, political institutions lie in the background; liberalization and globalization presuppose them. There is no such thing as a "free market" independent of legal and political institutions. Markets depend on the affirmative presence of institutions like property rights and contract law as much as they thrive in the *absence* of a great many other political institutions (like tariffs, capital controls, or immigration laws) that would hamper trade.

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[4] As in the case of standards for Midwestern grain in the nineteenth century (Cronon 1991), which enabled the mass distribution of grain by means of organized commodities markets rather than through any kind of internal administrative coordination.

The role of these larger institutions becomes even more critical when we consider the middle of the twentieth century, a period during which there were political institutions aplenty. Recall my argument: Chandlerian vertical integration arose as a mechanism for quickly making the many systemic changes called for by the economic forces of the late nineteenth century. As markets and market-supporting institutions "caught up" in the late twentieth century, high levels of vertical integration were no longer needed. But what exactly was happening in the middle of the twentieth century? Calendar time was elapsing, but markets and market-supporting institutions didn't seem to be catching up. Indeed, the 1950s and 60s were arguably the high point of the Chandlerian corporation. By well into the middle of the century, forward integration among manufacturers seemed to be increasing rather than decreasing (Livesay and Porter 1969). And at the beginning of the 1960s, the large corporations of the early century not only continued to dominate the *Fortune* 500 but actually seemed to be more fully entrenched than ever (Collins and Preston 1961). Why? The only way to answer this question is to look more carefully at political (and perhaps other social) institutions in mid-century to see how they affected the institution of the Chandlerian corporation, either directly, or indirectly through their effects on economic parameters like market size and trade costs.

Administrative coordination.

Before we examine the hypotheses and evidence, however, we need to take what may seem to be a detour. We need to be clear about what it is we are trying to explain.

Consider what may be a paradigmatic comparison, the enterprises of Gustavus Swift in the nineteenth century and Michael Dell in the twentieth century (Fields 2004). Both entrepreneurs set up high-throughput production and distribution systems. Unlike

Swift, who had to integrate vertically to create his system, Dell could plug into an array of already-existing capabilities available from the market. Indeed, Dell succeeded not in spite of having used the market, but precisely *because he did* (Baldwin and Clark 2006). In addition to a thick markets for computer parts, Dell could take advantage of what Stigler (1951) called "general specialties": Swift had had to become a maker of railroad cars in order to ship his goods, whereas Dell could simply hire Federal Express or UPS on contract.[5]

Although it is hard to deny that vertical integration today is lower than it was in the heyday of the Chandlerian corporation, it remains hard for many to let go of the idea that Chandler's visible hand may have lost its grip. For these writers, vertical integration and administrative coordination are potentially orthogonal ideas: even though we have less vertical integration, we still have as much administrative coordination as we had in the mid-twentieth century – or maybe even more![6] (Dosi, Gambardella, Grazzi and Orsenigo 2008; Helper and Sako 2010; Lazonick 2008). Dell is really a Chandlerian corporation after all.

But, of course, the issue here turns on what we mean by *coordination* and especially by *administrative coordination*. Following scholars like Simon (1960), Stinchcombe (1990), and Thompson (1967), I have argued that management is one mechanism for dealing with or *buffering* uncertainty (Langlois 2003b, p. 354). This is also essentially

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5 Indeed, Dell has routinely switched among carriers. Matt Kempner, "Dell Drops UPS, Will Use Rivals," *The Atlanta Journal-Constitution*, May 12, 2007.

6 "[O]ne could legitimately argue that the management of supply chains is a more organisationally complex activity than straightforward vertical integration" (Dosi, Gambardella, Grazzi and Orsenigo 2008, p. 35).

what G. B. Richardson (1960, 1972) means by coordination. Coordination is necessary because of the *complementarity* of productive activities and investments in a world of limited knowledge. Buying livestock, slaughtering, building rail cars, organizing ice houses and warehouses: these are all complementary parts of the chain of production. So are order-taking, motherboards, video cards, microprocessor, and delivery logistics. For production to operate smoothly at high volumes, these complementary activities must be coordinated. But "there is no unique single way in which complementary investments come to be co-ordinated. Co-ordination may occur spontaneously without the intervention of measures expressly adopted to that end; under different circumstances, it may be brought about by means of agreements, of one kind or another, between independent firms; in other circumstances, it may require deliberate planning, such as is possible only when the different investments are under unified control" (Richardson 1960, p. 84).

By calling his book *The Visible Hand*, and indeed by much of what he says in the book, Chandler leaves the impression that he is talking about a transition from "spontaneous" coordination to "deliberate planning" under unified control. In fact, however, much coordination has always taken place through "agreements, of one kind or another, between independent firms." This was true in the pre-Chandlerian world, in which generalist merchants coordinated the flow of goods through the American economy.[7] It continued to be true in the era of the large managerial corporation. And it remains true today. The managerial revolution should be understood as a change in the center of gravity of coordination in the direction of more agreements between independent firms and

[7] Something Chandler should have known from the work of his students Porter and Livesay (1971).

(especially) of more "deliberate planning." The vanishing hand represents a movement back toward inter-firm agreements and spontaneous coordination. (See figure 1.)

Spontaneous coordination	Agreements between independent firms.	Deliberate planning under unified control.

Figure 1.

Where to draw the lines?

As we move from left to right, we are moving from more decentralized to more centralized modes of coordinating. But it is important to understand that these modes of coordination are not arrayed in order of increasing sophistication. These are all sophisticated modes of coordinating. To notice that Dell Computer and similar operations coordinate a complex supply chain is not to demonstrate that they coordinate in the same way as a classic Chandlerian corporation.

I have used the terms "internal coordination" and "deliberate planning." But these are not the same thing. Internal coordination refers to the mode in which coordination, possibly informed by "deliberate planning," is carried out. But "deliberate planning" can be carried out through contract and other kinds of arrangement between separate firms. Unlike modern-day critics of the vanishing hand story, however, Chandler did not see these two concepts as orthogonal. He almost always mentions them in the same breath, and it is generally difficult to distinguish his arguments about administrative coordination generally

form his arguments about vertical integration. But occasionally Chandler does suggests that, at the margin, managerial coordination is consistent with various levels of integration.

For example, in a case to which we will return, Chandler argues that certain industries in Germany and the U. S. developed along parallel lines despite what was in effect different levels of vertical integration. German "cooperative managerial capitalism" achieved its rationalization using a variety of inter-firm arrangements and relationships, whereas, because of antitrust laws, American firms were forced to operate inside large diversified firms (Chandler 1990, pp. 537 and 549). But the end result was the same. In both cases coordination came to be carried out by trained professional managers. It is worth taking note here: Chandler is clear that political institutions matter for *vertical integration*. The "inability of factory owners to enforce and so maintain cartels" is an important explanation for "the growth of the large integrated enterprise" in the U. S. (Chandler 1967, p. 77). So at least one sort of political institution matters for vertical integration. But such institutions don't seem to matter for the rise of administrative coordination in the sense of deliberate planning: unlike Britain, the U. S. and Germany achieved similar levels of managerial coordination in key industries despite their different organizational forms.

Even within the U. S., managerial coordination did not always require full vertical integration. In an article that predates *The Visible Hand*, Chandler makes a distinction between "statistical" and "physical" coordination.

> Very few corporations, however, advocated complete and total integration – that is, the ownership and control of all activities involved in the production and distribution of their products. The General Motors executives emphatically opposed Henry Ford's example of building one

> massive manufacturing plant to produce a single model and of owning the sources of nearly all the supplies that went into its production. They believed that the forecasting and other procedures they were developing were as efficient in assuring a steady volume of production, as well as being far more flexible in meeting changing market demands, than were Ford's technological achievements in physical coordination. In fact, the effective control of their integrated operation by statistical means helped make General Motors one of the most profitable in the nation after 1925, while Ford's attempt at physical rather than statistical coordination was one basic reason for his astonishingly poor profit performance the in the same years. (Chandler 1967, p. 95.)

For Chandler, then, the essence of managerial coordination is not vertical integration per se.[8] It is central economic planning.

By the early twentieth century, the large managerial corporation had invented, out of necessity, the mechanics of central economic planning. Planning has two aspects, the allocation of resources and the coordination of flows (Chandler 1967, p. 95). By the allocation of resources, Chandler means basically capital budgeting, though it extends into strategy as well. Here the main techniques were standardized accounting procedures and rate-of-return calculation. What capital investments should the company make? How should it appraise new projects? This, says Chandler, was the easy part. The hard part was developing techniques to coordinate the flows of inputs and outputs through a complex and

[8] In his early adumbrations of the *Visible Hand* story, even before *Strategy and Structure* (Chandler 1962), Chandler does not talk about managerial coordination but refers only and explicitly to vertical integration (Chandler 1959). Interestingly, this is also true in one of his last pieces: "The central theme of *The Visible Hand* and *Scale and Scope* is the coming of the large-scale vertically integrated industrial enterprise in the United States, Europe and Asia. That managerial revolution occurred during the initial decades of the Second Industrial Revolution. Once steam and electrical power permitted distribution nationally and even globally, vertically integrated enterprises came to the fore. Beginning in the 1880s and flourishing in the 1890s, especially after the holding company act of 1889, vertical integration was the characteristic goal of the leading U. S. competitors in steel, oil, foods, chemicals, electrical equipment, and other manufacturing industries. The same pattern held also in the Rhine Valley" (Chandler 2006, p. 6).

usually capital-intensive system of production and distribution.[9] The solution: a "central coordinating agency" to balance supply and demand.

In the case of meatpackers like Swift, the coordination problem was relatively simple, and they solved it in a steam-punk version of the way Dell Computer solves the same problem today.[10]

> The meat packers, who created some of the very first of the integrated enterprises, were quickly able to assure an almost instantaneous connection between supply and demand. The branch houses telegraphed their orders daily to the packing plants. All messages were cleared through Chicago, where a complete record of all plants and yards was maintained. When one plant could not fill an order completely, the Chicago office would have the remainder supplied by another plant which had reported a surplus. The packing plants in turn had direct contact with the stockyards. So even as the cattle moved onto the disassembling line, the final destination of the many parts and accessories was already known. (Chandler 1967, p. 88.)

In other industries, however, the problem was far more complicated, especially because of the demands of capital-intensive mass production. In those – in most – industries, managers had to forecast. They had to plan. In many cases the managers planned flows between divisions of the corporation itself; but they could just as easily plan flows originating or terminating in separate firms. At the margin, the decision to integrate vertically was a matter of profitability. Sometimes it was necessary for defensive reasons, but at other times the threat of integration could keep suppliers in line. Sometimes

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9 "Such co-ordination of mass production and mass distribution involved several quite different but closely related matters, including the handling and adjusting of the fluctuating demands of working capital, the control of inventory at all stages of the flow, the physical movements of goods and materials from the sources of raw materials to the ultimate consumer, and finally the improvement and alteration of the quality and design of the product to meet the customers' changing needs and demands" (Chandler 1967, pp. 86-87).

10 "While other firms had to forecast the product configurations and quantities demanded by customers and accept the consequences of inaccurate forecasting, Dell took a different route to sales. It knew the configurations and quantities to build because its customers told them and Dell produced only from orders received" (Fields 2004, p. 180).

managers discovered that upstream or downstream activities were profitable, so they integrated into them; at other times such activities weren't profitable, so they didn't (Chandler 1967, p. 95).

The focus of this essay is on vertical integration. But it will be impossible to keep the ideas of managerial control and planning out of our field of vision. Planning in the sense of forecasting is certainly one way to "buffer" uncertainty. It is an attempt to gain information in order to resolve uncertainty. But it is only one of many ways of buffering uncertainty, one of many forms that "management" takes. I have argued that management is fundamentally an entrepreneurial activity: it is ultimately the organizational response to radical and qualitative uncertainty of the sort that forecasting cannot eliminate[11] (Langlois 2007b). The efficacy of planning and forecasting by trained professional managers, and the ability of such forecasting to deal effectively with uncertainty, even the uncertainty of technological change, is a bold leitmotif in Chandler. It is also arguably one of the defining themes of political economy of the twentieth century, just as skepticism about planning and forecasting has come to be one of the hallmarks of more recent political economy. We will not be able to talk about the twentieth century without talking about planning and forecasting.

The hypotheses.

So how, then, did political institutions affect the growth and survival of the large vertically integrated firm, especially during the middle of the twentieth century? It is certainly the case that government policy affected particular industries in defining ways. In the case of

[11] See also Foss and Klein (2012).

consumer electronics, for example, the U. S. government created a giant "national champion" in RCA, which thrived on its portfolio of patents and fed on military research-and-development contracts.[12] But I am concerned here not with particular circumstances but with general trends and forces. What broad government policies and socio-political institutions affected the American corporation in crucial ways during the twentieth century?

Recall that for Chandler, antitrust policy sort-of mattered and sort-of didn't matter. In his comparison of the U. S. and Germany in the early century, antitrust policy (and indeed other political institutions) mattered in that, because cartels were illegal in the U. S., managerial capitalism took form within the bounds of large diversified corporations, whereas in cartel-loving Germany, managerial capitalism took form in a less-integrated way through "complex and varied arrangements that the German firms had with each other and with the smaller competitors and producers of related projects within Germany and Europe, including joint ventures, stock participations, cartels, conventions, and agreements involving patents, processes, and marketing – nearly all of which were illegal in the United States" (Chandler 1990, p. 549). On the other hand, antitrust and related policies didn't *really* matter, since the U. S. and Germany both succeeded in establishing managerial capitalism, in what was in effect "parallel development." In Chandler's telling, the outlier

[12] Chandler glosses over the military origins of RCA (Chandler 2001, p. 15) and portrays the company as a paradigm of the private managerial corporation, one that created internal capabilities and led innovation in electronics through its investment in research and development. In reexamining this industry, I have argued to the contrary that, by confining the largely modular technology of the radio within a single organization and imprisoning it within the barriers of its "package licensing" IP policy, RCA arguably *reduced* innovation in consumer electronics (Langlois 2013) by failing to take advantage of what Baldwin and Clark (2006) call the *option value* inherent in such a modular technology.

was Britain, with its retrograde adherence to "personal" (meaning owner-controlled, not managerial) capitalism.[13]

Chandler's account of international differences in the growth of managerial capitalism resonates with what has come to be called the *varieties of capitalism* literature. Like Chandler, these writers notice that in Germany – a prime example of what they call a *coordinated market economy* – "firms depend more heavily on non-market relationships to coordinate their endeavors with other actors and to construct their core competencies. These non-market modes of coordination generally entail more extensive relational or incomplete contracting, network monitoring based on the exchange of private information inside networks, and more reliance on collaborative, as opposed to competitive, relationships to build the competencies of the firm" (Hall and Soskice 2001, p. 8). But unlike Chandler, the varieties-of-capitalism school does not see the U. S. and Germany as somehow alike, with Britain as the outlier. Rather, in contrast to Germany and other continental nations, both the U. S. and Britain stand as exemplars of *liberal market economies*, which rely far more on arms'-length relationships and formal contracting.[14]

The varieties-of-capitalism school has in mind capitalism at the turn of the millennium, not capitalism in the early twentieth century. Nonetheless, Hall and Soskice depict Germany in terms very similar to those of Chandler. But they portray the U. S. in a dramatically different way. In the present day of Hall and Soskice, the U. S. is more market

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[13] Chandler's views on British capitalism have been widely attacked, notably by Leslie Hannah (2007a, b).

[14] In the end, of course, this is also a kind of "parallel development" idea, in that, despite their marked institutional differences, coordinated market economies and liberal market economies both seem to constitute successful forms of capitalism. No triumphalism here. *A chacun son goût*.

oriented than Germany; in Chandler's early century, U. S. firms were more vertically integrated than German ones – that is, much *less* market oriented than German firms in their approach to coordination. If we take both accounts at face value, we are still left with our *explanandum*: why did coordination in the United States rely on high levels of vertical integration in the early and mid-twentieth century but rely far more on market relationships (and, of course, on intermediate modes of coordination) by the end of the century? Here the varieties-of-capitalism approach provides useful, pointing beyond the narrow set of political institutions like antitrust policy that explicitly regulate business and toward a wider range of social and political institutions, importantly including labor-market institutions, social-welfare policies, and financial regulation, that might shape choices of or organizational form.

My central thesis is that we cannot understand the organization of enterprise in the U. S. during the twentieth century without recognizing that, for much of that period, *the U. S. was a coordinated market economy*. This is not to say that the institutional matrix in the U. S. was identical to those in Europe, Japan, or other coordinated market economies then or today. America was indeed distinctive, along a number of dimensions that would prove crucial to the distinctive path American organization took as the twentieth century ended. Nonetheless, the U. S. was not a liberal market economy in the middle of the twentieth century, at least not the kind of liberal market economy the varieties-of-capitalism literature has in mind. Business enterprise in the U. S. lived within a system of coordination, cooperation, restriction, and regulation that helped to reinforce and extend the large vertically integrated enterprises that had arisen in the late nineteenth and early twentieth century. Note that in making this assertion I am not plunging to the opposite end

of the explanatory spectrum: I am not now claiming that *only* institutions matter in explaining organizational form. As we will see, factors like extent of the market and the nature of technology and of technological change – and maybe even historical accident – still matter. Indeed, they may matter most. But political institutions also matter; and the middle of the twentieth century was a period in which intrusive political institutions were thick on the ground. We cannot ignore them.

There are two related ways in which political institutions can affect the choice of organizational form. One is that political institutions can change the relative costs of using markets rather than internal hierarchies to allocate resources. The other is that political institutions can attenuate the competitive pressures that might otherwise impel business enterprise to adopt new organizational forms.

I have already insisted that the value of vertical integration can depend, and in historical fact had depended, on the existing state of markets and market-supporting institutions. Here "markets" means not just "spontaneous" coordination but also an increased number of firms engaged in complementary activities with whom one might forge agreements. To those working in the context of industrial organization in developing countries – as in the literature on business groups and multinational corporations (Hymer 1970; Leff 1978) – this is not a new argument.[15]

> In an advanced country, with a large manufacturing sector, the output of one industry—for example, the steel industry—is likely to have a large and varied number of outlets, so that there may be no acute complementarity

[15] Richardson cites Rosenstein-Rodan (1943), who urged governments in developing countries (and their funders in the West) to undertake a "big push" to industrialize many complementary sectors at once. Such governmental policies have been unqualified failures for a number of reasons, but in many cases the "big push" was in fact carried out successfully by diversified private business groups (Morck and Nakamura 2007). To this we will return.

> between the investment decisions of any few particular units. In poorer countries, on the other hand, the manufacturing sector is likely to be small, so that any increase in output by, say, a steel producer, would have to be absorbed by a small and clearly identifiable number of user firms. In such a situation complementarity would be strong, and profitable investment by one producer might depend on simultaneous expansion by others. The price mechanism, in the ordinary sense, breaks down; … It is difficult to resist the conclusion, therefore, that in underdeveloped countries, the co-ordination of investments—at least in the manufacturing sector—may require more deliberate planning than is necessary in advanced economies. (Richardson 1960, pp. 85-86.)

I have long argued, however, that fundamentally the same argument holds in the American context. For one thing, the U. S. in the nineteenth century *was* a developing economy. Moreover, even in a relatively developed and well-functioning market, systemic innovation can creatively destroy existing market linkages and render irrelevant existing market-supporting institutions (Langlois 1992; Langlois and Robertson 1995). It is in this sense that, even in a sophisticated economy, the price mechanism can "break down," and in the short run, internal coordination may be a cheaper way to realign resources.

It follows *a fortiori* that, even in a sophisticated economy, internal modes of coordinating gain advantage on the margin when political institutions impede the ability of the price system to coordinate resources. This is just Coase (1937): an increase in the costs of using the price system will shift the firm-market boundary in the direction of the firm, all other things equal. Political institutions can raise the costs of using the price system by distorting relative prices, thus reducing the information value of prices in rationing resources, or simply by impeding access to the price system.

In an account that has some affinities with the varieties-of-capitalism formulation, North, Wallis, and Weingast (2009) provide insight about when and why states might want

to distort relative prices and impede access to the price system. For most of human history since settled agriculture, the dominant form of political organization has been what they call the *natural state*. This form of political organization is "natural" not in any normative sense but in the sense that it is a kind of robust political equilibrium. Rather than thinking about the state as a unified actor, this formulation sees the (natural) state as a coalition of interests, who cooperate in order to earn the rents that come from avoiding a Hobbesian war of all against all. It is the ability to generate and distribute rents that keeps the coalition together. And one way to generate rents is to distort relative prices and control access to the price system. Typically, the natural state permits access to the price system only through merchants who are themselves part of the governing coalition.

On the one hand, a natural state might degenerate into the anarchy of warlordism, another robust (but far worse) equilibrium. On the other hand, however, a natural state might evolve to become an *open-access order*, of which wealthy liberal democracies like the U. S. would be examples. In an open-access order, the price system is in principle open to all. More significantly, an open-access order does not restrict the kinds of organizational forms available. North, Wallis, and Weingast (2009, p. 16) distinguish between *adherent* organizations and *contractual* ones. The former do not rely on third parties to enforce agreements; cooperation must be incentive compatible for all involved. (The natural state is itself an adherent organization.) By contrast, contractual organizations can avail themselves of third-party enforcement as well as incentive-compatible cooperation. Moreover, open access and the availability of third-party enforcement mean that participants can create perpetually lived organizations – like corporations.

North, Wallis, and Weingast are concerned principally with the problem of economic development. How do – how can – natural states make the transition to open-access orders? They are less concerned with the nuanced differences among actually existing open-access orders. But if we place modern open-access orders like the U. S., Japan, and Western Europe under the magnifying glass, we see a good deal of variation in degree and type of access to the price system, in the manipulation of relative prices, in the availability of organizational forms, and in the mechanisms for enforcing agreements. In short, actually existing open-access orders retain many of the characteristics of natural states, and it is these natural-state-like characteristics that the varieties-of-capitalism literature is picking up. Liberal market economies are clearly closer to the open-access end of the spectrum than are coordinated market economies, although "spectrum" may be a bit too narrow a way to view things. Nonetheless, it is my contention that the events of the middle of the twentieth century were associated with a movement of Western polities – notably including the U. S. – significantly away from the ideal of an open-access order and in the direction of the natural state. This was not always, or even mostly, a matter of exogenous events impinging on these polities and forcing them to become more like natural states. Rather, the events of the Great European Civil War and the transformation of political institutions were endogenous to one another.

The institutional matrix.

Before 1914.

There is a long tradition in American political culture, still vibrant today, that looks to Revolutionary and post-Revolutionary America as the touchstone for freedom of contract and the absence of intrusive government regulation. As the economic historian Jonathan

Hughes pointed out in his classic *The Governmental Habit* (1977), this picture of early America is far from the reality of the period. At the state level, non-market economic controls were ubiquitous. U. S. states adopted English common law, which, while broadly protecting property and contract, was nonetheless replete with business controls of medieval and mercantilist legacy. Moreover, state legislatures quickly assumed powers that had once been vested in a distant Parliament, or indeed in the Crown;[16] and by the time the ink was dry on the various Revolutionary denunciations of British practices, state legislatures were busy enacting more-or-less the same policies.

One important former Crown prerogative that state legislatures adopted was incorporation, which they exercised with enthusiasm[17] (Maier 1993). States created corporation not just, or even primarily, for business ventures: most were towns and districts, and the majority of the rest, at least initially, were charities, colleges, and the like. Incorporation created a charter, which provided the incorporated entity with a kind of internal constitution of rules. It also made the entity a legal person, shielding its assets from the creditors of the corporation's members (Hansmann and Kraakman 2000). And

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[16] Incorporation was not the only Crown prerogative that state legislatures assumed. Land in the American colonies was generally held in free and common socage, the least restrictive of traditional tenures, which would come to be called tenure in fee simple. This was in part the result of colonial statutes seeking to protect British creditors by allowing colonial borrowers to pledge unencumbered land as collateral (Priest 2006). The result was that land effectively became a commodity, which was to have great import not only for ownership rights generally but especially for the dynamics of westward expansion. Yet socage was nonetheless a feudal tenure, in which the holder was obliged to pay a quitrent to the "donor," ultimately the monarch, who was the real owner and who could repossess on failure to pay. Thus the state government became the "donor," and the quitrent transmogrified into the property tax (Hughes 1977, p. 16).

[17] And this at a time when incorporation had been abolished by the French Revolution and was still forbidden in Britain by the Bubble Act of 1720 (Maier 1993).

incorporation created a perpetually lived organization. Early American corporations were thus "creatures of the state" in both senses of the term "state."

It would be a mistake, however, to believe that formal incorporation by a state is necessary for an entity to enjoy corporate personhood, asset partitioning, and perpetual life. As Coasean legal theorists like Larry Ribstein (1991) have argued, all of these properties are potentially available through private ordering under common law. This is even true of limited contractual liability, which is after all merely a "feature" that potential creditors or investors can "price in."[18] Indeed, during the period of the Bubble Act (1720-1825), English courts had cobbled together "a pre-incorporation system that offered many of the effects of separate personality, asset partitioning and limited liability" (Getzler and Macnair 2005, p. 272); and there existed in fact a multitude of "unincorporated corporations" that enjoyed most of the benefits of incorporation without a government-granted charter[19] (Anderson and Tollison 1983).

At least in the case of businesses, early American state legislatures did not dispense charters in order to fill a legal void. They did so to control access to organizational forms and to generate economic rents. Like governments in almost all times and places, American states reserved to themselves the right to charter banks, which they both taxed

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[18] Anderson and Tollison (1983) claim that limited liability provisions were in fact enforceable in English law in the eighteenth century, even though they were little used because limited liability conferred few transaction-cost benefits in a world of closely held companies with face-to-face transactions. Whether the law ought to enforce claims of limited *tort* liability as against merely contractual liability – that is, limited liability against "involuntary" creditors – is a complex question; but that is not the same question as whether common law, unaided by a monarch or a legislature, could or did permit limited tort liability in addition to limited contractual liability.

[19] Indeed, despite the American state penchant for incorporation, the majority of early American businesses were not in fact incorporated, and the majority of incorporations were not where most economic activity was taking place (Handlin and Handlin 1945).

and invested in, and which provided a major source of public finance (Sylla, Legler and Wallis 1987). State legislatures also chartered many corporations for what were essentially purposes of economic development. The United States was a vast area of land with little transportation infrastructure. Because of near-universal white male suffrage, legislatures felt a strong demand for roads, bridges, and canals, especially from those who anticipated that these improvements would cause the value of their once-isolated land to appreciate. But since such benefits were geographically concentrated, it would have been politically difficult to fund the projects through state-wide taxation. So state governments turned to what John Wallis (2005) has called "taxless finance": grant monopoly powers to a private corporation by charter, and allow the venture pay for itself out of the resulting rents.[20] It would be a mistake, however, to think that state legislatures of the era were operating under some kind of modern-day theory of natural monopoly. States were in fact happy to grant charters to any business that could claim to be serving the public interest, and there were few that could not find a way to make that claim.[21] The first three business charters granted by Massachusetts were the Massachusetts Bank in 1784, the Charles River Bridge Company in 1785, and the Beverly Cotton Manufactory in 1789 (Maier 1993, p. 54).

As they had in English tradition, state business charters typically came in the first instance with grants of monopoly. Once the bank, or bridge, or coach route was in place, however, the same voters who benefited from these charters began to chafe under the resulting market power, and state legislatures felt pressure to charter competitors

[20] Although taxpayers would retain a contingent liability in the event the venture failed.

[21] In this period, state charters did not distinguish among governmental, non-profit, or commercial corporations. The language of "public interest" was identical in all (Maier 1993).

(Lamoreaux 2014). In 1828, Massachusetts chartered a competitor to the Charles River Bridge Company, leading to a famous Supreme Court case that came down in favor of the populist desire for competition[22] (Kutler 1971). By the middle of the century, most state legislatures had passed generalized incorporation laws; but, unlike comparable statutes in Britain, which had been crafted by a business elite, the American statutes were larded with restrictions and limitations reflecting the interests of voters (Lamoreaux 2014).

And here we can begin to see the two constellations of forces that would frame the American Public Choice problem well into the twentieth century. One constellation consisted of the familiar coalition of state government and specific businesses, who had a joint interest in regulating access to the price system in order to create and redistribute rents. The other consisted of strong populist interests of a far-flung and almost entirely rural population. We could call these forces Hamiltonian and Jeffersonian, except that in fact the Hamiltonian program strictly speaking was for a *national* developmental state, and that program never got off the ground. As I tried hard to emphasize, the policies of non-market control in the early U. S. were typically at the state level. In a world of high transportation costs and relatively low scale, federal-level regulation conferred few political benefits not available more locally, and they implied politically costly income transfers among regions.[23] As a result, the United States was indeed a relatively *laissez-faire* country – at the federal level. At the state level it was quite another matter.

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22 *Charles River Bridge v. Warren Bridge*, 36 U.S. 420 (1837).

23 The federal constitution reserved trade policy to the central government. As a result, tariff policy was hotly contested among regions that stood to gain or lose from a centralized policy. After the War of 1812, falling prices called forth a demand for tariffs. But, perhaps surprisingly, it was the populist interests of the Midwest who most strongly supported them, as the industries in question demanded agricultural products and raw materials, like wool, hemp, and iron, that came from the hinterland. By

All of this changed in the second half of the nineteenth century, which is where Chandler's story begins. Early railroads had already formed part of state-level transportation schemes, but the Civil War accelerated interstate linkages among railroads. Along with the telegraph and other innovations, railroads dramatically lowered transportation and communications costs, connecting what had been small regional markets into growing and increasingly national ones. Increased extent of the market allowed American producers to tap into, and indeed helped to create, the so-called Second Industrial Revolution of steel, electricity, chemicals, and eventually the internal combustion engine. As Chandler points out, this radically changed economic landscape made it more efficient to produce many kinds of goods centrally at high volumes and then ship those goods to the periphery. The new geographic and technological configuration required a new form of enterprise to coordinate mass production and distribution, leading to the multi-unit managerial corporation, for which the railroads themselves had formed an early template.

As we saw, Chandler's account is all about exogenous economic factors and organizational dynamics. Was there any role for political institutions in the story? In Chandler's account, the railroads were the organizational precursors of the managerial corporation. But railroads – and other infrastructural industries with interstate reach like

contrast, tariffs were opposed by many eastern mercantile interests, notably those in Massachusetts, who were heavily involved in the import business. "John Randolph said, in his vigorous fashion, of the tariff bill of 1824: 'The merchants and manufacturers of Massachusetts and New Hampshire repel this bill, while men in hunting shirts, with deerskin leggings and moccasins on their feet, want protection for home manufactures.'" (Taussig 1914, p. 75n1). Southerners also opposed tariffs, as they wanted cheap imports and feared European reprisals against their own exports.

telephony (Vietor 1994) – were *not* templates for how political institutions responded more generally to the dramatic changes in the economic geography of the United States.

Because railroads had become absolutely critical for the livelihoods of many of their largely rural constituents, state governments felt immediate pressure to exert non-market controls, including price controls. In the *Munn* case of 1877,[24] the Supreme Court granted states the right to regulate any economic activity that was "affected with the public interest," thus placing its imprimatur on practices of long standing. *Munn* upheld the so-called Granger Laws, which attempted to regulate railroad rates in a way favorable to farmers. Quite apart from harming the interest of the railroads, these state-level price controls wreaked havoc in an interstate network (McCraw 1984, p. 57). In the *Wabash* case in 1886, the Supreme Court invoked the commerce clause of the Constitution and effectively removed rate setting from state hands.[25] The next year the Interstate Commerce Commission (ICC) was born, with the power to regulate rates and to outlaw real or perceived price discrimination.

Gabriel Kolko (1965) famously argued that this was not a victory for the farmers and other shippers; it was not an instance of regulation acting in the "public interest" against the opposition of the railroads. Instead, it was a victory for the railroads, who actively sought regulation to free themselves not only from the tribulations of multiple state regulators but also from the more important problem they faced: competition among one

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24 *Munn v. Illinois*, 94 U.S. 113 (1877).

25 *Wabash, St. Louis & Pacific Railway Company v. Illinois*, 118 U.S. 557 (1886).

another. Kolko characteristically sees regulation as benefiting industry almost exclusively, an outcome he labels tendentiously as "conservative."

> Business advocacy of *federal* regulation was motivated by more than a desire to stabilize industries that had moved beyond state boundaries. The needs of the economy were such, of course, as to demand federal as opposed to random state economic regulation. But a crucial factor was the bulwark which essentially conservative national regulation provided against state regulations that were either haphazard or, what is more important, far more responsible to more radical, genuinely progressive local communities. National progressivism, then, becomes the defense of business against the democratic ferment that was nascent in the states. (Kolko 1963, p. 6.)

More recent scholars of the political economy of the era are more likely to see regulation as the outcome of a bargain that very much included the interests of various populist groups, who had been empowered by an early and extensive franchise. These bargains were positive sum for the participants, at the expense of players like consumers and other interests not effectively in the bargaining coalition. For example, Gilligan, Marshall, and Weingast (1989) argue that the Interstate Commerce Act benefited the railroads only slightly, and ultimately resulted in a transfer of wealth between two classes of railroad customers, from long-haul shippers to short-haul shippers. (Unlike long-haul shippers, short-haul shippers usually had only one choice of railroad, so the railroads tended to price-discriminate against them.) Needless to say, the short-haul shippers were importantly the "radical" and "genuinely progressive" Midwest farming interests.

In the 1870s, before the coming of the ICC, American railroads suffered under the intense competition of the era. Railroads were high-fixed-cost industries, which meant an ever-present incentive to price below average cost. Making matters worse, the federal land grants and subsidies that had driven inter-state rail also created excess capacity. The railroads tried "pools" and other forms of cartel, but these predictably failed. The emerging

industry of petroleum refining had similar problems of fixed costs, excess capacity, and intense competition. So railroad executives cooked up a plan solve their own problems by simultaneously solving those of the refiners (Chernow 1998, p. 135). Using the charter of the South Improvement Company, one of several "improvement companies" the Pennsylvania legislature had created under secretive and presumably corrupt circumstances, the railroads competing for the Pennsylvania oil business brought together a select group of refiners. The most important shareholders were a group headed by John D. Rockefeller, the largest refiner in Cleveland. The South Improvement charter was almost entirely free of restrictions, and included the right to operate across state lines and to own the stock of other companies. In effect, it was a holding company (Chernow 1998, p. 135). Using a complex system of rebates and "drawbacks," Rockefeller and the other refiners essentially policed a railroad cartel while earning a kickback in proportion to the amount of oil they shipped (Granitz and Klein 1996). This in turn created an incentive for Rockefeller, the dominant player, to acquire more capacity; within months he had bought out almost all the refiners in Cleveland (Chernow 1998, p. 153).

This scheme was in effect an attempt at a private solution to the problem of overcapacity and high fixed costs that the Interstate Commerce Act would later attack through regulation. One constituency left out of this bargaining coalition, however, were the producers of crude oil, who now faced monopsony power. The oilmen banded together and began to embargo shipments in what came to called the "oil war" (Tarbell 1904, ch. 3). As these constituents were almost all in Pennsylvania, the state legislature quickly pulled the charter of the South Improvement Company. This obliged Rockefeller to operate under the restrictive Ohio charter of Standard Oil; and, as he began to acquire

refineries in other states, he was forced to employ locally chartered companies. Through 1881, Standard was an "alliance" of 41 separate units, each one operated as some form of corporation, partnership, or trust (Hidy 1952), with substantial cross ownership of shares. It was a sort of nineteenth-century American *keiretsu*. Needless to say, this made administration difficult, especially in view of Rockefeller's strategy of closing inefficient refineries and concentrating production in large facilities nearer to customers (Montague 1903, p. 309). Moreover, the local nature of its constituent charters made it vulnerable to local political forces.[26]

Standard's general counsel S. C. T. Dodd came up with the famous solution: a stock-transfer trust (Hovencamp 1991, p. 249). The owners of all units would place their stock in the hands of a group of trustees – John D. Rockefeller and his associates – in exchange for a claim to dividends. In effect, Dodd was using the common law of trusts to recreate the kind of *carte blanche* corporate charter that South Improvement had enjoyed (Sitkoff 2005). The goal was to place effective control in a central office, which could rationalize holdings and invest in new facilities and technology (Hidy 1952).

But the states would not give up their power easily. In 1891, Ohio successfully sued Standard Oil on the grounds that its constituent units did not have the power under their individual local charters to enter into a trust arrangement. Standard was forced to reconstitute itself as an alliance, now of 34 operating units. Yet, because of the growing interconnectedness of the American economy, the ability of states to extract rents through charters was declining, and jurisdictions began adopting the opposite strategy: competing

[26] For example, Pennsylvania was threatening to tax the assets of Ohio Standard as a "foreign" corporation (Chandler 1977, p. 323).

for tax revenue through *removing* restriction from corporate charters, including restrictions on holding the stock of out-of-state corporations (Butler 1985). In this competition New Jersey led the way; and the Standard Oil operating unit in New Jersey took full advantage, becoming the holding company for the entire operation in 1899 (Hidy 1952). The relatively unrestricted state charter thus became the dominant legal vehicle for the large enterprise, supplanting not only the trust but also federal incorporation, an idea that never got off the ground[27] (Hovencamp 1991, p. 247).

In the case of railroads, rapid economic integration had led to federal-level non-market controls. But in most industries – like oil – the same economic integration had led to a relatively *laissez-faire* institutional regime at the federal level, one that set flexible legal ground rules but was relatively free of direct administrative interference. Left to its own devices, the common law of trusts might eventually have evolved an adequate legal structure for the large enterprise, with its need for extensive and complex financing and for managerial control across state borders. But relatively unencumbered state-level incorporation was quicker on the draw: in effect, it was able to reduce the dynamic transaction costs of institutional change, in much the same way – I will argue – as did the organizational innovations of entrepreneurs like Rockefeller. Of course, pressure mounted for federal-level regulation of the large industrial and distributional enterprises as well. But this regulation was to take a form – antitrust policy – that was less binding overall than the system imposed on the railroads and resulted in fewer direct non-market controls. This is

[27] Although relatively unrestricted by the standards of early state charters, late nineteenth-century state charters offered a standardized set of rules that, although useful for the large enterprise, were not highly flexible and, as Naomi Lamoreaux (2004) and her coauthors have argued, were not well adapted to smaller businesses.

not to say, however, that antitrust policy had no effect on the organizational trajectory of the large enterprise before World War I.

At least until George Stigler (1985) called the idea into question, historians had long sought the origins of the Sherman Antitrust Act in agrarian populism and its vocal opposition to the growth of the large enterprise (Thorelli 1955, p. 143). Stigler pointed out that small agrarian interests actually had little to fear from the large enterprises, and he noted that in the twentieth century antitrust enforcement grew stronger precisely as agrarian influence waned. Other revisionist scholars have reconciled Stigler's objections with the traditional account by suggesting a more subtle pathway through which populism might have influenced passage of the Act (DiLorenzo 1985). The main direct beneficiaries were not indeed the agricultural interests but rather smaller enterprises, like smaller oil refiners, who were among the principal constituents of Ohio Senator John Sherman and the Republican Party (Troesken 2002). One might pause to ask, à la Stigler, why small businesses would be opposed to conventional neoclassical monopolists, who would provide cozy price umbrellas under which less-efficient small firms could huddle.[28] But in the revisionist telling, the key concern was not in fact "trusts" at all but tariffs, which the Republicans strongly supported. Opponents saw tariffs as "the mother of trusts," that is, as the real cause of higher prices. By attacking the trusts directly, Sherman and his allies hoped to reduce opposition to a proposed tariff bill and at the same time transmit symbolic

[28] The obvious answer is that the small players did not see the large enterprises as price-raising monopolies at all but as efficient competitors. To give just one example: in the case of oil, small refiners continued to ship in barrels at a time when Standard had gained tremendous efficiencies using tank cars, for which they were rewarded by lower prices from the railroads. Indeed, Senator Sherman had previously proposed a bill to outlaw differential pricing for tank cars over barrels, a measure that failed only because some independent refineries had also adopted tank cars (Troesken 2002).

reassurance to diffuse constituencies – importantly including the agrarian populists – who felt anxious and powerless in the face of major economic change[29] (DiLorenzo 1985; Edelman 1964).

[To be continued.]

World War I and the Roaring 'Twenties.

The Great Depression.

World War II.

The Corporate Era.

The Undoing.

The Corporation and the Twentieth Century.

[29] As *The New York Times* declared on October 1, 1890: "That so-called Anti-Trust law was passed to deceive the people and to clear the way for the enactment of this Pro-Trust law relating to the tariff. It was a humbug and a sham. It was projected in order that the party organs might say to the opponents of tariff extortion and protected combinations, 'Behold! we have attacked the Trusts. The Republican Party is the enemy of all such rings.'"

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