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Divergence, Convergence, and the French Path to Industrial Development after 1750

This book is about industrial prosperity: how to get it and when it emerges. Standard descriptions of the trajectory of comparative industrialization, such as David Landes' classic *The Unbound Prometheus*, depict French industry as unable to compete with laissez-faire Great Britain until after 1850 at the earliest.¹ Budding French attempts at industrial competition were unsuccessful, and later efforts were rapidly overshadowed by two emerging industrial powerhouses: an arrogant Imperial Germany and the upstart United States. In many historians' accounts, the French were permanently relegated to a kind of industrial purgatory. For Landes, the nature of French entrepreneurialism was to blame. The French emphasis on family firms, an "outdated" form of organization that championed austerity, frugality, and high profit per unit sold at the expense of profit maximization and relentless expansion of output, consigned the French to perpetual second-class status. Landes attributed these business choices to cultural preferences; material constraints, exogenous technical considerations, dissimilar labor relations, and political pressures were at best secondary factors in his evaluation of entrepreneurial decision making and the course of French industrialization.

For those who follow this interpretation, French industrial development was held back by regressive institutions like the *corporations* of the ancien régime. Moreover, the French state's emphasis on military conquest and its dirigiste approach to oversight of the economy hindered efforts to imitate the classically liberal economic policies that had brought extraordinary industrial success to their rivals across the English Channel. Yet, even as an undergraduate, I remember being struck by the fact that most historians

report that France's per capita income was roughly comparable to Great Britain's by the outbreak of World War I.² How did France come to be competitive with the predominant industrial nation? When did France escape from industrial purgatory? What social or economic groups led the way? What was the nature, the style, and the pace of French mechanization? Was an active state role necessary for nations playing industrial "catch up"? Why was an economic strategy that proved successful over the long term so thoroughly denigrated in the historical community?

The more deeply I read the secondary literature relating to comparative industrial development, the more thoroughly I was struck by its fundamental Anglocentrism. England (later Great Britain) was seen as following the only legitimate market-based route to industrialization; divergences from that path were, by definition, considered to be detours from the path to "true" productivity, rather than alternative passages. Aggregate statistics, which are essential to a "pure" economic historian, were shunted aside by historians of "political economy." Unmistakable signs of sectoral, regional, or national economic competitiveness or industrial success in other countries during the age of British ascendancy were minimized by references to the greater incidence of poverty on the Continent. In contrast to the wealthier and more market-oriented British, Landes persistently evoked an image, adopted from Guy de Maupassant, of a frugal and impoverished French peasant going out of his way to collect a piece of string.³ Such interpretations of the relative wealth of the two societies have also been based on an overemphasis on easily accessible sources, such as the travel journals of agronomist Arthur Young, who concentrated on the poor conditions of large-scale, over-taxed French farms to underscore the wealth created by the disappearing self-sufficient family farms of England.⁴ The fundamental Anglocentrism of these visions of conditions on the Continent frustrated my initial attempts to understand the course of French industrial development.

The Success of the French Path to Industrial Society

During the revolutionary era (1750–1815), French economic growth did not equal Great Britain's. When the revolutionary and Napoleonic wars ended, in 1815, the British were approximately a generation ahead in

industrial technology and in the elaboration of the mechanized factory. Britain reached its peak of economic power in the period 1830–1850, achieving the enviable position of “the workshop of the world” displayed so proudly at the Crystal Palace Exposition of 1851. This textbook version of economic history has been largely unchallenged for generations, but it glosses over important developments that took place on the Continent.

At the height of British industrial dominance relative to the rest of Europe—the period from 1815 to 1850—French industry grew rapidly, if not so rapidly as Britain’s. Anglocentrists overlook the fact that France remained the largest industrial nation in the world until 1820, at least in terms of gross output. Even more impressively, this growth took shape in a depressed and diminished state. In 1815, much of the eastern part of the country was occupied by enemy troops, and France owed the victorious allies vast sums. Commodity deflation seriously limited sales of manufactured goods in a largely agricultural nation.

Despite these constraints, France posted a particularly high annual rate of growth—3.7 percent—from 1815 to 1820. Population growth from 29.3 million in 1815 to a little less than 32.4 million in 1830 spurred this recovery. Despite high tariffs, French foreign trade recouped, reaching 13 percent of the gross national product by 1830. France steadily decreased imports of manufactured goods and forcefully increased its export of manufactures, retaining its status as the world’s number-two exporter of industrial goods. Overall, material output rose doggedly, surmounting the booms and busts of the international economy. Estimates of industrial expansion range from 2.5 percent to 3.4 percent. The agricultural sector complemented this growth with 1.2 percent annual increases during the period 1820–1870. French society and its structures changed dramatically as a result of industrial development. France had an industrial revolution, albeit more gradual and less abrupt than Great Britain’s.⁵

France enjoyed impressive long-term growth, both overall and per capita, particularly in light of its slower population expansion, limitations in factor endowments, dilatory growth of the domestic market, restricted imperial advantages, circumscribed capital stock, and fragmented transport system. Between 1815 and the First World War,

France's average annual increase in per capita economic growth was 1.4 percent. In material output, France's per capita increases roughly matched Great Britain's.⁶ In large part because of a spurt during the Belle Époque, by 1914, on a per capita basis, France's economic performance was indeed broadly comparable to Great Britain's.⁷ Britain's per capita income remained higher by about 20 percent, but the gap between Britain and France remained relatively constant.⁸

When the material and technological bases of industrial success changed at the end of the nineteenth century, France outperformed Britain handily. This later expansion must not be permitted to overshadow the industrial strengths France developed up to 1850 and maintained successfully in the face of British preeminence. As a number of historians have observed, the economic structures that made Great Britain successful in the first half of the nineteenth century later held it back.⁹ Martin Daunton writes: "Arguably [after 1850], a gap was opening up between the production *institutions* which were developed in Britain—small family firms, a reliance on subcontracting between and within firms, a highly formalized system of collective bargaining—and the needs of production *technology*."¹⁰ Daunton highlighted the divide between organizational changes and technological development, but these factors are often conflated in explanations of the sources of economic growth. Over the long term, France survived the onslaught of British dominance in a position to take full advantage of the new technologies, industries, and sources of power that emerged later in the century as part of the "Second Industrial Revolution." This work focuses on the sources of France's later successes and on the well-springs of the French perseverance that emerged during the first Industrial Revolution.

The outlines of this analysis of comparative economic performance were suggested by Patrick O'Brien and Caglar Keyder in 1978. Since then, their analysis, highly controversial when published, has garnered widespread support from French economists and historians. Despite this validation, their conclusions have been ignored in Anglo-American versions of how technological change affects economic growth and in comparative studies of the process of industrialization.¹¹ Viewed from the Continent or indeed from almost anywhere else, the dominant Anglo-American

version of comparative industrialization, with its emphasis on the cultural aspects of the British model, appears terribly parochial.

As Peter Mathias pointed out so effectively, British industrialization shifted the context for those who followed. Following precisely in Britain's footsteps was impossible. Why would anyone expect France or any other country to industrialize on the same pattern as a pioneer, especially when that nation lacks the same mix of resources and expertise and has to contend with competition from the cradle in international markets?¹² This common-sense question gets us to the heart of the matter. As Martin Wiener, W. D. Rubinstein, Nicholas Crafts, and others have suggested in various ways, the underlying question or implicit challenge in this literature is to understand whether and how late-Victorian or post-1945 Britain lost its industrial edge, an issue that became more potent in the 1970s and the 1980s when a surging Japanese economy led many Americans to fear eclipse.¹³ France's economic performance during the Industrial Revolution must be considered on its own appreciable merits, not through the lens of later eras. The French path to industrial society diverged from the British, but over the long term its seemingly tortuous route produced impressive results.

Since Landes, accounts of comparative industrialization focus on the divergent cultural outlooks about science and its application on the two flanks of the Channel. Adopting elements from Landes and from Max Weber, Margaret C. Jacob has provided the most coherent recent explanation for why the French were unable to take advantage of their opportunities while the English made the most of theirs. Her explication of national "scientific cultures" endowed an intellectual underpinning for the divergences within western Europe that was independent of more contested economic realities.¹⁴ Following a similar line of argument, historians of the advent of consumerism have claimed that cultural and economic imperatives held back France's imitation of Britain's mass-market industrial approach. This approach has the added advantage of being able to justify France's "catch up" after 1850.¹⁵

Joel Mokyr's evocation of an "Industrial Enlightenment" took the cultural argument into new, more explicitly economic territory. His term referred to a particular way of thinking that emphasized how "useful knowledge" bridged the Scientific Revolution and the Industrial

Revolution. As for Landes and Jacob, this focus on the generation and use of knowledge, particularly scientific and technological knowledge, was both necessary and sufficient to explain Britain's accomplishments and France's retardation.¹⁶ In his 2004 Presidential Address to the Economic History Association, Mokyr provocatively made the linkages implicit in the "cultural turn" explicit. In an attempt to have his cake and eat it too, the most recent version of Mokyr's Enlightenment added a "doctrine of *economic reasonableness*" to the Baconian program emphasized by Jacob.¹⁷

The consequence of these perspectives has been an identification of technical creativity with Britain and an assumption that—for cultural reasons, based on a certain view of science rooted in Bacon—Adam Smith was describing how the British people acted, not a model of economic behavior. As Marie Antoinette learned, however, breaking the cake of custom was far messier than the bloodless, straightforward industrial revolution depicted by Jacob and Mokyr. They talked about origins and results, but not about process. Incentives, profits, and labor relations do not get much attention in their versions of the Industrial Revolution. The "how" portrayed in my account challenges the "why" featured in recent cultural explanations of comparative industrialization.

In the still waters reflecting French backwardness and British triumphalism, the publication of Kenneth Pomeranz's *The Great Divergence: China, Europe, and the Making of the Modern World Economy* cast widening ripples. Pomeranz asserted that *all* national experiences must be considered as deviations and that none should be elevated to the status of the normative, no matter its timing or the relative strength of the economy in question.¹⁸ This profoundly timely warning about interpretations of the British Industrial Revolution was seconded by R. Bin Wong's proposals for establishing reciprocal comparisons not only between countries but also between theories and their material basis.¹⁹ As I began to investigate the sources and framed my research agenda, the threads of the Anglocentric argument—so patiently gathered by Landes on behalf of de Maupassant's peasant—unraveled.

Jan de Vries laid the groundwork for a reconsideration of Anglocentric accounts of comparative industrialization and technological change. De Vries' emphasis on an "industrious revolution" in much of western

Europe profoundly challenged Landes' version of industrialization and its link to economic growth during the age of revolution.²⁰ To de Vries, the more thorough use of resources and manpower and hence the growing integration of labor, commodity, and capital markets were the chief sources of economic growth before the onset of substantial mechanization in the second quarter of the nineteenth century.²¹ His argument has been buttressed by the findings of economic historians who keep pushing back the date for when mechanized production became the chief force in the British industrial economy. The 1820s are the earliest date currently advanced.²² Taken together, these studies suggest the need to revisit accounts emphasizing convergence around a British model based on *laissez-faire* conceptions of the sources of industrial success.²³

Based on more than a decade's archival research, I have fashioned an alternative vision of industrial development that crosses the traditional historiographical boundaries of the old regime, the Revolutionary decade, and the nineteenth century. The documentary record left little doubt about the uniqueness of French labor. Largely because of the emergence of Revolutionary politics, the relations of the laboring classes to entrepreneurs and to the state in France differed greatly from those in Britain. This divergence had profound repercussions both politically and on the shop floor. Secondly, as Landes asserted, a French style of entrepreneurialism existed, but it was rational, profit-seeking, and relatively successful despite the trials and tribulations of war and the upheavals of the Revolution. Finally, the French state developed idiosyncratic and effective means of mediating between these groups while seeking to accelerate scientific and technological innovation, to manage labor unruliness, and to encourage risk-taking. In short, I found that the state was more than just an obstacle to the operation of theoretically free markets—on both sides of the Channel. The French experience illustrates that there was more than one pathway to industrialization. Deviation from the British model of the interaction of state and society did not necessarily rule out long-term economic growth.

This book weaves together three arguments. The first is that the late-eighteenth-century French state attempted to emulate most of what policy makers understood as the English model of industrialization—which, I illustrate, was far removed from what “liberal” accounts would

suggest. The second argument is that these attempts foundered because of the emergence of revolutionary politics in France. The possibility of a thoroughgoing social and economic revolution by the laboring classes ensured that neither the French state nor Continental entrepreneurs could safely maximize profits or innovate in response to labor militancy, as in Britain. The true divergence of industrial paths dated from the radical phase of the French Revolution. This view restores the prominence of the “political” component of political economy, which is absent from too many accounts of this turbulent era. It also builds on Donald MacKenzie’s call to revisit and deepen our understanding of the technical consequences of relations between entrepreneurs and labor during industrialization.²⁴ Thus, this book embraces a different style of comparative history that considers not only what actually occurred, but also what avenues remained unexplored and why certain possibilities were conceivable in Great Britain but not in France.

A corollary of this second argument is that Great Britain could profit from its admitted advantages and achieve industrial ascendance because its entrepreneurs were able to control and exploit the working classes to a degree that was impossible in France because of the “threat from below.” A commitment to allowing the market to set prices must not be permitted to mask the significance of British state action in industrial development. The ruthless repression of the British working classes, the powerful incentives provided to entrepreneurs, the acquisition and protection of an enormous empire, and the determined way that the Hanoverian state manipulated the ideology of liberalism produced concrete long-term economic advantages for Great Britain.²⁵ Landes to the contrary, the involvement of the state in British industrialization *never* incarnated the form of *laissez-faire* articulated by Adam Smith.²⁶

Third, I argue that the French state, unable to emulate the “liberal” British route to industrialization, embarked on a search for a different path that was forged amidst the heat of war, revolutionary politics, and emerging dictatorship. A statist command economy formed to deal with the mortal threats of the Year II (1793–94) stoked the fires of revolutionary fervor and provided a potent alternative model of industrial development. The dependence of this model on the Reign of Terror made it anathema to French policy makers. With this initial attempt politically

intolerable, the French state evolved a distinct longer-term institutional model of industrial development. This novel approach necessitated different means of accelerating scientific and technological innovation, managing labor unruliness and encouraging entrepreneurialism. These efforts yielded relative prosperity and, over the long term, permitted France to achieve levels of per capita income comparable to those of Britain. The path not taken traversed different thickets to emerge in the same place.

The Path Not Taken: Tracing France's Industrial *Sonderweg*

In chapter 2, “A Brave New World of Work: The Reform of the *Corporations* and the *Lettres-Patentes* of May 1779,” I explore the complex relationship between the French royal government and the *corporate* economy of the ancien régime. Bounded by privilege, entrepreneurs, artisans, and workers did not have sufficient “liberty” to innovate technologically or in the manner of production, but too much license led to poor-quality goods that were difficult to export. A group of Enlightened thinkers known as the Physiocrats played the leading roles in developing this analysis of French “backwardness.” Following their lead, several initiatives successively altered the legal framework governing the interaction of producers and laborers to allow both groups to be more creative, more innovative, and more efficient. By dissecting the meanings of liberty and license in French industrial regulation, this chapter delineates contemporary conceptions of international competitiveness.

After 1750, repeated attempts were made to increase the degree of economic “liberty” accorded to entrepreneurs while circumscribing the “license” of the laboring classes in a dense web of restraint that varied according to the political perspective of the sponsors of the reforms. During Anne-Robert-Jacques Turgot’s tenure as Controller-General (1774–1776), a new legal framework to regulate the world of work became enmeshed in the effort to abolish the *corporations*. After his fall from power, Jacques Necker encountered the profound difficulties of regulating labor within the restored, but profoundly shaken corporate structure. *Lettres-patentes* issued in May 1779 and revised in September 1781 were intended to take France several furlongs down the path

blazed by England. Chapter 2 traces the effects of these reforms of the *corporate* world on the shop floors and in the counting houses of France's most advanced industrial district, the province of Normandy. Resistance to reform in this model province demonstrated the limitations of top-down reform in the *ancien régime*, particularly in the face of divisive challenges stemming from privilege, liberty, and international economic competitiveness. The better-known reforms of the Revolutionary decade also stand revealed as part of a long-standing effort to reform the world of work and to enable French entrepreneurs to take better advantage of the productive environment.

Chapter 3, "Foreign Policy as Industrial Policy: The Anglo-French Commercial Treaty of 1786," traces the *mentalité* underlying the cross-Channel rivalry that dominated this period. In economic terms, and particularly in industrial terms, our understanding of French leads and British lags in productivity and in technology recasts the explanations of backwardness emphasized by Alexander Gerschenkron.²⁷ This chapter develops themes highlighted in Christine Macloud's revisionist article reminding us of Britain's technological dependence on the Continent and challenges Maxine Berg's assertion that fashion was at the heart of Britain's industrial dominance.²⁸ French attempts to imitate British economic practice are the jumping-off point for my attempt to plumb the depths of the discrepancy between the practice of *laissez-faire* envisioned by Adam Smith and the actions of the Hanoverian state.

The negotiation of the Anglo-French Commercial Treaty, that treaty's implementation, and (most important) the way French entrepreneurs responded to the heightened challenge of British competition demonstrate how issues of liberty and license, privilege, and profit worked out in practice. In an astonishing number of sectors, French entrepreneurs of the 1780s competed successfully with their English counterparts. Contemporary French competitiveness has been submerged by a deluge of references to the leading textile sector and by a deterministic emphasis on the impending collapse of Bourbon political authority. The fundamental presumption of state policy makers in signing the Treaty—that the French *could* compete and could beat the British at their own game—was not necessarily misguided. In areas where Britain was dominant, the French state's intervention sought to mitigate the Treaty's effects and

stimulate competitiveness. This account demonstrates conclusively that the French policy makers' principal misconceptions were political, not economic or technological. French attempts at bolstering technological improvement and supercharging the competitive spirit of entrepreneurs foundered with the sinking ship of state. This chapter sets the stage for an analysis of the 1789 Revolution's effect on the course of the Industrial Revolution in France.

After 1789, labor relations differentiated British and French industrial conditions. Chapter 4, "The Other 'Great Fear': Labor Relations, Industrialization, and Revolution," examines the incidence of machine-breaking on both flanks of the Channel from the old regime until well into the nineteenth century. The effectiveness of government repression of machine-breaking was a sensitive gauge of the relative power of the British and French states. During the eighteenth century, machine-breaking by the restive English laboring classes was much more common than in France. The turning point in this domain, as in so many others, came in 1789. Although overshadowed by more spectacular events in Paris, the revolutionary moment embraced pervasive machine-breaking in several industrial centers. Because machine-breaking in 1789 was an aspect of the emergence of revolutionary politics, the supposedly assertive French state proved nearly powerless in clamping it down. Throughout the revolutionary decade (1789–1799), French industrial entrepreneurs could not rely on the state to repress working-class militancy.

In England, machine-breaking is usually associated with the Luddites of 1811–1817. If the weakness of French state support slowed the pace of mechanization and technological innovation, Great Britain, the archetypical "liberal" state, deployed impressive levels of coercion to repress labor militancy in general and the practice of machine-breaking in particular. Entrepreneurs in England exhibited a justified faith in the power and protection of the Hanoverian state against the "threat from below." E. P. Thompson and Adrian Randall emphasized the potential for political upheaval inherent in Luddism,²⁹ but events illustrated that the English working classes were rebellious not revolutionary. Sheltered from the peril of a political and social revolution, Britain could safely consolidate and extend its industrial advantages in the generation after 1789. By tracing the complex relationship of the state with the laboring

classes during the revolutionary era, this chapter demonstrates how French machine-breaking shifted labor relations on the Continent to slow the pace of industrial transformation. Although far less well known, French machine-breaking in 1789 had a far greater effect than its English counterpart. This chapter chronicles the onset of a genuine divergence in the industrial pathways of these two nations.

Chapter 5, “*La patrie en danger*: The Industrial Policy of the Year II,” is a case study of the effect of Revolutionary politics on industrial development. In 1793–94, the Committee of Public Safety faced not only the onslaught of the overwhelming coalition of states arrayed against the Revolutionary French government but also the Federalist and Vendéan rebellions. The French economy was in free fall, industrial production was collapsing, and the ports were cut off from the colonies. Only a deliberate policy of state-sponsored Terror enabled the Revolutionaries to enforce the wide-ranging economic measures needed to provide the weapons and food essential to victory.

For the French Revolutionaries, the key to increasing industrial production was the mobilization of scarce resources. The state mobilized human resources (including skilled laborers, entrepreneurs, and technological innovators), knowledge (consisting of both the best existing industrial practices and new processes and inventions), and raw materials. Against all odds, the Committee of Public Safety defeated both internal and external enemies and embarked on a crusade to bring the benefits of the French Revolution to the other peoples of Europe. Only through the Reign of Terror was French industry able to meet the extraordinary demands made upon it. Chapter 5 takes issue with how many historians of science and technology, most notably Ken Alder, have treated this period. Rather than focus on experiments of restricted application or generalizing about technological applications from limited data, I examine how agents of the Terror treated industrial problems and how entrepreneurs and laborers reacted to the draconian policies of the state, both in Paris and in the provinces. In the crucible of war and revolutionary politics, the economic relationship of state and society shifted fundamentally, but the reliance of the industrial policies of the Year II on revolutionary violence indelibly tainted this effective approach to managing the economy. Succeeding regimes groped for different means of

mobilizing French resources for war. The link between the industrial policies of the Year II and the Terror also magnified the “threat from below” in the minds of entrepreneurs, thereby speeding up French divergence from the English model of industrialization.

Chapter 6, “From Allard to Chaptal: The Search for an Institutional Formula for French Industrialization (1791–1804),” investigates French administrative attempts to develop institutions capable of fostering industrialization in the context of Revolutionary politics. As early as 1791, classical liberalism was superseded by more cameralist views of how to stimulate technological innovation and support entrepreneurialism while keeping the laboring classes in check. Accelerated by the widening war and the crisis of the Year II, French policy makers experimented with novel institutional means of fostering competitiveness and innovation. Until the advent of the Consulate (1799–1804), these experiments generally foundered on the jagged rocks of uncertain French finances and political instability. In the fresh dawn of the Napoleonic era, Minister of the Interior Jean-Antoine Chaptal (1800–1804) masterminded a new approach to improving French industrial competitiveness that melded Physiocratic notions concerning resources and liberal attitudes about the rights of the individual with an activist vision about the necessity of state action in technological matters.

Chapter 6 delves deeply into the technological decisions made during the Revolutionary decade to illustrate the demise of the liberal paradigm and to explain how the economic and political situation constrained industrial and technical possibilities. Economic and political weaknesses limited the effectiveness of institutions, such as the first industrial exposition of 1798, that publicized and rewarded technological advance. Chaptal codified and extended the bureaucratic efforts of the Revolutionary decade. He emerged as the institutional architect of the nineteenth-century French industrial economy. Mokyr’s description of Chaptal as a paradigmatic figure of the Industrial Enlightenment permits me to reflect on the limitations and utility of this term and the way that Mokyr related a particular way of thinking to the sustained technological innovation that took place after 1820.³⁰ Chaptal’s institutional creations combined formal education and hands-on experience to permit France to find a middle way among the competing models of industrial

development. He and his bureaucratic collaborators adopted and adapted elements of the British model, the hyper-centralized approach of the Year II, and classical *laissez-faire* to lead France down a different path to industrial development that laid the foundations for long-term economic success.

Chapter 7, “Facing Up to English Industrial Dominance: Industrial Policy from the Empire to the July Revolution (1805–1830),” traces the legacy of the Chaptalian framework. Chaptal and his approach to fostering industrial competitiveness were shunted aside temporarily during the era of Napoleon’s ascendancy in favor of a mercantilist Continental System designed to ensure French economic hegemony by force of arms. The expansion of imperial borders to encompass Belgium, the Netherlands, the Rhineland, and northern Italy fortified expectations that an enlarged France verging on the dimensions of the original European Common Market could compete with Britain on its own terms. Tracing the vicissitudes of international trade in terms of the ups and downs of European-wide war reveals both the genuine possibilities and the mistaken assumptions inherent in the Napoleonic approach to economic competition. After Napoleon’s two defeats, however, the institutions created early in the century resumed their place at the forefront of government industrial policy. The Restored Bourbons did not enjoy Napoleon’s military successes or the bloated borders of the Empire, but they benefited from the education, technical training, and workplace experience his regime propagated to a host of the artisans, laborers, and tinkerers. During the Restoration (1815–1830), a period of diminished political expectations, state industrial policy focused on expanding the profitability and range of what France did well and reserving the home market for domestic manufactures. Only someone wearing the blinders of *laissez-faire* would expect the French to slavishly attempt to compete in international markets with Great Britain in the areas of its supremacy. If this led to slower growth than across the Channel, it did allow France to recover from its ordeals and to profit from its own competitive advantages.

Without the cover provided by war, competing with the paramount industrial power from an inferior position challenged French pride and hampered French exports. Royal policy makers recognized that,

although basic capacity had to be developed in certain industries (such as steel), France had a unique mix of resources, skilled laborers, and product specialties that could form the basis of a solid prosperity despite English predominance. In a wide variety of sectors, the French state focused its efforts on providing what manufacturers lacked to enable them to take advantage of their opportunities. Within the confines of “domestic” *laissez-faire*, a uniquely French form of government intervention often entailed finding appropriate skilled labor, developing scientific knowledge, and furnishing technological expertise or start-up capital. The success of these efforts also bought time for the educational and training institutions created earlier in the century to work. Unsurprisingly in view of France’s segmented markets and uneven transportation network, innovation was usually organized locally or regionally. A modified mercantilism dominated French industrial policy until the railroad inaugurated a new industrial era.

Chapter 8, “Coalitions and Competition: Entrepreneurs and Workers React to the New Industrial Environment,” complements chapter 7 by revealing how entrepreneurs and laborers responded to state industrial policies in the first three decades of the nineteenth century. Both groups rejected passive acceptance of top-down policies and instead sought to develop tactics and strategies to improve their own situations. These maneuvers focused on limiting competition through either formal or informal coalitions or through some sort of fraud, very broadly defined. The prospect of competition either with domestic technological innovators or with favored international rivals made many French uneasy. Their response was to circumscribe and circumvent the market. Groups of entrepreneurs and laborers circumvented the law in ways that illustrate the limitations of state control and the continuing legacy of Revolutionary politics in the early industrial age, further complicating our understanding of the process of industrialization.

In the early nineteenth century, the collective power of the laboring classes was expressed intermittently, but the “threat from below” loomed large. The repression of worker militancy met with uneven success. When French manufacturers attempted to lower wages to reduce prices and stimulate sales rather than search for technological improvements or new outlets for their goods, their workers usually accepted it.

When workers banded together to restore the cuts, as they did in Normandy, at Le Houlme in 1825, entrepreneurs and the state reacted in ways that characterize the divergence of labor relations on both flanks of the Channel because of the lingering “threat from below” in France.

Producers also resisted the market discipline imposed by the state by forming coalitions and by counterfeiting, making knock-offs, and smuggling. The true scale and scope of these activities will never be known, but they peaked during Napoleon’s Continental System (1806–1813). The willingness of entrepreneurs in a wide range of industries, market situations, and places to engage in illegal activities demonstrates the multiple sources of entrepreneurial profits missing from so many accounts of industrialization. Economic competition is fought out both over and under the table. The existence of so many opportunities for illicit profit-taking also attested to the weakness of the market mechanism in a country as large and diverse as France. The evidence presented in chapter 8 undermines optimistic Anglocentric visions of how industrial development ought to work by emphasizing how it actually functioned. The extent of these illicit sources of profit also helps to explain why many French industrial entrepreneurs did not wholeheartedly endorse mechanization and innovation, as their British rivals did: they did not yet need to. In France, many if not most entrepreneurs preferred to take advantage of alternative and fundamentally easier means of acquiring wealth. Economic rationality in an age of war and Revolution was not as straightforward or as mathematical as market theorists would have us believe.

Chapter 9, “Chaptal’s Legacy in a Niche Industry,” provides a glimpse of how the institutions founded earlier in the nineteenth century created a new industrial environment. As Chaptal envisioned decades earlier, entrepreneurs, tinkerers, and bureaucrats in the city of Troyes took full advantage of the institutional support that was available to them. By cultivating the niche market of *bonneterie* (the making of hats and stockings), Troyes rebounded from a deep industrial decline between 1810 and 1820 to become one of France’s most dynamic centers of technical innovation. As de Maupassant’s thrifty peasant well knew, the path not taken presented its own delights to those who knew where to look.