

2001

## Consolidating power: Technology, ideology, and Philadelphia's growth in the early republic

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CONSOLIDATING POWER  
TECHNOLOGY, IDEOLOGY, AND PHILADELPHIA'S GROWTH IN THE EARLY  
REPUBLIC

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A Dissertation

Presented to

The Faculty of the Department of History  
The College of William and Mary in Virginia

In Partial Fulfillment  
Of the Requirements for the Degree of  
Doctor of Philosophy

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by

Andrew M. Schocket

2001

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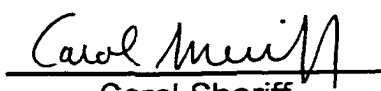
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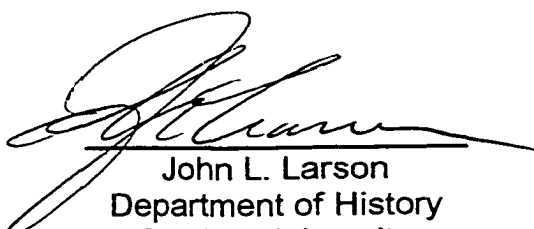
  
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## DEDICATION

To Harry Klamkin, Jay Schocket, and Barry Schocket: three fine men who taught me to do the right things, to do things right, and to bring joy to their completion.

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## ABSTRACT

This dissertation examines the ways that moneyed Philadelphians invented corporate power in America during the first four decades of the federal republic, specifically focusing on business corporations, such as canal companies and banks, and on a public corporation, Philadelphia's municipal government. Through evidence from company and municipal records and publications, the private papers and correspondence of corporate officers, newspapers, pamphlets, and legislative acts and proceedings, this study identifies the people and the technological and financial processes that contributed to the establishment and entrenchment of corporate economic and political power.

From the 1790s to the 1830s, Philadelphia-area residents demanded cheaper transportation, a better water supply, and more adequate credit facilities and financial institutions. The technical, legal, and monetary requirements of corporations that administered these projects served to increase their leverage in political and economic relations with other individuals and groups, allowing the few who controlled those institutions to exert power over space in unprecedented ways. The men who dominated those corporations justified this increased influence by successfully casting their own interests as being synonymous with those of the public at large. In addition, by the 1810s, a small group of Philadelphians recognized the centrality of transportation and banking to economic growth and coupled them to the corporate form to establish a forum at once withdrawn from public input yet able to exert power in public politics: the meeting-rooms of corporations run by men with close business and family ties.

Most significantly, this study argues that the creation of such a domain held serious consequences for the legacy of the American Revolution. Philadelphia corporations provided broader political and economic independence for more people than before the Revolution; indeed, these companies grew because of the great demand for their services and the freedoms they fostered. However, as corporate associates consolidated their hold over institutions they gained increasing command over what direction growth could take and how its rewards would be distributed. These phenomena contributed greatly to the transformation of America from a gentry-dominated society in the eighteenth century to the corporate-dominated one of the nineteenth and twentieth centuries.

CONSOLIDATING POWER

TECHNOLOGY, IDEOLOGY, AND PHILADELPHIA'S GROWTH IN THE EARLY  
REPUBLIC

## Introduction

In the 1790s, Philadelphians referred to their city as the “Metropolis of America,” and for good reason. At over 50,000 people and growing, its population easily surpassed that of any other city in the new nation. No American city hosted as many prominent cultural institutions, including the American Philosophical Society, the Library Company, the College of Pennsylvania, and the Pennsylvania Hospital. Its wharves on the Delaware River were among the busiest on the Atlantic seaboard, as thickets of tall ships loaded grain farmed in its lush hinterland and flour milled along the eastern seaboard to trade for sugar from the West Indies and a plethora of goods from Europe and beyond. Nonetheless, Philadelphians worried about a host of problems. With Britain having been their source of commercial credit they were apprehensive about locating the capital necessary to finance economic development. The rising cost of fuel also bothered them as they ransacked the surrounding countryside for firewood. They had further concerns about the continued viability of their competitiveness. Despite the difference in population, New York had usurped Philadelphia’s position as the primary commercial city in the nation and Baltimore threatened to displace it to third. Both of these cities had more extensive natural inland navigation networks that portended for continued growth at Philadelphia’s expense. But their most pressing problem was the water—it was terrible. They did not have enough to drink and complained about the poor quality of what little they got. Many blamed the bad water for the terrible yellow fever plagues that swept the city almost every year.

Searching for solutions, Philadelphians primarily turned to Britain for technologies, organizational and legal structures, and financial methods not yet implemented in the United States. The city government built the first large municipal waterworks in America, originally steam-powered and later harnessing the power of the Schuylkill, a feat previously thought to be impossible. To compete with their metropolitan rivals for interior trade, Philadelphians constructed artificial navigations along the Lehigh and Schuylkill rivers and built canals to connect other waterways. They discovered how to burn anthracite coal and how to mine and transport it to the city affordably. They founded new financial institutions—banks and insurance companies—and experimented with novel forms of investment. They invented new ways to explain and justify these new technologies and institutions. To administer all these activities, Philadelphians recast a British legal and administrative structure that provided a platform for power, the corporation.

This dissertation is an examination of how Philadelphians used British-inspired projects and methods such as waterworks, banks, canals, and insurance companies to confront the city's challenges from the 1790s to the early 1830s. I argue that Philadelphians, borrowing from British precedent, constructed these technologies and the institutions that administered them in such a way as to create and entrench economic and political corporate power, to extend it ever farther throughout the region, and to consolidate it in a handful of institutions controlled by a dwindling number of moneyed men. Indeed, they forged a new corporate sector of society that in some ways stood aloof from traditional politics and economic relations. Although certainly a subject of public

discussion, corporate consolidation did not take place over the violent objections of the citizenry nor secretly in closed drawing-rooms. Rather, the men who owned or controlled large projects responded to and manipulated the demands of a growing city. Farmers, manufacturers, and merchants alike in the city and the region called for better transportation, more extensive public services, and access to credit, but often balked at paying for them in taxes or subscriptions. Ambitious investors were only too happy to enter into the vacuum, and they profited from the region's economic needs in two ways: not only through financial returns but also by controlling crucial technologies on which great numbers of people depended. Furthermore, through interlocking directorates, a small group of men was able to coordinate consolidating efforts across technologies and institutions. By the early 1830s, public corporations such as the City of Philadelphia and private ones such as the Schuylkill Navigation Company had obtained legal, political, and economic leverage by those methods. By doing so, corporate insiders increasingly reserved for themselves control over wide areas of the economy previously left to sovereign governments—including money supply, transportation policy, and credit issues. The age of corporate power began in early republican Philadelphia. This dissertation explains how and why, and in so doing addresses one of the great unanswered questions of American history: the genesis of corporate power in America.

Previous historians who have considered the role of corporations and the technologies they administered in America during this period have largely done so from either a legal or an economic standpoint. Economic historians conducted a cluster of case studies toward the end of the 1970s identifying

regional development and transportation improvements as central to city expansion. Most of these monographs chiefly address the years from 1810 to 1840, previously pinpointed by economic historians as the take-off period for the growth associated with the beginning of America's industrial revolution.<sup>1</sup>

Generally these works emphasize geographic and economic approaches to urban growth, comparing intra-regional economic development with inter-regional trade. While noting the importance of infrastructure in the young nation's growth, business historians in particular have discounted the influence of corporations before the 1830s. Certainly compared to the railroads and industrial giants that became national in scope during the second half of the nineteenth century, the projects in the 1810s or 1820s seem pitifully small in terms of money and number of employees. Economists have mostly explained corporate growth as a function of greater efficiency—a quantifiable measure—rather than analyzing the more qualitative characteristics of political or economic influence.<sup>2</sup>

Legal scholars have debated the role of the state in the development of the corporation and the extent to which the state encouraged or involved itself in

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<sup>1</sup>For case studies of urban growth, see Diane Lindstrom, Economic Development in the Philadelphia Region, 1810-1845 (New York: Columbia University Press, 1978), which focused on the development of a regional trade; Gary Browne's Baltimore in the Nation, 1789-1861 (Chapel Hill: University of North Carolina Press, 1980), emphasized the development of capital, coupled with immigration and improvements in transportation; Francis X. Blouin, Jr., in The Boston Region 1810-1850: A Study of Regionalization (Ann Arbor: UMI Research Press, 1980) described the growth of the Boston region as the result of increased efficiencies of regional economic and industrial integration; John G. Clark argues in New Orleans: An Economic History (Baton Rouge: Louisiana State University, 1970) that this city was the beneficiary of a huge hinterland, its growth eventually guaranteed by the proliferation of steamboats; Carville Earle provided a summary of a relevant geographic description of urban growth as a function of hinterland staple crops in "Why Tobacco Stunted the Growth of Towns and Wheat Built Them into Small Cities," in Carville Earle, Geographical Inquiry and American Historical Problems (Stanford: Stanford University Press, 1992).

<sup>2</sup>See George Rogers Taylor, The Transportation Revolution (New York: Harper and Row, 1951), Alfred Chandler, The Visible Hand: the Managerial Revolution in American Business (Cambridge: Belknap Press, 1977), Douglass C. North, The Economic Growth of the United States, 1790-1860, Thomas C. Cochran, "The Business Revolution," *American Historical Review* 79 (Dec. 1974) 1449-66, Diane Lindstrom, "American Economic Growth before 1840: New Evidence and New Directions" *Journal of Economic History* 39 (March 1979), 289-301, Carter Goodrich, ed., Canals and American Economic Development (New York: Columbia University Press, 1961).

economic activity, usually considering corporate behavior through the use of sources such as legislative debates and pronouncements or juridical rulings. They have not, however, adequately considered the reverse: how corporate insiders strove to influence or exploit the political process, a phenomenon best understood through the analysis of corporate records.<sup>3</sup> Historical economic sociology offers valuable insights by addressing all these issues for later periods, but because it draws on existing legal and economic historiography rather than primary sources for the early national era, it is laden with the assumptions of those disciplines: that corporations were small-scale, quasi-public institutions.<sup>4</sup> None of the aforementioned scholars has properly explored the ways the men who ran corporations manipulated their technologies for clearly political and economic considerations, nor the extent to which owners linked the new technologies, legal structures, and financial methods.

Although historians of technology have elaborated upon the great debts that American technological development owed to British engineers and engineering, legal and economic historians have seriously underestimated the profound influence of British corporate organizational, legal, and financial

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<sup>3</sup>See Guy S. Callender, "The Early Transportation and Banking Enterprises of the States in Relation to the Growth of Corporations" *Quarterly Journal of Economics* 17 (Nov., 1902), 111-162; Oscar Handlin and Mary F. Handlin, "Origins of the American Business Corporation" *Journal of Economic History*, 5 (May 1945), 1-23; Oscar Handlin and Mary Flug Handlin, *Commonwealth: A Study of the Role of Government in the American Economy* (Cambridge: Harvard University Press, 1947); Louis Hartz, *Economic Policy and Democratic Thought: Pennsylvania, 1776-1860* (Cambridge, 1948); James W. Hurst, *The Legitimacy of the Business Corporation in the Law of the United States, 1780-1970* (Charlottesville: University Press of Virginia, 1970); Morton J. Horwitz, *The Transformation of American Law, 1780-1860* (Cambridge: Harvard University Press, 1977); Ronald E. Seavoy, *The Origins of the American Business Corporation, 1784-1855: Broadening the Concept of Public Service During Industrialization* (Westport: Greenwood Press, 1982); L. Ray Gunn, *The Decline of Authority: Public Economic Policy and Political Development in New York, 1800-1860* (Ithaca: Cornell University Press, 1988), and Pauline Maier, "The Revolutionary Origins of the American Corporation," *WMQ*, 3d Ser., 50 (1993) 51-84.

<sup>4</sup>See William G. Roy, *Socializing Capital: The Rise of the Large Industrial Corporation in America* (Princeton: Princeton University Press, 1997), Robert Alford and Roger Friedland, *The Powers of Theory: Capitalism, the State, and Democracy* (New York: Cambridge University Press, 1985), and Neil Fligstein, *The Transformation of Corporate Control* (Cambridge: Harvard University Press, 1990).



techniques upon American efforts in the same areas.<sup>5</sup> For the most part, scholars remain strangely mute on the subject. The few who do address British influence have even gone so far as to label the origins of American business corporations a “mystery,” or to argue that in the United States, “corporation law was a homemade product.”<sup>6</sup> As will be demonstrated in the following chapters, nothing could be further from the truth. American corporate boosters mimicked British predecessors in nearly every conceivable arena, from the ways that they presented their goals to the public and their general administrative structure to particular money-raising schemes and identical language in corporate by-laws and charters.

This study combines the scholarship of legal history, economic history, and the history of technology to posit insights that no one of those historiographic traditions alone has made. By examining legal, economic, and technological developments with the understanding of their interconnection, this study illuminates the ways in which economic behavior and manipulation of technology translated into power. Late eighteenth- and early nineteenth-century Americans would have found foreign the classical liberal distinction between politics and economy posited and academically institutionalized in the second half of the nineteenth century; even the patron saint of liberalism, Adam Smith, understood such issues to be inextricable. In pamphlets, newspapers, petitions, and

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<sup>5</sup>Darwin Stapleton has written several pieces about Benjamin Henry Latrobe—the designer of the first Philadelphia waterworks—regarding his role as the primary agent of transfer in both steam technology and inland navigation technology; the best summary of that work is “Benjamin Henry Latrobe and the Transfer of Technology,” in Pursell, Carroll, ed., Technology in America: A History of Individuals and Ideas (Cambridge: MIT Press, 1982), 34-44 while his more broad treatment of the subject in general is The Transfer of Early Industrial Technologies to America (Philadelphia: American Philosophical Society, 1987).

<sup>6</sup>Pauline Maier, “The Revolutionary Origins of the American Corporation,” *William & Mary Quarterly*, 3d. Ser. 50 (1993), 52; James W. Hurst, The Legitimacy of the Business Corporation in the Law of the United States, 1780-1970 (Charlottesville: University Press of Virginia, 1970), 1.

speeches the first generation of United States citizens used the term “political economy,” inherited from the Enlightenment, to describe the field of thought that addressed the social and political consequences of economic activity and vice versa.<sup>7</sup> Especially during the early republic, before the weight of precedent pressed so heavily upon legislators to separate the “political” from the “economic,” Americans struggled in word and deed to define the limits of governmental and non-governmental activity, individual and collective privileges, and moneyed and mass influence.

Because of the unique range of large-scale technologies its residents pursued from 1790s to the 1830s, Philadelphia provides an excellent site to examine all of the relevant issues. Philadelphians pioneered river navigations, canals, a steam-powered waterworks, a water-powered waterworks, banking, insurance, and various kinds of municipal finance. They administered these projects through a public corporation, the City of Philadelphia, and through private corporations such as the Farmers and Mechanics Bank, the Pennsylvania Company for Insurance on Lives and Granting Annuities, and the Union Canal Company. Despite many false starts, Philadelphians discovered how to use anthracite coal and founded the Schuylkill Navigation Company and the Lehigh Coal and Navigation Company to bring it to market. By 1830, Philadelphia’s corporations had gained control both over major local resources and over the allocation of capital in the region.

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<sup>7</sup> Perhaps Drew McCoy has best defined the meaning of “political economy” in the early republic; he described it as the “characteristically republican idea of a dynamic interdependence among polity, economy, and society.” Drew McCoy, The Elusive Republic: Political Economy in Jeffersonian America (Chapel Hill: University of North Carolina Press, 1980), 6.

This study emphasizes the extent to which corporate consolidation involved at least the implicit and often the explicit cooperation of many disparate groups.<sup>8</sup> Previous studies have focused primarily upon the men who proposed and ran corporations, ascribing all agency to them. However, these men were not acting in a vacuum: they were actors in an environment in which farmers, merchants, and manufacturers continually petitioned the state legislature for public improvements and greater access to credit. Despite the political pressure for such technologies and services, most Pennsylvanians were not willing to pay for them through increased taxes and were wary of government administration of financial services and large construction projects. Thus, the people who demanded better transportation, paper money, and access to credit cooperated with companies in their efforts to secure charters and other favorable legislation. At the same time, many small investors—widows, middling tradesmen and merchants, executors of estates for orphans—were eager for safe ways to invest that would provide a steady income without requiring the time and expertise to devote the money to their own business pursuits; corporate stocks and municipal bonds often provided the perfect investment vehicle. These people were willing to supply the money for corporate projects that others would administer. Together, the cooperation of corporate officers, small investors, and the great number of people who demanded canals, banks, and waterworks made corporate power possible.

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<sup>8</sup>In surveying literature on the interaction of various groups with different kinds of technologies, Thomas J. Misa has pointed out that historians have found agency at every level of interaction from designer to producer to administrator to user. Each kind of agency is different in that various parts of a technology are determined by the different groups. See Thomas J. Misa, "Retrieving Sociotechnical Change from Technological Determinism," in Merritt Roe Smith and Leo Marx, eds., Does Technology Drive History? The Dilemma of Technological Determinism (Cambridge: The MIT Press, 1994), 115-141.

Nonetheless, because a small community of insiders worked most actively to establish and administer corporations, those individuals must be near the center of any analysis of corporate power in the early republic. In this sense, then, this study follows in the footsteps of others that examined particular groups of “associates” in the late eighteenth- and early nineteenth-century Atlantic world.<sup>9</sup> Just as in those works, “associates” here does not refer to membership in a formal organization, nor to shareholders in one particular venture. Many were long-term partners of various firms or served together on corporate boards, but overall they had no single business or line of work that united them. They did not necessarily have family ties, although many were related either by birth or by marriage. Boundaries remained fluid; as individual men became more prominent in Philadelphia’s business circles, they could buy large blocks of stock or gain election to corporate boards and thus earn acceptance into corporate insider circles. The terms “associates” and “insiders” will be used in this study to describe a group of men in a particular time and place who shared many business dealings, class interests, and a common vision of economic development and their role in that development.<sup>10</sup> Because the group had no

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<sup>9</sup>See Robert F. Dalzell, Jr., Enterprising Elite: The Boston Associates and the World They Made (Cambridge: Harvard University Press, 1987); Thomas M. Doerflinger, A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia (Chapel Hill: University of North Carolina Press, 1986); David Hancock, Citizens of the World: London Merchants and the Integration of the British Atlantic Community, 1735-1785 (New York: Cambridge University Press, 1995); Naomi Lamoreaux, Insider Lending: Banks, Personal Connections, and Economic Development in Industrial New England (New York: Cambridge University Press, 1994); Cathy Matson, Merchants & Empire: Trading in Colonial New York (Baltimore: The Johns Hopkins University Press, 1998); and Anthony F. C. Wallace, Rockdale: The Growth of an American Village in the Early Industrial Revolution (New York: W.W. Norton & Company, 1978).

<sup>10</sup>For a particularly explicit definition of “associates,” see Hancock, 11-12. The definition I have given of associates mostly mirrors Hancock’s. However, my use of the term for research resembles that of Wallace and Dalzell in one crucial sense, which is that Hancock’s group was circumscribed by the number of merchants whose lives he examined, a number necessary limited by research requirements including extant records and a depth not reached in this study; rather, the Philadelphia associates constitute the entire community of men active in Philadelphia corporations during the first three decades of the nineteenth century.

formal membership rites or titles, those men did not explicitly label themselves as associates. Nonetheless, they could clearly identify others in their network as men who were active in Philadelphia corporations.

While associates and others influenced the development of corporations in ways small and large, the sum of those contributions cannot be described fully by the actions of any particular individual or small group. The interaction of many people and interests on a grand scale also shaped these institutions and affected their economic and political roles. Thus, this study addresses both the words and actions of the individuals involved and the greater process of corporate growth that exhibited similar patterns and results across the range of corporations in the Philadelphia area. In almost every case, corporations gained what historian of technology Thomas P. Hughes has labeled “institutional momentum.”<sup>11</sup> That is, as technologies are first deployed, many individuals or groups can have great influence over their design and implementation; however, once a technology is established, owners, administrators, and users will often have an interest in keeping it unchanged as well as discouraging competing versions of the technology. Beyond the actions of individuals, Philadelphia corporations did take on institutional momentum in the 1810s and 1820s as they matured and gained more customers and represented increasingly entrenched interests.

This work is also guided by the recognition that certain kinds of technologies and activities were integral to the workings of an entire local or even

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<sup>11</sup>Thomas P. Hughes, “Technological Momentum,” in Merritt Roe, and Marx, Leo, eds. Smith, Does Technology Drive History? The Dilemma of Technological Determinism (Cambridge: The MIT Press, 1994), 101-115.

regional economy, such that their designers and administrators could manipulate them for great power.<sup>12</sup> Although many observers of technology have analyzed systems—most prominently electrical networks, telephone networks, and railroad systems—they have not adequately conceptualized the ways in which certain kinds of technologies can be deployed to gain economic leverage.<sup>13</sup> Those scholars considering these issues have sharply disagreed over the possibility that large technological systems may have inherent political or social consequences. Observers with a more philosophical bent have tended to portray some large technologies as necessarily entailing certain centralizing or authoritarian effects. On the other side of the fence, most historians of technology have argued that, like any technology, large technological systems are culturally defined and open to literal and figurative construction by administrators, designers, builders, users, and legislators. This study bridges the two views by pointing out that both arguments apply in part to canals, river navigations, and waterworks. Like any technology, they could be designed and

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<sup>12</sup>In this study, “local” will be used to describe one municipality and its immediate surroundings, for example Philadelphia and its contiguous suburbs, the town of Reading, or the town of Mauch Chunk and its local mines. “Regional” will be used to describe the geographic area of which Philadelphia was the economic hub, so including much of the Delaware, Schuylkill, and eventually Lehigh River valleys.

<sup>13</sup>For a discussion of the use of railroad routing and financing to establish economic power, see John Lauritz Larson, Bonds of Enterprise: John Murray Forbes and Western Development in America's Railway Age (Cambridge: Harvard University Press, 1984); David E. Nye does the same for electricity in Electrifying America: Social Meanings of a New Technology (Cambridge: The MIT Press, 1990); also see Thomas P. Hughes, Networks of Power: Electrification in Western Society, 1880-1930 (Baltimore: The Johns Hopkins University Press, 1983). For a summary of the historiographic debates on technological determinism, especially in terms of large technologies, see Merritt Roe Smith, “Technological Determinism in American Culture,” in Merritt Roe Smith and Leo Marx, eds. Does Technology Drive History? The Dilemma of Technological Determinism (Cambridge: The MIT Press, 1994), 2-35.

Lewis Mumford, in “Authoritarian and Democratic Technics,” *Technology and Culture* 5 (Winter 1964), 1-8, postulated that large technological systems engendered themselves to centralized control, and thus contributed to the consolidation of bureaucratic power.

Thomas Hughes, in Networks of Power: Electrification in Western Society, 1880-1930 (Baltimore: The Johns Hopkins University Press, 1983), argued just the opposite: that national engineering cultures and local economic and political decisions determined the deployment and administration of large technological systems. For insightful discussions on the political nature of technology, see Langdon Winner, The Whale and the Reactor: A Search for Limits in an Age of High Technology (Chicago: The University of Chicago

administered in a nearly infinite number of ways. Nonetheless, more so than most technologies, some large technological systems cost great sums to build and became central to a city's or region's economic life, making them particularly attractive targets for ambitious men with access to capital who saw opportunities for profit and for gaining a large say in the direction of economic growth.<sup>14</sup>

Banks and insurance companies were the financial equivalents to such large technologies in the early republic.<sup>15</sup> The Philadelphia waterworks gathered a precious resource to be distributed at a controlled flow through predetermined conduits from a reservoir to particular places, all the while decreasing the responsibility and burden to individuals of gathering their own water. Banks and insurance companies essentially performed the same centralization and distribution functions, again relieving individuals of certain encumbrances and liabilities. Rather than water, the latter institutions each gathered and spread more abstract yet equally crucial commodities: banks did so with capital and insurance companies did so with risk, though their functions often overlapped. Those who administered the companies overseeing such operations—often the same men or in league with those who ran river navigations, turnpikes, and

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Press, 1986), 19-58 and Jacques Ellul, The Technological System, Joachim Neugroschel, trans. (New York: Continuum, 1980).

<sup>14</sup>Charles Sabel and Jonathan Zeitling argued that "which technological possibilities are in fact realized depend crucially on the distribution of power and wealth in society: those who control the disposition of resources and the returns from investments choose from among the available applications of technology the one most favorable to their interests as they define them." Charles Sabel and Jonathan Zeitling, "Historical Alternatives to Mass Production: Politics, Markets, and Technology in Nineteenth-Century Industrialization," *Past and Present* (August 1985), 161. Historians of technology have attacked this general assertion for many technologies, especially those at the "consumption junction": mass consumer technologies. However, Sabel's and Zeitlin's contention remains particularly apt for technologies requiring vast resources.

<sup>15</sup>The question of whether a bank or an insurance company itself is a technology is open to debate. While many historians have limited their definition of technology to artifacts—machines, roads, circuits, cloth, tools, and so forth—others have widened the definition. For instance, an alphabet does not necessarily have a physical component, nor does calculus; however, each are humanly constructed tools representing some facet of the physical world. Other tools are trickier; for example, paper money is clearly a technology

canals—could and did use them to extend their influence over the direction and distribution of Philadelphia’s economic growth.

The chapters to follow will address the ways that corporate insiders, in cooperation and conflict with legislators, investors, and the general public, shaped these technologies and institutions. Chapter Two begins with an analysis of the transatlantic financial and mercantile community. Although post-Revolutionary Philadelphia remained peripheral to the British metropole, the city became more integrated with Britain institutions following the Revolution than it had before the start of the conflict. Philadelphia’s commercial leaders looked to the mother country for the economic and technological tools that would bring stability to their businesses and to the greater economy. They turned to new solutions, ones that had profound consequences for the projection of power across space. This chapter also outlines the consolidating and diffusing characteristics of corporations that led to changes not only in the economy but also in the construction of power in the early republic.

The following three chapters investigate in closer detail the phenomena identified in Chapter Two. Chapter Three addresses the new technologies Philadelphians adopted, specifically the Philadelphia waterworks, the Schuylkill and Lehigh navigations, and, to a lesser extent, various canals in the Philadelphia region. The designers and owners of these technologies planned and built such technologies in ways that ensured centralized control over their administration. Once these projects had been constructed, their administrators manipulated the dependence of others upon the technology to enlist their help in

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according to the widely accepted definition, but a bank may not be. For the purposes of this study, banks



securing legislation that gave the organizations that ran them advantages over other actors in the economy. For example, the city gained power over issues of rate collection for water delivery in Philadelphia's suburbs, and internal navigation companies acquired advantages in suits concerning property damage. These new technologies proved more effective than previous ones for the men who wanted to extend power over more people and greater space.

Chapter Four examines the role that the exploitation of finance played in Philadelphia's expansion, concentrating on banks, insurance companies, and the methods they and the controllers of physical-technology projects used to raise money. In Pennsylvania, the widespread desire for credit and for better transportation facilities, in combination with the resistance to taxation, played into the hands of those who had the money to invest in such activities. In addition, the administrators of the technology exploited the desire of most investors to avoid active participation in the venture. Corporate insiders were thus able to gather vast amounts of capital over which the public and eventually even most investors would have little control.

Just as physical technology and financial institutions were powerful consolidating tools, so too was the use of ideology to legitimate, justify, extend, and protect the gains of administrators and large investors. Chapter Five will examine how those who ran corporations manipulated terms and ideas concerning concepts of private interest, public service, and city, state, and patriotism in their efforts to promote and defend their projects and institutions. By championing the interests of those who would benefit from their projects,

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and insurance companies will not be defined as technologies.

corporate insiders were able to associate their own interest with the public interest.

Although each of the institutions under study was owned and administered separately, corporate insiders ran them in similar ways and to defend similar interests. Corporate boosters did their best to gain as much independence as possible from state authorities in terms of their own administration while keeping lines of communication open with the statehouse to gain legislative favors. Chapter Six details the effort to keep public officials out of the boardroom and to resist governmental regulation, giving special attention to the composition of corporate boards of directors, the extent to which corporate boards interlocked and the way they worked in concert. Such activities necessitated coordination among and between corporations; Chapter Six also investigates how the corporate community coordinated its *de facto* control of state money policy and directed Philadelphia's economic growth.

As Chapter Seven shows, companies used technology, ideology, and finance together to create a corporate sphere. This development held profound consequences for the ordering of American society in the half-century after the Revolution. Corporations brought Philadelphians greater access to credit, efficiency of transportation, availability of water, circulation of cash, and supply of coal, and in doing so helped bring about the end of the old, patron-client economic order. They allowed the diffusion of economic—and thus political— independence for the many. At the same time, corporate insiders gained and retained control over these processes. Chapter Seven will also place Philadelphia's changes in the context of Jacksonian America, showing how an

acknowledgment of the early nineteenth-century creation of a new, corporate sphere allows the synthesis of the two seemingly antithetical interpretations of changes in the distribution of political and economic power in the early republic.

By the 1830s, Philadelphians could no longer call their city the “Metropolis of America”; clearly, New York had taken that honor, never to relinquish it.

Philadelphia was poised to move in another direction, toward its nineteenth-century self-designation as the “workshop of America.” It was in a position to be a center of heavy industry, especially the manufacture of steam engines, through a heritage of steam engine use fostered by the first waterworks and access to cheap anthracite coal. Building from their experience with canals, Philadelphians would help found and run the Pennsylvania Railroad, the largest and most powerful corporation in America for most of the nineteenth century.

Philadelphia’s Fairmount waterworks would become a model for municipal waterworks across the country, as would the city’s administration and finance of such projects. The big city corporation and the big business corporation had their origins in early nineteenth-century Philadelphia. The following chapters will explain how and why.

## British Precedents, American Conditions, and Philadelphian Consequences

In the decades following the Revolution, the United States attempted to achieve economic independence from Britain. Part of that effort involved the creation of the physical, financial, and institutional structures denied them under British rule. Philadelphia led the way in many of those areas by developing the new mechanisms necessary for independent economic growth. Ironically, the men most responsible for establishing this infrastructure borrowed heavily from British precedent.

As Philadelphia recovered from the British occupation, it quickly reclaimed its place as the largest and most culturally sophisticated city on North America's Atlantic seaboard. In the mid-1780s, about 40,000 people lived in Philadelphia or its suburbs, still ahead of close rival New York City. Although in 1682 William Penn had planned the city to span a one-mile wide, two-mile long stretch of land between the Delaware and Schuylkill Rivers, a century later it remained mostly hunched along the western bank of the Delaware. The Delaware not only was deeper and less likely to freeze than the Schuylkill, but also was navigable for many miles above the growing commercial capital, well into New York State. By the 1780s, city habitations reached less than a mile inland, a densely settled six or seven blocks beyond the busy wharves. Nonetheless, residents boasted about Philadelphia's rational plan, its copious markets, and its broad, paved avenues with their brick sidewalks and gutters.

The city's wide streets and grand buildings drew compliments from many travelers, too, as did its lively cultural and social scene. "Philadelphia may be considered the metropolis of the United States," observed an impressed French

traveler, J.P. Brissot de Warville, in 1788, long enough after the Revolution for the repainting of facades, the replacement of windows, and the mending of streets to have taken place. “It certainly is the finest town, and the best built; it is the most wealthy, though not the most luxurious. You find here more men of information, more political and literary knowledge, and more learned societies.”<sup>1</sup> He was referring to well-grounded institutions including the American Philosophical Society, founded there in 1743, the Pennsylvania Hospital, opened in 1752, the College of Philadelphia, chartered in 1755, and the Library Company of Philadelphia—America’s first lending library—organized in 1731. Philadelphia’s cultural wealth reflected its commercial wealth, manifested in the grand, three-story brick mansions built by the city’s richest men. Commerce was the lifeblood of all waterfront cities in the Atlantic world in the eighteenth century, and the Quaker City was no exception.

Philadelphia merchants tried their best to amass fortunes amid the instability and uncertainty of the Atlantic economy. In order to gain some modicum, or perhaps some illusion, of control over their businesses, Philadelphia merchants tended to specialize in one of two particular modes of commerce, the provisioning trade or the dry goods trade.<sup>2</sup> Provisions consisted of all the goods exported from Philadelphia. Drawing from hundreds of square miles of hinterland in Pennsylvania, New Jersey, Delaware, and Maryland, Philadelphia provisioning merchants annually shipped hundreds of thousands of barrels of

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<sup>1</sup>J.P. Brissot de Warville, New Travels in the United States of America. Performed in the Year 1788 (Dublin: W. Corbet, 1792).

<sup>2</sup>See Thomas M. Doerflinger, A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia (Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1986) for a complete analysis of Philadelphia merchants and their business methods during this period.

flour. By the end of the colonial period, they began searching ever farther for supply, acting as an entrepot to export grain farmed as far afield as upstate New York and much of the Chesapeake Bay region. Southern Europe increasingly became the destination of choice, as prices there rose because of poor harvests and continental conflicts.<sup>3</sup> Philadelphians continued to send great quantities of flour, beef, and wood to the West Indies, the first two to feed Caribbean slaves and the last for the barrels in which to store and ship the products the slaves made, sugar and molasses. Philadelphia merchants also transported large quantities of flax to Ireland for its linen manufactories and a variety of other goods to other selected destinations. These businessmen bought locally and sold globally. Wherever they did business, their long-term success depended upon the cultivation of reliable contacts in distant ports as well as a considerable amount of luck on the high seas.

Dry goods merchants did exactly the opposite, importing mostly finished goods to be distributed in the Delaware Valley and beyond. Isaac Weld, an Englishman who visited in 1795, wrote that Philadelphia “has evidently been raised to [its] state of pre-eminence by her extensive inland commerce.”<sup>4</sup> The dry goods business consisted of receiving manufactured wares on credit from Britain, then selling them by offering credit either at the merchants’ own stores in town, to smaller local merchants in the interior, or to shallopmasters and teamsters who would carry the goods many miles afield. Thus, while dry goods merchants traded directly within a radius of perhaps a hundred miles, Weld

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<sup>3</sup>See John McCusker and Russell Menard, *The Economy of British America, 1607-1789* (Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1987).

pointed out that Philadelphia was the center of a vast distribution network. Goods sent from Philadelphia traveled to Harrisburg in central Pennsylvania and from there up both branches of the Susquehanna, and “by land carriage Philadelphia also trades with the western parts of Pennsylvania, as far as Pittsburgh itself, which is on the Ohio, with the back of Virginia, and, strange to tell, with Kentucky, seven hundred miles distant.”<sup>5</sup> Philadelphia merchants connected the middle states to the Atlantic world. Although the dangers of Atlantic shipping affected provisioners more than dry goods merchants, the latter had their own problems. Should their ultimate customers not be able to pay bills because of bad harvests or lack of hard money, a dry goods business could collapse under the weight of unpaid bills to London creditors.

By the 1770s and 1780s, the dry goods and provisioning businesses had become so complex—and so profitable—that they each became split and spawned another mercantile layer between producer and customer. This new group of middlemen concentrated either on inland distribution of the merchandise that dry goods merchants imported or on engrossing large enough cargoes of grain or lumber for the provisioners to fill ships’ bottoms. They cultivated contacts inland, established local credit networks, and worked out the details of intra-regional transportation. Levi Hollingsworth, for instance, built a fortune in the late eighteenth century as a flour merchant, buying from millers in the Delaware River valley and selling to provisioners for overseas shipment. Such specialization allowed dry goods and provisioning merchants to

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<sup>4</sup>Isaac Weld, Travels Through the United States and the Provinces of Upper and Lower Canada, During the Years 1795, 1796, and 1797 (London: John Stockdale, 1799), 34.

<sup>5</sup>*Ibid.*, 34.

concentrate on the details of Atlantic shipping while the middlemen labored over the vagaries of inland commerce. Still, those middlemen depended upon good grain prices to make a living, and Atlantic grain prices spiked and plummeted in unfathomable patterns.

Regardless of the specialization of individual Philadelphia merchants, they all operated in an extremely uncertain business environment. The increased concentration on smaller niches of commercial activity made Philadelphia merchants even more acutely aware of the greater need for better inland transportation networks, better credit facilities, and easier access to cash. Those common concerns far outweighed any sense of internal competition between firms, leading to a spirit of cohesion that often crossed political, ethnic, and religious lines. Eighteenth-century Atlantic-world commerce entailed high risks and high rewards that led merchants in the same city to pool resources rather than fight over them. Despite the thousands of vessels criss-crossing the Atlantic on a regular basis, captains had not found ways to eliminate the dangers of wind and storm or to avoid the predations of privateers and hostile navies in wartime. Merchants shared cargoes and insured each other's ships and merchandise in order to reduce their exposure on any one voyage while retaining their potential for large net profits. Quite literally, several merchants' fortunes would ride in the same boat. The uncertainty did not end when a ship reached port, for prices changed quickly, often going from good to bad in the time of a single voyage. Merchants needed to know the quality and quantity of agricultural and manufacturing production at home and abroad, the latest international political conditions, the variations in exchange rates, and the fluctuating value of



the financial instruments they used to conduct their business. Because market information traveled at the same rate as cargo, local conditions and prices in distant ports—and thus the profitability of a given voyage—shifted faster than merchants could adapt, putting a premium on gathering as much data as possible, data that affected all merchants because it affected local commodity prices, too. Again, the benefits of sharing far outweighed any slight advantage to be gained from simply knowing more overall than another merchant down the block, for the other man might possess that essential more recent or reliable tidbit. The pooling of all available information proved especially crucial given that choosing the right destination and the proper mix of cargo could mean the difference between big profits and selling entire shiploads at a loss. Just as merchants spent long hours poring over their own account books, they spent much time exchanging information and making deals in Philadelphia coffeehouses.<sup>6</sup> Their general willingness to cooperate would be a hallmark of their corporate activity in the coming decades.

In addition to sharing a spirit of community, Philadelphia merchants nearly universally agreed on the necessity of establishing more stable economic exchange. To be successful in any mercantile business required possessing a healthy preoccupation with questions of credit and money supply, two separate but related issues. In the eighteenth-century Atlantic world, silver and gold, or specie, formed the universally accepted media of exchange but had the liabilities of being bulky and risky to send in large quantities. Even if specie had been

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<sup>6</sup>See Richard D. Brown, Knowledge is Power: The Diffusion of Information in Early America, 1700-1865 (New York: Oxford University Press, 1989), 110-121 for the ways that merchants received and exchanged information.

more physically practical for long-distance commerce, merchants still would have needed other ways to convey money. Also, the specie supply could not keep up with the increases in population and productivity, that is, the increased need for circulating currency. Specie was so hard to come by that a merchant who could merely get his hands on some to import it to Philadelphia could make a fortune.<sup>7</sup> Compounding matters for Philadelphia merchants, the colonies and later the United States always imported a higher value of goods than they exported, consistently draining whatever specie made its way there back out of the country quickly. Instead, merchants, tradesmen, and farmers alike found ingenious ways to cope with the literal and figurative shortcomings of specie. For long-distance commerce, they used instruments called bills of exchange. These were essentially checks written on accounts with British-based commercial houses. To pay for goods in Charleston, for example, a Philadelphia merchant could write a bill of exchange promising that his British agent would pay a certain amount upon demand. Both the Philadelphia merchant and the London house would be liable for the bill. The receiving Charleston merchant could then either send the bill to London for payment or sign it and use it to pay someone else, in which case the Charleston merchant could also be held responsible for payment. In each major Atlantic port, merchants traded bills of exchange, making them both a convenient form of specialized payment as well as a kind of currency. This system generally served Atlantic commerce well, but the lack of a strong local institution able to issue notes accepted locally or in distant ports still plagued Philadelphia merchants

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<sup>7</sup>Ralph Hidy, The House of Baring in American Trade and Finance: English Merchant Bankers at Work.

Furthermore, the brisk generation of and trade in bills of exchange could not operate as a viable money supply for the small, everyday transactions of most people. Bills of exchange were cumbersome, difficult to understand, and usually involved large sums. Parliament had never chartered any banks in the colonies, so colonial governments had tried all sorts of alternate methods to increase local credit and money supply. These efforts, usually either fiat money or land banks, met with mixed success.<sup>8</sup> Fiat money referred to paper currency issued by a government to be used as legal tender; unlike notes generally issued by eighteenth- and early nineteenth-century banks, fiat money could not be redeemed for specie by the issuing agency. Rather, the institution that printed the bills arbitrarily declared what each note would be valued, thus “fiat.” Fiat money had the potential to depreciate quickly, depending upon the confidence of the general population in the solvency of the government. The other popular solution to inadequate levels of cash was the land bank. Land banks were agencies run by colonial governments that printed money to be loaned in exchange for interest on the principal and a lien on the debtor’s property. Their notes tended to be more solid than fiat currency as long as confidence held that the colonial officials would enforce the seizure of mortgaged property should the bank’s debtors default. For better or worse, colonial legislatures did not always have the discipline to resist passing laws that relaxed debt collection, resulting in decreased public confidence in the value of land bank notes. As successors to

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1763-1861 (Cambridge: Harvard University Press, 1949), 20

<sup>8</sup>See Richard Sylla, “Monetary Innovation in America” *Journal of Economic History* 42 (March 1982), 21-30, especially 23-26.

the colonial governments, state legislatures searched for more successful ways to create stable currencies and establish an adequate money supply.

To compensate for the paucity of cash, Americans generally operated in a book-credit economy that had serious liabilities. Most farmers and tradesmen kept two sets of books, a daybook and a ledger. When buying or selling goods, they entered the transactions in chronological order in the daybook—what goods were exchanged and their market price—without exchanging cash. They also entered each transaction in a ledger that had a separate page for every customer. When the customer finally had the cash to pay, the tradesman could simply go to that person's page in the ledger to find how much the customer owed. The web of credit could get quite complicated: often, customers paid debits by crediting what the tradesman owed yet another person. The universality of these practices was reinforced by laws that made entries in daybooks and ledgers legally binding, and the heavy dockets of local courts testified to the difficulties in collecting book debts. Without the ability to extend or receive credit, farmers and tradesmen had trouble keeping afloat, and as the basis of the American economy they had the potential to take most merchants down with them in a whirlpool of insolvency.

Credit proved to be an especially volatile issue because it was the key to power in the transatlantic economy of the eighteenth and early nineteenth centuries. The ability to get credit offered the chance either to expand business or to ride out economic storms. Everybody wanted credit, from farmers, craftsmen, and small merchants, to manufacturers and big city merchants, and in the early republic, there was not enough to go around. Thus, the ability to

extend credit, sometimes by direct loans and more commonly by selling goods for future payment, gave anyone with the wherewithal to use it wisely great leverage in business dealings. By selling merchandise on credit or by extending credit on speculation of sales, merchants cultivated dependencies among their clients. Samuel Gist, an American-born, London-based tobacco merchant engaged in a typical use of the leverage of credit in 1767 when he insisted that his American debtors “consign their tobacco to him... or pay their balances at once or face a suit for debt.”<sup>9</sup> Philadelphia merchants did the same with their clients in the Delaware and Schuylkill valleys. Links of credit formed the chain of dependency and power in the eighteenth-century Atlantic world.

Credit also formed the cornerstone of the relations between what John Trenchard and Thomas Gordon, British pamphleteers popular in the colonies, called those between “Patron and Client,” the most typical mode of economic and political power in America.<sup>10</sup> Usually the patrons, either planters or merchants, created influence based upon their ability to make loans to farmers and tradesmen and to provide a conduit through which these clients could market their surplus goods. Patrons provided legal advice, political representation, and cultural leadership; in short, they controlled the terms of activity between their clients, whose orientation remained parochial, and the outside world. They also performed the task of local arbiter either in an official capacity, such as alderman or justice of the peace, or informally by settling local arguments and claims. At the same time, the power of patrons was limited by

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<sup>9</sup>Charles Royster, Fabulous History of the Dismal Swamp Company: A Story of George Washington's Times (New York: Alfred A. Knopf, 1999), 137.

the amount of capital and effort they were able to use—often at a financial loss—to cultivate such relationships. For merchants and planters, extending power cost money. Furthermore, the fragility of mercantile partnerships and the risk inherent in eighteenth-century commerce mitigated against the establishment of family dynasties, making the economic basis of patron-client power frustratingly impermanent. Also, life in trade did not provide for a stable living: markets rose and fell, and wars could disrupt trade for years. Furthermore, while a merchant could train his sons to take over the business, he could have great difficulty providing for daughters and widows as well as sons who had a different aptitude or disposition. Meanwhile, patron-client relationships required constant reinforcement through face-to-face encounters in churches, on court days, at militia musters, during election campaigns, and any number of other public occasions in addition to more private individual business and legal transactions with clients. This personal touch made patron-client power difficult to project over space or to a great number of people.<sup>11</sup> Like the technologies it supported, patron-client power would have difficulty sustaining itself in the expansion of the early republic.

Just as Philadelphia merchants still took their fashion, reading, and social cues from Britain, they did so in mercantile matters. Scholar David Hancock has noted how the most successful London merchants diversified their portfolios

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<sup>10</sup>Quoted from Gordon Wood, The Radicalism of the American Revolution (New York: Vintage Books, 1992), 57.

<sup>11</sup>See for example Wood, 57-77; Alan Taylor, William Cooper's Town: Power and Persuasion on the Frontier of the Early American Republic (New York: Vintage Books, 1995), 229-255. For the most insightful discussions of patron-client relationships in their purest form, see Rhys Isaac, The Transformation of Virginia, 1740-1790 (Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1982), and Charles Sydnor, American Revolutionaries in the Making: Political Practices in Washington's Virginia (originally Gentlemen Freeholders) (New York: The Free Press, 1952).

once they had made their fortune in Atlantic commerce. Although a few continued some of the commercial activities, all bought sugar plantations, British estates, or both. These new investments held distinct advantages over the merchant business. First, they tended to be extremely stable in that they produced roughly the same income year after year. This was in marked contrast to the high stakes world of Atlantic commerce with its cycles of price fluctuations, its uncertainties of war and weather, its long periods of waiting punctuated by bursts of activity when ships loaded or landed, and its nearly annual potential to bring ruins or riches. Second, plantations and estates virtually ran themselves: owners hired supervisors to administer them. The merchants could then devote more of their own time to other endeavors such as philanthropy and art collecting. Best yet, the combination of stability and ease of management allowed these men to provide long-term financial security for their families.<sup>12</sup> Rather than spending all their days in counting houses and coffee houses, their children could devote their careers to more prestigious cultural and political pursuits. Those London merchants provided a powerful example. If Philadelphia merchants could find stable, easily managed investments close to home, they too could retire and ensure their families' continued prominence.

In addition to the more personal challenge of building dynasties, the founding and growth of the new nation entailed novel sets of problems for the Philadelphia merchant community. From the 1790s to the 1830s, Philadelphians faced a new series of challenges that established technologies and the old systems of paying for and organizing them could not resolve. The chronic

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<sup>12</sup>David Hancock, *Citizens of the World: London Merchants and the Integration of the British Atlantic*

shortage of money for the growing economy remained a source of complaint throughout the period. Like specie, flexible credit could be difficult to acquire. Greater Philadelphia merchants worked together to pool their capital in partnerships, and often traded on credit from their British counterparts, and smaller merchants, tradesmen, and manufacturers, in turn, had to rely on the rich merchants for credit, thus forging the chain of credit dependence that gave economic force to patron-client relations. However, after the Revolution, with an economy growing in both relative and absolute terms, cash and credit were short for merchants and their clients. A tradesman was certainly not alone when he grumbled in the newspaper that “the mechanic labors under the... difficulty of the impracticability of obtaining money to carry on his business.”<sup>13</sup> In a new nation with seemingly limitless possibilities, Philadelphians would turn to a tried-and-true device, the corporation, to solve their credit and money supply problems.

As they did in so many other arenas, Americans decided to try a British solution: banks. Philadelphians founded the nation’s first bank, the Bank of North America, controlled the first and second Banks of the United States, and established seven other banks in the area. As one proponent explained, these new financial institutions “provide[d] a means for putting industry and capital into activity, which would have otherwise remained wholly unproductive and wholly useless—this is done by the operation of credit.”<sup>14</sup> Not only did the banks loan money, but also they issued currency, thereby alleviating both the cash and the

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Community, 1735-1785 (New York: Cambridge University Press, 1995).

<sup>13</sup>*Freeman’s Journal*, December 13, 1786, as quoted from Russell F. Weigley, ed., Philadelphia: A 300-Year History (New York: W.W. Norton & Company, 1982).

<sup>14</sup>William Duane, Observations on the Principles and Operation of Banking; with Strictures on the Opposition to the Bank of Philadelphia (Philadelphia, 1804), 10.



credit crunch. Still, they could never seem to supply enough money to meet the ever-growing demand.

Philadelphians also faced the typical early nineteenth-century urban challenge of gaining access to a hinterland exploding in population and productivity. Eighteenth-century colonists had mostly stayed within fifty miles of the ocean, or at least within a day's ride of the fall lines of major rivers, partly for safety but also because prevailing transportation technologies could not support extensive market activities. Beyond that range, poor road quality and the bulkiness of most agricultural products rendered the cost of transportation to market prohibitive and made potentially productive farmland not worth settling. If getting a farmer's grain to Philadelphia cost more than the sale price, growing a surplus—or, for that matter, planting anything in the first place—would not provide the income to pay taxes and to buy necessary finished goods. Exactly that kind of reasoning led many western Pennsylvania farmers to distill grain into whiskey to reduce the volume and weight of their product to make transport to market economically feasible. Land travel, as opposed to water transport, remained highly expensive for bulky goods: the cost of shipping grain all the way across the Atlantic was lower than sending it 30 miles overland by wagon—and that was on a good road. Finished goods bore the high cost of transport from Philadelphia inland, but grain produced as close as 100 miles west of the Quaker City was shipped down the Monongahela or the Ohio to the Mississippi and all the way to New Orleans. Turnpikes, especially the Lancaster Philadelphia Turnpike, did lower transportation costs greatly, but few were well built or well maintained, and teamster costs remained high. Merely constructing more and

longer roads would not sufficiently reduce the price of sending produce from Pennsylvania's rich farms to Philadelphia. Both farmers and city merchants started to demand new technologies that, in the words of canal booster Charles Paleske, would "secure the grand objects of conveying the products of the interior country to the metropolis, and returning with the imports or manufactures of the latter."<sup>15</sup>

The War of 1812 greatly exacerbated another of Philadelphia's problems: an insatiable hunger for cheap energy.<sup>16</sup> Like most urban and even many rural Americans, by the turn of the nineteenth century Philadelphians cast far and wide for power sources. The Delaware and the Schuylkill rivers both seemed too broad and too powerful to be dammed, so the City of Philadelphia had evaded the dearth of harnessable waterpower near the highly populated parts of town by using coal- and charcoal-fired steam engines in the design for the Philadelphia waterworks. It was an expensive example that some industrial concerns, especially ironworks, soon followed, but steam engines were still too costly or impractical for other purposes. Furthermore, the cost of fuel for work, for heating, and for cooking skyrocketed during the War of 1812. Philadelphians had long supplemented their supply of firewood and charcoal that had been floated down the Schuylkill or Delaware with bituminous or "soft" coal shipped from Britain and Virginia because its use as ballast kept it affordable. However,

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<sup>15</sup>Charles G. Paleske, Observations on the Application for a Law to Incorporate "The Union Canal Company" Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania (Philadelphia: Duane, 1808), 7.

<sup>16</sup>For a general discussion of America's energy needs during this period, see David E. Nye, Consuming Power: A Social History of American Energies (Cambridge: The MIT Press, 1998); for Philadelphia's particular need for fuel in the first two decades of the nineteenth century, see H. Benjamin Powell, Philadelphia's First Fuel Crisis: Jacob Cist and the Developing Market for Pennsylvania Anthracite (University Park, PA: The Pennsylvania State University Press, 1978).

with the British blockading the coast, coal from either the old country or the Old Dominion became unavailable. Although the cost of fuel dropped when the war ended, the demand for energy grew faster than the population. As one city resident observed, “the rapid disappearance of wood from all the streams connected with Philadelphia” continued apace, resulting in ever-rising fuel prices.<sup>17</sup> Philadelphians continued to cast about for new, cheaper forms of physical power.

Philadelphians considered all of these challenges during a period of increasing economic transformation, the 1790s to the 1830s. Transportation improvements on the local, regional, and sectional scale helped accelerate growth. Changes within the region, much more than links with other domestic markets or international trade, drove this grand economic expansion.<sup>18</sup> With the notable exception of the trade embargo in 1807 and 1808, high profits from shipping during the Napoleonic Wars and the subsequent British flooding of American markets with a backlog of cheap finished goods forestalled large-scale domestic investment in manufacturing and internal transportation. Nonetheless, beginning in the 1810s, the economic landscape of Philadelphia and its surrounding hinterlands—western and southern New Jersey, eastern Pennsylvania, and most of Delaware—began to change considerably. Towns sprouted on the Schuylkill and the Lehigh Rivers when the mining of anthracite began in earnest. The use of the new coal laid the foundation for the development of the United States’ premier center of heavy industry, the

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<sup>17</sup>[Samuel Mifflin], Observations on the Importance of Improving the Navigation of the River Schuylkill, for the Purpose of Connecting it with the Susquehanna, and Through that River Extending Our Communication to the Genesee Lakes and the Ohio ([Philadelphia?], 1818), 3.

manufacture of high-pressure stationary steam engines, in the Philadelphia area during the second quarter of the nineteenth century.<sup>19</sup> Closer to the city, Manayunk and Spring Gardens became manufacturing centers whose production rivaled their more famous cousins such as Lowell, Lynn, and Paterson. Meanwhile, farmers in the surrounding countryside began to specialize in particular crops for sale to the growing population of the city, deviating from their past practices of sending surpluses of general farm produce to more local markets. Philadelphia slowly shifted from an emphasis on foreign commerce to manufacturing products that it could sell in exchange for its hinterlands' growing bounty, and so began to look as much inland as it had toward the Atlantic in the previous century. Exploiting the increasing productivity of the countryside looked like the way to prosperity in the early nineteenth century, and Philadelphians desperately wanted their share of the loot.

This process of regional integration was but one play in the larger theater of what historians increasingly have identified as the central defining process of the United States during this period, the market revolution. Both producers and consumers began to concentrate more intensely upon products for sale in the nearest metropolis and to use the new income to buy even more factory-made goods.<sup>20</sup> Internal improvements were the way to prosperity by more tightly linking

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<sup>18</sup>See Diane Lindstrom, Economic Development in the Philadelphia Region, 1810-1850 (New York: Columbia University Press, 1978).

<sup>19</sup>See Alfred D. Chandler, Jr. "Anthracite Coal and the Beginnings of the Industrial Revolution in the United States," *Business History Review* 46 (Summer, 1972), 141-181.

<sup>20</sup>For the most sophisticated quantitative analysis of intensified market behavior, see Winifred Barr Rothenberg, From Market-Places to a Market Economy: The Transformation of Rural Massachusetts, 1750-1850 (Chicago: University of Chicago Press, 1992); Richard L. Brooke's The Heart of the Commonwealth: Society and Political Culture in Worcester County, Massachusetts, 1713-1861 (Cambridge: Harvard University Press, 1989) provides a more qualitative assessment, and Christopher Clark's The Roots of Rural Capitalism: Western Massachusetts, 1780-1860 (Ithaca: Cornell University Press, 1990), falls somewhere in between. For historiographic treatments of the market revolution, see Michael Merrill,

hinterland and metropolitan production. A group of farmers in Bucks County, for instance, were “fully convinced of their utility by so greatly facilitating the conveyance of the produce of their Farms to Market, and being desirous that a participation of those Benefits, may be further extended.”<sup>21</sup> Credit, too, helped to bring producers and consumers together. One set of petitioners pointed to “the loaning of money upon reasonable terms... the object and operations of which are calculated to advance the interests of agriculture, manufactures, and the mechanical arts to produce benefits to trade and industry in general.”<sup>22</sup> In a time when the great optimism for general improvement was matched only by the fear of being left behind, Philadelphians nearly fell over themselves in their rush to accept improvements on almost any terms.<sup>23</sup>

In addition to such a climate of change, the American Revolution signaled a shift in the makeup of the Philadelphia merchant community. Most noticeably, Quakers figured much less prominently in Philadelphia’s political and mercantile circles. Many Quaker merchants, because of the sect’s pacifist tenets, had either been Loyalists or at least fallen under suspicion of being so, leading to a decline in their business opportunities and political influence. After the Revolution, a new generation of merchants gained prominence, a cohort that did not have the same power bases as the old. The imperial administration and the

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“Putting ‘Capitalism’ in Its Place: A Review of Recent Literature,” *William and Mary Quarterly* 52 (April 1995), 315-326; Paul A. Gilje, “The Rise of Capitalism in the Early Republic,” in Paul A. Gilje, ed., Wages of Independence: Capitalism in the Early American Republic (Madison: Madison House, 1997); and Sean Wilentz, “Society, Politics, and the Market Revolution,” in Eric Foner, ed., The New American History, Revised and Expanded Edition (Philadelphia: Temple University Press, 1997), 61-84.

<sup>21</sup>“Petition to Pennsylvania General Assembly, Read January 23, 1804, From Citizens in Bucks County,” Folder January 23, 1804, McAllister Collection, Historical Society of Pennsylvania

<sup>22</sup>Pennsylvania House of Representatives Bill Number 74, January 28, 1808, Historical Records, Box 1, 1807-1820, Folder: Farmers and Mechanics Bank, Accession1658, Hagley Museum and Library.

<sup>23</sup>For a work that captures the optimism of the period, see Daniel Feller, The Jacksonian Promise: America, 1815-1840 (Baltimore: The Johns Hopkins University Press, 1995).

proprietary Penns were gone, and many attachments to them were swept away. Ironically, Philadelphia's merchant community became even more closely enmeshed with the British economy and merchant community during the 1780s than it had been before the Revolution.<sup>24</sup> During the war, a number of disaffected and loyalist Philadelphia merchants fled to Britain, where they continued their mercantile pursuits by conducting business with old associates who remained. Quakers figured prominently in this group.<sup>25</sup> Many emigrated to Britain because of their loyalist leanings or ties to the Penn family—even long after the Penns' conversion to Anglicanism—while others left to avoid the harassment that any pacifist group endures during conflicts in which allegiances are open to question. Typical of cohesive, commercially vigorous religious minorities, Quakers kept especially close ties with their relatives and partners in the New World while resettling in the Old.<sup>26</sup> Uprooted merchants who had started their careers in Philadelphia proved perhaps greater assets for the city's merchant community in Britain than they had been at home.

Just as some Americans initiated mercantile operations in the Old World, immigrants from Europe did so in Philadelphia. From 1774 to 1785, the number of merchants operating out of Philadelphia increased by 60%; most of the new merchants hailed from Britain, Holland, and France.<sup>27</sup> These men brought not only capital but also connections to business associates all over the Atlantic world, and they came not only to Philadelphia but also to all the major American

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<sup>24</sup>Thomas M Doerflinger, *A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia* (Chapel Hill: University of North Carolina Press, 1986), 245.

<sup>25</sup>Doerflinger, 222.

<sup>26</sup>Another group that did much the same in terms of cultivating trade and contacts among coreligionists was the Huguenot community. See John Garretson Clark, *La Rochelle and the Atlantic Economy During the Eighteenth Century* (Baltimore: Johns Hopkins University Press, 1981).

port cities.<sup>28</sup> While native Philadelphia merchants were well informed of European cultural, political, and technological developments, the newcomers brought first-hand insight and knowledge of the latest business practices and opportunities.

Both Philadelphia and British merchant firms also saw the end of hostilities between the two nations as an opportunity to reopen old trading ties or to create new ones. British merchants sent sons, nephews, trusted clerks, or junior partners westward to drum up business in American port cities. Almost immediately after news of the Peace of Paris reached Philadelphia, Robert Morris wrote to Sir Francis Baring, head of a London merchant house, to strike up a trade relationship. Through Morris, prominent Philadelphia merchants Thomas Willing and William Bingham soon opened accounts with the House of Baring.<sup>29</sup> In 1795, in order to work out a proposed Maine land deal with New Yorker Henry Knox, Baring sent Alexander, his second-oldest son, to help close the deal and to establish closer relations with other American clients. He succeeded so well that he married one of Bingham's daughters in 1798, and his brother married another Bingham daughter in 1802.<sup>30</sup> Morris, Willing, Bingham, and the Barings were among the most aggressive and most successful merchants in Philadelphia and London, respectively, but their connections typified the reintegration and even intensification of Anglo-American trade connections after the Revolution.

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<sup>27</sup>Doerflinger, 244.

<sup>28</sup>For example, Alexander Brown, founder of the nineteenth-century Brown family transatlantic empire, emigrated from Ireland to Baltimore in the 1790s. Edwin J. Perkins, *Financing Anglo-American Trade: The House of Brown, 1800-1880* (Cambridge: Harvard University Press, 1975), 19.

<sup>29</sup>Ralph Hidy, *The House of Baring in American Trade and Finance: English Merchant Bankers at Work, 1763-1861* (Cambridge: Harvard University Press, 1949), 22.

The strengthened business ties between merchant communities on opposite sides of the north Atlantic meant more than strengthened economic ties; they fostered a greater exchange of information on all sorts of business opportunities. Some of that information traveled east, resulting in a flow of European capital to invest in American land speculation deals, government securities, and eventually bank shares. Both British and continental European merchant firms looked for American partners to help purchase western lands, a process facilitated by the willingness of the national and state governments to auction off large tracts in their haste to pay off Revolutionary War debts. Foreign investors also snapped up shares in the Bank of North America and the Bank of the United States immediately after their founding and bought state and federal debt certificates. The United States provided opportunity and Europeans had the money; Philadelphia merchants connected the two by offering services and information.

Even more news and data regarding business flowed westward across the Atlantic than eastward. Throughout the eighteenth century, Americans had been kept abreast of business developments in Britain through a variety of channels. Some future merchants and planters had traveled to England as young men to be educated; others made the trip to defend or further their business or political careers by lobbying proprietors, Parliament, or the Board of Trade. While such travel may have declined after the Revolution, the men who had made those trips usually kept up their contacts with those they had met. Most merchants, especially those in the dry goods trade, corresponded with one or more trading

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<sup>30</sup>Hidy, 29-30.



houses in London, Bristol, or Liverpool on a regular basis. Thomas Willing, one of the central figures in the founding of the Bank of North America and the Bank of the United States, exemplified these connections: Pennsylvania-born, he was educated at Watts Academy and the Inner Temple during the 1740s and engaged in the mercantile business upon his return, often corresponding with London merchants including his uncle, Thomas Willing.<sup>31</sup> Philadelphia merchants depended on these houses to supply goods for trade, for financial services including credit and insurance, and to purchase special luxury items that could not be obtained in America. They also relied upon British merchants' assessments of political and economic developments that could affect trade.

Scholars have puzzled over the roots of the business corporation in the United States and have come to a consensus that such enterprises did not play an important role in Great Britain.<sup>32</sup> Legal historians have noted the paucity of new common law addressing business corporations—as opposed to other corporations such as municipalities and colleges—in eighteenth-century Britain. They have argued that because the corporate form for business did not evolve in a legal sense during that period, it was not widely used.<sup>33</sup> Similarly, economic and business historians, whose concerns with corporations has mostly been their use in relation to the industrial revolution, have cited the dearth of British manufacturing corporations in particular during the eighteenth century. Both

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<sup>31</sup>Robert E. Wright, "Thomas Willing (1731-1832): Philadelphia Financier and Forgotten Family Founder," *Pennsylvania History* 63 (Autumn 1996), 527-531.

<sup>32</sup>Oscar Handlin and Mary F. Handlin, in their seminal article "Origins of the American Business Corporation" *Journal of Economic History*, 5 (May 1945), 1-23, downplayed any British precedents of American business corporations, as did Pauline Maier in "The Revolutionary Origins of the American Corporation," *William and Mary Quarterly*, 3d Ser., 50 (1993) 51-84.

<sup>33</sup>See for example James W. Hurst, *The Legitimacy of the Business Corporation in the Law of the United States, 1780-1970* (Charlottesville: University Press of Virginia, 1970), 3-6.

legal and economic scholars have also stressed the low number of eighteenth-century British business corporations compared to the proliferation of American business corporations. Hence, they argue as a corollary of these conclusions that the British use of corporations did not influence Americans in their embrace of corporate organizational structure.

However, a closer look at the logic and evidence of these arguments reveals their shortcomings. In sum, these assertions are based on negations, that is, on what was not occurring in eighteenth-century Britain. While Blackstone and others found little development in the common law treatment of British business corporations, a lack of drastic change does not necessarily denote an absence of use or importance. True, few British used the corporation to administer manufacturing businesses, but then very few early United States corporations were manufacturing concerns. Not until the 1810s and 1820s would a group of Boston merchants use the corporate form to organize their highly capitalized textile mills, and such operations remained the exception rather than the rule until mid-century at least. By 1800, Parliament had chartered at least 92 business corporations in banking, insurance, and inland navigation.<sup>34</sup> In the United States, fourteen state legislatures had by then chartered 335 corporations.<sup>35</sup> However, the vast majority of the latter were formed to build and operate turnpike roads, an activity that was relatively uncommon in Britain. By contrast, Parliament incorporated far more canal and river navigation companies

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<sup>34</sup> This number is calculated by combining data compiled from Joseph Priestley, Historical Account of the Navigable Rivers, Canals and Railways throughout Great Britain (London, 1831) and adding known banking and insurance firms.

<sup>35</sup> Joseph S. Davis, Essays in the Earlier History of American Corporations (Cambridge: Harvard University Press, 1917), 26.

during the 1790s than did American state legislatures.<sup>36</sup> In the eighteenth century, the British used corporations for business purposes far more frequently than previous American historians have acknowledged; furthermore, most of that activity was concentrated in the same kinds of ventures—financial services and transportation development—as most early American business corporations.

British and American businessmen sought corporate charters for the same reasons. The most common business organizations at the time were merchant partnerships. Partnerships had the advantage of being easily formed and served well for businesses run on a limited scale and involving small amounts of capital. They also had severe limitations. They could only last as long as the members agreed to stay together; once one died or left, the whole partnership had to be dissolved or at least reorganized, assuming the survivor remained solvent. "A copartner in trade is frequently interested to a large amount in the duration of his associate's life," reminded a typical insurance company pamphlet, "and we recollect one instance in which a merchant had 30,000 dollars dependent upon the safe return of another from a distant voyage."<sup>37</sup> Every member of the partnership was personally fully liable for any debts the partnership might incur, meaning a potential loss of property and debtors' prison for group failure. Partnerships, then, implied a great degree of trust: commonplace was the ruination of merchants through the bad luck or

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<sup>36</sup> Parliament chartered at least 55 internal navigation companies during the 1790s, compared with 15 chartered by American state legislatures during the same period. British statistics compiled from Priestley; American statistics compiled from correspondence solicited by Albert Gallatin for his report on roads and canals for the United States Senate, *American State Papers, Vol 1., Miscellaneous* (Washington: Gales and Seaton, 1834), 724-921.

<sup>37</sup> "An Address from the President and Directors of the Pennsylvania Company for Insuring Lives and Granting Annuities, to the Inhabitants of the United States, upon the subject of the beneficial objects of that institution." Typescript copy of original publication. Folder "History of the Pennsylvania Company for

malfeasance of erstwhile partners. Incorporation provided a way for a group of people whose membership changed constantly to own property and buildings, and unlike partnerships, the corporation did not have to start over when old members left or new ones joined. Furthermore, corporations greatly limited liability of their members: if a canal company borrowed money to construct new locks, for example, the members were only liable up to the value of their investment. Because of these features, corporations could attract far more capital than partnerships, and therefore could undertake large ventures beyond the resources of a few individuals. In America, where all but the largest fortunes paled next to those of British grandees, the ability to pool capital made corporations an especially useful form of business organization.

Philadelphians read and heard about a range of British corporate business activities. Some Americans decried English manufactories and the slums around them and remained suspicious of corporations such as the Bank of England. Nevertheless, to the Philadelphia merchant community many British business corporations seemed at least as well suited for the United States as for Britain if not more so—perhaps the Bank of England most of all. Incorporated in 1694, the Bank of England provided credit services primarily to the Crown by buying large blocks of government securities at comparatively low interest rates; that is, lower than could be gotten from financial houses either at home or on the Continent. Even more so than other large banking enterprises, it could only have worked as a corporation because of the great amount of capital necessary to absorb the huge amounts of money the Crown needed at its disposal. Having a

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Insurance, 1895," Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476,

willing purchaser for seemingly infinite sums of public debt allowed the Crown great flexibility in its spending. For their part, stockholders could be assured of steady dividends as long as the government kept on paying interest, a fairly sure thing given that the government was sovereign and many members of Parliament or their families would have at least small holdings of stock in the bank. Thus, people active in the government had an interest in making sure that the state paid its debts. The Bank of England provided stability on several levels: for government budgeting especially in wartime, for a financial community wary of high government debt, for investors, and even for those concerned about political disloyalty. With those same considerations in mind for the United States, many prominent Philadelphia merchants strongly supported the incorporation of the Bank of North America, the Bank of the United States, and eventually a number of state banks as well.

Philadelphia merchants were also familiar with Scottish banking practices. Praised by David Hume, John Law, and Adam Smith, the Scottish example was powerful to Philadelphia merchants because the Scottish banks had been central to Scotland's rapid economic development during the eighteenth century. For much of that period, Scotland had faced some of the same problems that United States did after independence: a lack of local currency, a negative balance of trade, and inadequate credit facilities. The Bank of Scotland, chartered a year after the Bank of England, performed the same functions as its English counterpart. Unlike the Bank of England, however, the Bank of Scotland was not granted a monopoly, so other banks—the Royal Bank of Scotland and the British

Linen Company—also obtained banking privileges, assuring that different groups could have access to the benefits of banking. The Bank of England only operated out of its central office in London, issuing notes of £10 or more—a denomination far too large for everyday transactions and only intended for the use of governments and large commercial houses. By contrast, Scottish banks opened branches and issued notes as low as shillings and pence, thereby greatly supplementing the general money supply.<sup>38</sup> The Scottish system, much more stable than the colonial American financial institutions, looked very attractive to Philadelphia merchants and served as prototypes for Pennsylvania-chartered banks. State banks, just like the Bank of North America and the Bank of the United States, resulted more from the enlightened mimicry of British organizations than from American innovation.<sup>39</sup>

The Scottish banking system proved especially attractive given the poor currency management record of colonial and state governments. Merchants could conclude that land banks and fiat money had proven insufficient, but not necessarily because the underlying premises were unsound. Those measures had often been approved with the backing of the merchant community in the colonies that undertook them. Merchants could reasonably argue that these measures were ultimately unsuccessful partly because of the refusal of imperial officers to force British merchants to honor the notes, but mostly because of the unreliability of colonial legislatures that lacked the political backbone to retire notes on schedule and foreclose on debtors. If anything, the latter problem

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<sup>38</sup>See Richard Saville, *Bank of Scotland: A History, 1695-1995* (Edinburgh: Edinburgh University Press, 1996), 1-278; and Charles W. Munn, *The Scottish Provincial Banking Companies, 1747-1864* (Edinburgh: John Donald Publishers, 1981).

would become exacerbated after the Revolution. In 1786 and 1787, Revolutionary War veteran Daniel Shays and hundreds of other central Massachusetts farmers protested high taxes and the state enforcement of debt collection and land foreclosure. After Massachusetts merchants funded a successful military expedition to restore order, the disgruntled farmers went to the polls in great numbers, electing Thomas Hancock as governor with a mandate to pass laws relieving the tax burden and protecting debtors.<sup>40</sup> Although merchants, too, involved themselves in webs of debts and credits, as overall creditors they could draw two conclusions from the incident. First, the dearth of cash and credit could spark not only economic dislocation but also social unrest, and second, state governments could not be trusted to keep promises to creditors or to follow a consistent currency policy. From any merchant's point of view, the Shays affair showed the dangers of the existing currency system, or lack thereof. The danger in Pennsylvania could be particularly acute because its constitution guaranteed universal suffrage, meaning that Philadelphia merchants could not rely on the statehouse to enforce unpopular measures limiting money supply.

Consequently, the Scottish system of incorporated banks that allowed the mercantile community to control and regulate currency and credit constituted an exemplary model for Philadelphia merchants. In scheduled meetings, Scottish bank representatives gathered to exchange the notes they had issued and had been brought to each other's counters. By doing so on a regular basis, they

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<sup>39</sup>Although the Bank of North America had a Pennsylvania charter, it clearly was originally intended as an institution of national scope.

collectively insured that each of their members had the ability to meet its obligations, and so acted as a clearing-house mechanism to ensure that banks and the notes they issued remained on firm ground.<sup>41</sup> In their efforts to keep note issues at conservative levels, they also prevented general inflation, always the bane of those who are net creditors. Furthermore, these meetings allowed bank officials, rather than public authorities, to decide how much money would be issued and when.

In name, in form, and in operation, Philadelphia-based banks closely followed British precedent, beginning with remarkable similarities in their charters. In terms of corporate governance, British bank charters dictated that a majority of electors was required to amend company by-laws, that the companies' governor, lieutenant governor, and directors were to be elected annually during a specified one-month time-frame, that the directors must be English (or, in the case of Scotland banks, Scottish) subjects, and that a majority of directors constituted a quorum for official business.<sup>42</sup> The Bank of North America and the Bank of Pennsylvania's charters, too, stipulated that by-laws be amended by a majority of electors, that the president and directors be elected annually on a specific date, that directors be citizens of the United States—or in the case of the Bank of Pennsylvania, residents of the state—and that a majority

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<sup>40</sup>For a variety of historical viewpoints on Daniel Shays and his eponymous "rebellion," see Robert Gross, ed., *In Debt to Shays: The Bicentennial of an Agrarian Rebellion* (Charlottesville: University Press of Virginia, 1993).

<sup>41</sup> Randall Kroszner, "Free Banking: The Scottish Experience as a Model for Emerging Economies," presented at World Bank Seminar *Financial History: Lessons of the Past for Reformers of the Present*, 10-14.

<sup>42</sup> Joseph Hume Francis, *History of the Bank of England* (Chicago: Euclid Publishing Company, 1888), 58-63; William Robert Scott, *The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720, Vol. III: Water Supply, Postal, Street-Lighting, Manufacturing, Banking, Finance and Insurance Companies; Also Statements Relating to the Crown Finances* (New York: Peter Smith, 1951), 253-256.



of directors were required for a quorum.<sup>43</sup> They raised capital in similar ways, as well; both British and American banks issued a limited number of shares, set a maximum for individuals' initial investment, and collected their capital through subscription. They even operated under similar limitations, including charter-mandated capital ceilings, the condition that dividends were to be issued only out of profits while preserving the paid-in capital, and prohibitions against engaging in any other trade. And once Philadelphia was home to several banks, company officers met to coordinate money policy in much the same way the Scottish banks did.<sup>44</sup> Philadelphia bankers clearly mimicked British bankers through their adoption of such similar methods and structures.

Philadelphians could also look eastward across the Atlantic and admire British transportation improvements corporations, especially in the field of internal navigation. Between 1760 and 1790, Parliament had chartered 28 river navigation and canal companies. Although waterpower would provide most of the energy for America's factories in the first half of the nineteenth century, Britain had not been equally blessed with so many fast-flowing rivers. Furthermore, by the early eighteenth century the British had depleted their countryside of sufficient firewood to meet their domestic heating and industrial demands. Accordingly, they relied upon a different source of fuel, bituminous coal. To transport the bulky and heavy stone across great distances, they began building inland navigations from mining regions to the coast or to regional population centers. The construction of canals accelerated in the 1760s, as more inland manufacturing and mercantile centers strove to be better connected

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<sup>43</sup>Charters, Laws, and By-Laws, of the Bank of Pennsylvania (Philadelphia: Clark & Raser, 1830), 2-21.

to what was quickly becoming a national market. However, that gentle increase did not compare to the canal frenzy of the early 1790s. In 1793 and 1794, 32 inland navigation companies secured charters from Parliament. Americans watched the British canal boom with great interest, for such projects inspired them to similar actions in the United States.

What the Philadelphians saw, read, and heard about in Britain were a host of institutions and technologies that integrated a national economy while providing for regional development. Furthermore, they had witnessed how sponsoring the British corporations that administered banks and navigations could be personally profitable. Not only had British agents promoted these investments, but many Americans also read the popular, London-based *Gentleman's Magazine* that displayed the prices of British corporate stocks. Philadelphia merchants could not afford to buy Caribbean sugar plantations or British estates, and American land speculation was a notoriously tricky enterprise. However, they could observe that over the long term banks and sometimes internal navigation company stocks rose gradually and issued regular dividends without demanding any input of time on the part of the majority of investors.

The American Revolution, the economic and political stability of the Constitution, and eventually the economic recovery of the early 1790s provided Philadelphia merchants with the opportunity to develop the kinds of projects that had been undertaken in Britain. Pennsylvania chartered the Delaware and Schuylkill Canal Company and the Susquehanna and Schuylkill Canal and

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<sup>44</sup> See Chapter Six for an analysis of the cooperation between Philadelphia banks.

Navigation Company in late 1791, and the Chesapeake and Delaware Canal Company petitioned the Maryland, Delaware, and Pennsylvania assemblies in 1792. America's transportation needs were even more pressing than Britain's; hence the timing of the first canal boom in the United States strongly suggests that it was an extension of the British craze. American corporate founders took their cues from Britain, whose successful transportation projects served as a model for developing America to emulate.

Municipal charters, although having the same roots in medieval law, operated differently than business corporations in the eighteenth-century British Atlantic world. Municipal charters granted privileges far beyond those of business corporations: a monopoly over local civil authority as well as eminent domain and right-of-way, two oft-confused but technically different legal constructs. Eminent domain endows the right to seize property permanently—with compensation—in order to use it for public purposes. For example, the town corporation would pay a landowner a sum of money, either agreed upon or, if necessary, a fair price determined by the courts, and come to possess the property on which to build a courthouse. Although the owner had no right to refuse, at least she or he would get paid for the loss. Right-of-way gives one entity the right to travel or even build a passage through others' property, but the property stays in possession of the original owner. In this case, the town could build a road right through a farmer's wheat field and not necessarily have to compensate for the lost crop, although technically the farmer would still own the land. Because of their duty to enforce the law and because of the necessity of eminent domain and right-of-way in building and maintaining streets and

municipal property, city officials considered a charter to be essential for continued municipal development.

While investing merchants saw the practical benefits of incorporation, corporate charters were controversial precisely because of the nature of their British origins in terms of special privileges for elites. Americans hotly debated who should administer and control these various chartered organizations. A concern of many citizens was the potential for a few rich men to control private corporations: in 1794, one group of angry petitioners referred to the issuing of charters as "the most dangerous policy in this infant republic, to combine the wealthy in order to make them powerful."<sup>45</sup> To combat such powerful combinations, the Pennsylvania legislature inserted charter provisions designed to curtail the influence of large investors seeking to dominate corporations. Some charters contained clauses requiring stock offerings to be held in several places at once, limiting the number of stocks any individual could purchase and scaling down the number of votes of individual stockholders. Nonetheless, in company after company, a small number of investors eventually owned enough stock to gain control of the board of managers. The body of stockholders in other companies deferred to the Board's wisdom, assuming that directors would act in the stockholders' best interest: the whole point of investment for a great many of the small contributors was to have their money grow without having to work at it.<sup>46</sup> The result was that the men who put themselves in a position to run such corporations could control crucial technologies and great amounts of capital

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<sup>45</sup> Petition, House File, 17<sup>th</sup> Session-1, 1793-94 Records of the General Assembly, Group 7, Pennsylvania State Archives.

<sup>46</sup> See Chapter 4 for a discussion of investor motivation and behavior.

far exceeding what they could have amassed on their own or in small partnerships. Despite the best efforts of careful legislators—and through the willing acquiescence of the majority of investors—fewer and fewer men controlled individual corporations. Furthermore, some men managed to get themselves on the boards of several corporations, further concentrating corporate power.

The ideological viewpoint of observers had a great deal to do with the way they regarded these projects. Characterizations of corporations fell everywhere along the spectrum from great promoters of national wealth to unnatural monopolies that were nearly governments unto themselves. Both extremes reflected a republican ethos that predated the Revolution. While republicanism had nearly as many definitions as it did definers, most Americans in public life agreed on its main tenets: that private property and checks on government formed the basis for freedom, that private interest must never override the public interest, and that the struggle against tyranny required constant vigilance. Still, those basic ideas left a good deal of room to negotiate, raising difficult questions to be considered by politicians, editors, pamphleteers, and their audiences. How broadly or evenly should property be distributed? Which was more important, broader access to economic opportunity or the unfettered ability to pursue large concentrations of wealth? To what extent should or do private and public interest coincide? Boosters of banks, insurance companies, and canal companies answered these questions in ingenious ways. They argued that by making credit more available, by decreasing American dependence on foreign insurance, and by promoting domestic commerce, they would bring prosperity to

more people. In doing so, they allowed for more people to gain personal economic dependence, thus strengthening the nation. Boosters asserted that banks, insurance companies, and internal improvement companies contributed to the greater society by empowering individuals. Corporate boosters took the next step to claim that their interest coincided with the public interest, especially, they pointed out, when the state owned stock in these ventures.

Philadelphians debated the ideological implications as well as the physical components and the financial aspects of canals and banks, knowing that such projects were somehow fundamentally different from previous forms of business practice. Many of their debates about these new ways of doing business centered on corporate charters.<sup>47</sup> The charter as a legal construct had originated as a perpetual grant from the sovereign to a group of people, extending them certain rights or privileges; examples included guilds, universities, and city governments, and commercial entities such as the Virginia Company. Soon, colonial governments themselves began granting charters to cities or counties and eventually churches and social organizations. After the Revolution, canal, turnpike, bridge, insurance, and bank companies sought charters for many of the same reasons as towns and congregations in that, in the words of one applicant, "capital, concert, and duration [were] all necessary." That is, such a large-scale enterprise was a "concern in which many must be

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<sup>47</sup>For insightful discussion of the role of and debates over corporations in Pennsylvania, see Louis Hartz, Economic Policy and Democratic Thought: Pennsylvania, 1776-1860 (Cambridge, 1948); Oscar and Mary Flug Handlin considered the Massachusetts case in Commonwealth: A Study of the Role of Government in the American Economy (Cambridge: Harvard University Press, 1947). Among the more recent considerations of the historiography regarding the relationship between corporations and the state in the early republic are Harry N. Scheiber, "Government and the Economy: Studies of the 'Commonwealth' Policy in Nineteenth-Century America." *Journal of Interdisciplinary History* 3 (summer 1972): 135-151 and William G. Shade, "Louis Hartz and the Myth of Laissez Faire" *Pennsylvania History* 59 3 (July 1992): 256-273.

united, which requires a capital that must be furnished by many hands, and a concert which must endure for a considerable period.”<sup>48</sup> Big projects potentially requiring hundreds or even thousands of participants were impracticable in a partnership structure.

In addition to the ability to provide a structure for many investors, the corporate form offered the attractions of limited liability and sometimes even special privileges or monopolies. The limitation of liability was nearly a *sine qua non* for attracting investors: “they require an act of Incorporation,” a group of petitioners pointed out, “to protect them from further liability; —without the last, numbers will not engage, —without numbers, the necessary capital will not be raised, —and without large capital, no great undertaking can succeed.”<sup>49</sup> Both banks and insurance companies took risks—on loans or property, respectively—larger in aggregate than most individuals either could or would take. Indeed, that was their purpose. Without limited liability, investors might as well have continued with private lending and self-insurance, the latter often being a euphemism for having no insurance at all. Public improvement companies, too, required limited liability: many of them either borrowed or entered into construction contracts beyond their current means. Furthermore, corporations remained liable for damages to private property incurred during construction. By obtaining limited liability, the men whose fortunes heretofore had been at the mercy of partners, creditors, and the sea could enter into large ventures knowing even the greatest failure would not ruin them. Corporate power, then, was much

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<sup>48</sup>Remarks and Observations Showing the Justice and Policy of Incorporation "The Schuylkill Coal Company," Respectfully Addressed to the Public, and Particularly to the Members of the Legislature ([Philadelphia], 1823), 6.

less risky to personal and family fortunes than the merchant activities upon which patron-client power had been based.

Corporations offered more than stability of return: many companies sought a virtual monopoly through the chartering process, thus offering security from competition. Banks lobbied for guarantees that the state government would deposit funds in them or that they would be the only chartered banks in a given city. Bridge companies, for which profits were unlikely even without competition, often desired monopoly assurances that others would not be able to run a ferry within a certain distance. River navigation companies tended to be concerned about another monopoly, one that they were often reluctant to mention: the exclusive possession of water in the river, that they could then “rent” to mill owners for tidy sums. Public improvements also needed a right that banks did not: the right of eminent domain. Turnpikes, canals, and bridges all went through land already under private ownership, and so could not exist without some way of gaining access to private (and sometimes public) property. Monopoly privileges, as contemporaries knew all too well, further insulated corporate power in a way that merchants, with their strenuously competitive environment, could well appreciate.

While the chartering of municipalities, congregations, and charitable organizations tended to go smoothly through even the most contentious of legislatures, bills to incorporate banks, insurance companies, canals, and turnpikes nearly always ignited lively and sometimes acrimonious debates. Certainly the fact that the latter category of charters involved potential profit for

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<sup>49</sup>Petition to House, March 11, 1825, House File, 49th Session-1, 1824-25, Folder 5, Pennsylvania General



private citizens, whereas the former did not, figured significantly in the differing levels of controversy. Many people perceived banks as mysterious moneymaking machines for their owners, believing those profits were made from the work of the commonfolk.

Private profit, though, clearly was not always the primary consideration for charter opponents. Canal and turnpike company boosters usually found the chartering process to be a political challenge, and although some of these improvements turned out to be profitable, the large majority proved unable to break even. Many investors, as well as the public at large, never expected some projects to turn a profit, yet even the least promising ones, from an investment standpoint, rarely went through the legislature without rancor. In this case, corporations from which no one would profit found the chartering process difficult. On the other hand, the later chartering of manufacturing companies, which clearly would profit, rarely encountered the sort of heated opposition that nearly all prospective banking and public improvement companies learned to expect as a matter of course. While the possibility of the state officially sanctioning the ability of some citizens to make money from a publicly granted privilege certainly played a role in these debates, clearly more was at stake.

For example, the supply of fresh water to Philadelphia involved technological, financial, and administrative issues with far-reaching consequences for the city corporation. Water supply lent itself to several fundamentally different solutions, each of which could have various advantages and disadvantages reflecting both physical and social parameters: feasibility,

time of construction, cost of construction, availability of skills and labor, reliability, durability, expandability, maintenance costs, repair costs, and maximum operating capacity. For example, the Philadelphia City Councils of the late 1790s began to investigate ways to provide the city with adequate supplies of fresh water. At first, their only option was a proposed canal; later, British-born and -trained engineer B. Henry Latrobe suggested a steam-powered pumping system. A canal might have greater water capacity, was a fairly proven technology, but would require expensive repairs. Pumping systems could be constructed more quickly, worked all year round, and could be more easily expanded, but steam engines would incur high fuel costs and were unfamiliar in the United States. The City Councils weighed the characteristics of both systems before making their decision. Their choice of the waterworks and their further development and extension of the system held both intended and unintended consequences for the administration of the city and its suburbs. The Watering Committee, a subcommittee of the city's governing Select and Common Councils, supervised the waterworks, and eventually became the most powerful group in the city government by controlling a large portion of the city's revenue and budget and by securing its own revenue streams and tax collectors. The regulations necessary for the maintenance, protection, and distribution of water entailed inspectors to enforce them. Moreover, the city parlayed the extension of the system to the suburbs into regulatory and financial leverage over suburban government. All of these developments combined to one effect: the consolidation of the city corporation's power over its own citizens and its suburbs.

The new institutions and technologies provoked such intense controversy because people recognized them to be central to the region's economy and thus to the relationships, politics, and power that its economic structure fostered. Indeed, their adoption signaled a profound reordering of power in the Philadelphia region. So many people clamored for better transportation, more access to credit, and a larger money supply because they saw such developments not only as necessary for their economic success but also as perhaps a fatal blow to the patron-client system that Trenchard and Gordon described and that so dominated social, political, and economic relations in eighteenth-century America. Credit, transportation, and available currency each gave more people the opportunity to participate more freely in a cash economy rather than the book-credit economy under which they had been operating. They saw the taking of these opportunities as their opening to the economic independence that would free them from patrons. The two most influential recent works on the political transformation of the early republic, Gordon Wood's Radicalism of the American Revolution and Alan Taylor's William Cooper's Town both describe the decline of deference between patrons and clients, each attributing revolutionary, egalitarian ideology as the underlying cause.<sup>50</sup> Certainly the spread of nearly universal white male suffrage in concert with the use of the secret ballot contributed as well. However, the political independence that Wood and Taylor described would not have been possible without the economic

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<sup>50</sup>See Gordon Wood, The Radicalism of the American Revolution (New York: Vintage Books, 1992) and Alan Taylor, William Cooper's Town: Power and Persuasion on the Frontier of the Early American Republic (New York: Vintage Books, 1995).

independence that bank notes and river navigations offered: they were opposite sides of the same coin.

Nonetheless, freedom from patrons did not come without a price. On the one hand, internal improvements were necessary to spur economic development. On the other, when a corporation was granted the right-of-way of a river, had the privilege of eminent domain around its banks, and owned the rights to the river's water, it essentially controlled the economy along a twenty-mile wide swath on either side of the waterway and even to its tributaries. The company decided what tolls to charge, influencing the final price of every product shipped on the river and affecting just about everyone in the region. Anyone who owned property on the riverbank essentially did so at the pleasure of the company, which had the legal authority to dam up the river and thus flood adjoining lands if it deemed closing the river necessary for the navigation. The company also influenced the cost and degree of industrial development by setting terms for the purchase of the river's waterpower and by deciding where and how much water could be used. Naturally, any change in price or policy by a canal company inevitably involved the interests of many people, interests that company officials were only too willing to exploit. Everyone understood the potential conflicts involved, and that was why canal companies became such lightning rods of public controversy.

As controversial as inland navigation companies could be, transportation debates never reached the furor of those over financial institutions because of the consensus that the men who ran financial institutions, too, wielded great influence over the growing economy. By deciding how much money to loan and

when, bank managers determined the region's money supply, with its attendant effects upon inflation. Lending policy, of course, carried with it great power over politics and economic development: if, as John Marshall so famously stated about opponents to the Bank of the United States, "the power to tax involves the power to destroy," then the ability to make credit available only to political friends, members of particular groups or certain kinds of businesses also provided great opportunities for power. And through their selection of investments, either in government loans or corporate stock, both banks and insurance companies had opportunities to decide the projects that would be funded and those that would not. For organizations not run by the public at large, these were considerable powers indeed.

In addition, corporate administration had social components, parts of its design that explicitly or implicitly reinforced the greater economic agenda of the owners, designers, or both.<sup>51</sup> In the early republic, politicians, editors, and petitioners all expressed varying opinions on many facets of financial institutions. "Though some people represent the Bank [of North America] as injurious and dangerous, while others consider it as salutary and beneficial, to the community," one pamphleteer pointed out, "all view it as an object of high importance; deserving and demanding the public attention."<sup>52</sup> The face value of banknotes became particularly controversial. Certainly many merchants had a point when

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<sup>51</sup>For an historiographic view of the growing "externalist" school of the history of technology, that is, those who consider technology socially constructed, as opposed to the "internalist" school, which is more concerned with intrinsic changes in technologies, see John M. Staudenmaier, Technology's Storytellers: Reweaving the Human Fabric (Cambridge: The Society for the History of Technology and the MIT Press, 1985); also see Wiebe Bijker, Thomas P. Hughes, and Trevor J. Pinch, eds., The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology (Cambridge: MIT Press, 1987).

<sup>52</sup>James Wilson, Considerations on the Bank of North-America (Philadelphia: Hall and Sellers, 1785), 3.

they contended that the issuance of small-denomination bills might lead to increased speculation, thus triggering inflation that could hurt everyone in the economy. But critics argued that, like beauty, the value of inflation was in the eye of the beholder: it helped debtors, who could pay their obligations with dollars that were now easier to earn and worth less—or even worthless—and thus hurt creditors. Money supply was a two-edged sword. The trick was to have enough to make liquidity possible so people could pay debts, but not so much that demand would decrease for their credit business or that inflation would ensue. Furthermore, the issuance of bank bills was the method by which the country's money supply grew; those who only dealt in small denominations would thus be dealing with a much less elastic money supply than those with greater access to large denominations. In a confidential meeting in 1820, officials from seven of the largest Philadelphia banks made an agreement not to accept any notes lower than five dollars.<sup>53</sup> In so doing, they instantly depreciated the value of any lesser notes issued by the city's Mechanics' Bank, catering to a broader clientele, and those issued by almost all the country banks. The larger city banks essentially devalued all of the other banks' notes because, by not accepting country banks' smaller notes, they undermined public confidence in the country banks' practices. A bank's use of small denominations made all its issuances now seem that much less solid. The men on the boards of the larger Philadelphia banks could thus use their control over financial institutions to solidify their influence over a crucial sector of the economy, the credit market, both in the city and in the rest of the state.

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<sup>53</sup>Historical Records, Box 1, 1807-1820. Folder: Farmers and Mechanics Bank 1820, Accession1658,

Administration of the new technologies also severely limited the traditional role of patron as arbiter of local disputes, instead substituting the authority of the state to be invoked at the desire of corporate officials. Quarrels between local property holders, while often going to court, had frequently been settled by neighborhood patrons either unofficially or in their official capacity as justice of the peace. Such arbitration held obvious advantages for those lacking legal expertise or wanting to avoid the fees and annoyance of legal proceedings; it also reified the patron's local authority. However, disputes that involved corporations were settled almost exclusively by courts. Corporate officers in Philadelphia did not trust local patrons, who might have had their own axes to grind against a canal or navigation, and possibly had political motivations for siding with a local against a distant corporation. Moreover, because corporations could afford expensive lawsuits and experienced lawyers, corporate officers had additional motivation to go to court where they could put those advantages in play. In some cases, control over a community resource meant that a corporation decided local disputes. In the spring of 1817, some Philadelphia residents petitioned to have a public hydrant at the northeast corner of Front Street and Chestnut Street removed; a counter petition from residents of the "vicinity of Chestnut and Front St." protested that "such removal would be attended with serious Inconveniencences... in as much as the Pump is the most central, and useful in the neighborhood." They further argued that "we would not wish to injure one of our neighbours by its continuance, and we presume it will

not in the present instance.”<sup>54</sup> In this instance, the city corporation’s Watering Committee, rather than a prominent neighborhood merchant, decided the outcome. Another pillar of patron-client power had fallen, to be replaced by a much stronger and durable corporate one.

Besides having profound local effects, the new projects catered to many people over a wide area. In the late 1820s, the Lehigh Coal and Navigation Company lobbied for the right to build a navigation along the Delaware River from where it met the Lehigh down to Philadelphia. The company’s Board of Managers did not exaggerate much when it pointed out to the Pennsylvania legislators that its proposed “improvement of the Delaware must be a matter of deep interest to nearly one half of the population of this state and of New-York.”<sup>55</sup> When the residents of such a large area depended upon one canal or river navigation to provide their connection to the market, those who controlled the project held substantial power over a great number of residents. Canal company boards of directors decided upon routes, regulated traffic volume, and determined toll rates for different commodities, thereby shaping economic development in the entire region through which their navigations passed.

Banks also cast long shadows: their managers had to set policies regarding the honoring and discounting of other banks’ notes. For example, a Philadelphia bank might only pay eighty cents for every dollar of a note drawn from a bank in western Pennsylvania, both because of the cost of travel to redeem the note and because of the risk that the rural bank might not be fully

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<sup>54</sup>“Lehigh Coal & Navigation Company Board of Managers to Pennsylvania House of Representatives, March 24, 1825,” House File, 49<sup>th</sup> Session-1, 1824-25, Pennsylvania Canal Folder, Records of the General Assembly, Record Group 7, Pennsylvania State Archives.



solvent. Thus, the large Philadelphia banks had great influence over rural banks, and therefore, by proxy, over many of same issues as they did locally: money supply and lending policy. This practice of discounting the notes of the rural banks also had a much more insidious effect: in essence the big city banks were also setting up an exchange. Those holding a strong currency could buy goods in other areas at a low price, but their own goods became more expensive to sell. Thus, cityfolk could buy country goods cheaply, but country people had trouble affording goods manufactured in or imported through Philadelphia. Corporations and the services they provided helped a small group of Philadelphians to extend economic and political influence well beyond the possibilities of traditional patron-client relations.

That extension of power could only be possible through the amassing of large amounts of capital and the ability to employ that money as corporate insiders saw fit. Leaders of proposed projects needed to raise capital far exceeding the capacity of partnerships to do so, and consequently found new ways to raise money from a wider range of the population while still controlling the use of the money. Corporate boosters found all sorts of methods to tap the resources of private citizens, and the amount of money demanded up front tended to be inversely proportional to the riskiness of the venture. Bank shares cost anywhere from \$50 for the smaller institutions to \$400 for the Bank of North America. As safe investments, banks—and to a lesser extent insurance companies—attracted a great deal of investment from widows, from trusts for orphans, and from charitable institutions, all of which were looking for ways to

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<sup>55</sup>ibid.

guarantee steady income in an uncertain economy. Because transportation projects were much less likely to succeed, they usually issued subscriptions for stock in which investors initially paid five or ten dollars and assessed further amounts whenever company reserves got low. Canals solicited subscriptions from anyone who owned land or who conducted business within about twenty miles of the proposed route. In all of these projects, investors created a relationship with the men who ran the corporations in which the former provided capital in exchange for the services of the latter. The men on the boards thus commanded far larger sums of money than they could have raised by themselves. They then proceeded to use that money in many of the same ways that patrons had: loaning it to themselves, their friends, and political allies; distributing jobs and construction contracts; and rallying the support of those who depended upon these services.

The growing extension of corporate power into the economy matched the concentration of corporate control in fewer hands, as many men served on the boards of several institutions across different technologies. John Bohlen sat on the boards of the Union Insurance Company, the second Bank of the United States, the Schuylkill Navigation Company, the Pennsylvania Company for Insuring Lives and Granting Annuities, the Germantown Turnpike, and the Bank of Philadelphia; his brother Bohl was a director of the Delaware Insurance Company of Pennsylvania. Because they had members in common, corporate boards often worked together to the companies' mutual benefit. Boardmembers also served in the city councils and the state and federal legislatures. By serving

on multiple boards and by having associates and family members on still more, a coterie of insiders coordinated corporate growth.<sup>56</sup>

Corporations also used their technologies to protect and insulate their corporate status. Whether it was the city of Philadelphia watching water use, canal companies controlling traffic, or banks manipulating the money supply, corporations increasingly used their position in the economy to cajole the legislature into providing them with special protections far beyond the wildest dreams of individuals or partnerships. Their ability to do so signaled the culmination of the genesis of corporate power.

In the early 1830s, Philadelphians certainly remained proud of their city. They noted that their Fairmount Waterworks had become the wonder of residents, visitors, and lithographers alike. They counted the tons of coal and grain coming down a network of canal and river navigations to their busy wharves and they listed the banks, insurance companies, and their respective capitals proudly in their newspapers and city directories. Already, new railroads promised even greater efficiency and riches. Such projects and institutions evidenced the city's prosperity and the energy of its citizens and transformed the structure of the local and even the state economy. For better or worse, the men who ran large corporations had found answers to the area's needs and in return exacted a price of profits and power. In constructing and administering river navigations, water distribution systems, a banking system, and insurance operations, they replaced the old ways of building and keeping power with new,

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<sup>56</sup>For analyses of consolidation of control of finances and manufacturing, respectively, in Boston, see Naomi Lamoreaux, Insider Lending: Banks, Personal Connections, and Economic Development in

more permanent, and more far-reaching methods of projecting power in the economy and the polity. They had invented corporate power.

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Industrial New England (New York: Cambridge University Press, 1994), and Robert Dalzell, Enterprising Elite: The Boston Associates and the World They Made (New York: Norton, 1993).

## The New Power of Nexus Technologies

The water taunted them. Living in the western parts of Philadelphia in the late eighteenth century, one could always hear the Schuylkill River, rushing over the Falls several miles northwest of the city. The fresh, cool water flowing by Philadelphia seemed heavenly compared to the sometimes fetid and possibly deadly well water city residents forced themselves to drink. The Falls also constantly reminded Philadelphians of the existence of a potential waterway into its hinterland and perhaps to the west, if only it could be navigated. In the first decades of the nineteenth century, Philadelphians used various technologies to conquer the Schuylkill in order to supply the city with water and to make a cheap, fast form of transportation to the coal counties upstream. More significantly, the use of these technologies changed the structure of public power in the city and the region.

The motivations behind Philadelphia's desire for a water supply system were for the most part practical, beginning with public health. Yellow fever attacked almost every American city, some repeatedly: Baltimore in 1794, 1795, and 1797; New York in 1795 and 1799; Norfolk in 1795 and 1797; Charleston in 1796 and 1799; Boston in 1796; New Haven in 1794; Providence in 1797.<sup>1</sup> Philadelphia suffered far worse than any other. During the summer and early autumn of 1793, yellow fever ravaged Philadelphia, claiming 4,000 lives. In 1797 yellow fever claimed over 1,200 in the City of Brotherly Love; in 1798 3,500; in 1799 1,000. By all accounts, the poor suffered the most, but no part of society

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<sup>1</sup>Nelson Manfred Blake, Water for the Cities: A History of the Urban Water Supply Problem in the United States (Syracuse: Syracuse University, 1956), 6.

remained unscathed: “ten of the doctors, ten of the ministers, even more lawyers, even more merchants, these of the city's great” were listed in a best-selling necrology in 1793.<sup>2</sup> As many as 23,000 people temporarily left the city during the plague months in 1793, and 40,000 evacuated in 1798. In 1797 and 1798, a combination of city officials and private citizens helped set up two huge camps north and west of Philadelphia for the indigent who could not afford to flee anywhere else.

These yellow fever epidemics threatened Philadelphia's future as a political and commercial center during a period when its collective psyche was already reeling from its impending loss of political eminence: both Pennsylvania and the United States were in the process of relocating their seats of government away from the Quaker City. Anyone with relatives outside the city or enough money—including the Pennsylvania State Assembly—fled the plague during the summer, and the United States Congress moved temporarily to Trenton.<sup>3</sup> “The opulence of our metropolis,” bemoaned Pennsylvania governor Thomas Mifflin, “sustained an incalculable loss, by the suspension of its commerce and its arts; the obstruction of public business, and the derangement of moneyed institutions.” He further warned that “the general prosperity of our state will be immediately endangered” unless all could work “to avert, as far as human agency can avail, the recurrence of so awful a visitation.”<sup>4</sup> The governor's words

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<sup>2</sup>J.H. Powell, Bring Out Your Dead: The Great Plague of Yellow Fever in Philadelphia in 1793 (Philadelphia: University of Pennsylvania Press, 1993), 281.

<sup>3</sup>George Edward Reed, ed. Papers of the Governors, vol. 4 of Pennsylvania Archives, no. 4 (Harrisburg: State of Pennsylvania, 1900), 267.

<sup>4</sup>Reed, Papers of the Governors, 406.

reflected those of his constituents, who thought that “the reputation & salvation of the City [was] at stake.”<sup>5</sup>

After so much tragedy, controversy remained over what would prevent further “awful visitations”: no one knew the cause of yellow fever. Some blamed the influx of immigrants from the French West Indies, where yellow fever and slave revolts made refugees out of rich and poor alike. Two thousand Haitians crowded into the poorer sections of Philadelphia, a city of about 50,000 before the plagues hit.<sup>6</sup> Accordingly, Pennsylvania and Philadelphia both enacted law after law to quarantine and eventually prevent immigration during plague years.<sup>7</sup> But the plague continued. Others, including the famous Dr. Benjamin Rush, blamed organisms in the muggy Philadelphia air, creatures that he insisted for years came from the foul-smelling garbage in the streets of the city.<sup>8</sup> Just about everyone agreed that the foul drinking water and filthy streets, whether or not the cause of the plague, exacerbated its effects. Fire companies vainly tried their best to clean the streets. In 1796, the city council set aside funds for five carts to clean and water the streets; in 1798, the city ordered the gutters washed and the streets wetted three times a week.<sup>9</sup> But washing streets intermittently with dirty water, Philadelphians discovered, did not make them clean.

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<sup>5</sup>Thomas P. Cope, Philadelphia Merchant: The Diary of Thomas P. Cope. (South Bend: Gateway Editions, 1978), 31.

<sup>6</sup>Powell, Bring Out Your Dead, 5.

<sup>7</sup>Reed, Papers of the Governors, 264, 267, 384, 397, 407, 426.

<sup>8</sup>The Journals of Benjamin Henry Latrobe 1799-1820: From Philadelphia to New Orleans, vol. 3 of Journals, Edward C. Carter II, ed., The Papers of Benjamin Henry Latrobe, no. 1 (New Haven: Yale University Press, 1980), 9.

<sup>9</sup>Report of a Committee of the Select Committee of Philadelphia, Read November 10th, 1796 (Philadelphia: Zachariah Poulson, Jr., 1796), 8-9 and William Currie, Memoirs of the Yellow Fever, Which Prevailed in Philadelphia, and Other Parts of the United States of America in 1798 (Philadelphia: John Bioren, 1798), 3.

Although Philadelphia's encounters with yellow fever were more frequent and severe than those of other eighteenth-century American cities, its water supply problems were typical. First, there was barely enough water to go around: citizens petitioned for about fifteen new public hand pumps and wells a year. Even so, the three hundred or so pumps and wells did not always meet the need, especially during the winter, and the quality of the city's water was uneven at best. Philadelphia had no sewer system, and so homeowners dug deep privy holes under their houses. Many of these were dug so deep as to contaminate the underground supply of water from which many Philadelphians drew their wells.<sup>10</sup> A few of the city's wells were near cemeteries, and after rains the water had a ghastly taste.<sup>11</sup> In October 1798, Philadelphia's Board of Managers of Marine and City Hospitals suggested working the pumps more often, in the hope that the "extremely offensive and unwholesome" water would be pumped out by clean water underneath.<sup>12</sup> A newspaper reported that the pungent smell of standing water assaulted the nose of anyone who dared travel in the city, and even Governor Mifflin admitted that current water sources were "far from affording, either in quality or quantity, what health and cleanliness demand."<sup>13</sup> With each new wave of yellow fever, the demand for water grew until "the [city] Councils were bored by petitions... & the members were perpetually dinned with the cry of 'Water, water; no matter as to expense, the citizens will support

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<sup>10</sup>The Virginia Journals of Benjamin Henry Latrobe 1795-1798, vol. 2 of Journals, Edward C. Carter II, ed., The Papers of Benjamin Henry Latrobe, no. 1 (New Haven: Yale University Press, 1977) 379-380.

<sup>11</sup>Kenneth Roberts and Anna M. Roberts, eds., Moreau de St. Méry's American Journey, 1793-1798(Garden City: Doubleday & Company, 1947), 262-263.

<sup>12</sup>Currie, Memoirs of the Yellow Fever, 108.

<sup>13</sup>Blake, Water for the Cities, 8; Reed, Papers of the Governors, 412.



you.”<sup>14</sup> Mifflin certainly did not hurt his popularity when he claimed that the single best way to prevent more epidemics was the “introduction of good and wholesome water.”<sup>15</sup> Clean water seemed the best way to douse the hellish fire of yellow fever.

Of course, yellow fever was not the only fire that needed dousing in eighteenth-century American cities, built largely of wood. Another motivation for a more reliable, frost-free water supply was fire prevention. Nearly a quarter of New York City's houses burned to the ground in 1776. Philadelphia, where Franklin had founded the first fire company in the colonies, was equally sensitive to fire's danger. In 1791, widespread reports of arson prompted Philadelphia's city officials to post round-the-clock fire patrols and to offer a \$1,000 reward for the arrest of offenders.<sup>16</sup> Four years later, the Pennsylvania General Assembly allowed Philadelphia to prohibit the construction of wooden buildings in the main parts of the city, legislation applauded by both insurance companies and stonemasons.<sup>17</sup> Searching for a well with enough water to put out a blaze in Philadelphia provided a constant challenge for local firefighting companies.

Israel Israel, an innkeeper, stable-keeper and local politician, provided the city's ruling Federalists with a third motivation for solving the city's water woes. A local Revolutionary hero, Israel had worked selflessly for the city during the 1793 yellow fever plague, serving on the Orphan Committee and helping run the

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<sup>14</sup>Cope, *Philadelphia Merchant*, 31.

<sup>15</sup>Reed, *Papers of the Governors*, 412.

<sup>16</sup>Thomas J. Scharf and Thompson Westcott, *History of Philadelphia, 1609-1884* (Philadelphia, L. H. Everts & Co., 1884), 1:467.

impromptu Bush Hill hospital.<sup>18</sup> He lost bids for a seat in the state legislature in 1793 and 1795, both times running on a solidly Anti-Federalist platform—causing Richard Peters to wonder why so many were “not fond of stable men and stable measures.”<sup>19</sup> The third time appeared to be the charm for Israel when he finally beat opponent Benjamin Morgan in a close election in August of 1797, but Morgan cried foul. Israel had eked out an overall victory by garnering a huge majority of the poor vote while the more prosperous (read: Federalist) voters had fled the plague-ravaged city.<sup>20</sup> After petitioning the General Assembly on a technicality, Morgan won a run-off the following February. The Philadelphia councils at the time were predominantly Federalist. Although no council members made any public admissions to the effect, thoughts of yellow fever-skewed voting demographics may have given them pressing political reasons to do whatever possible to end Philadelphia’s blight.<sup>21</sup>

Prompted by the request of a growing number of petitioners, in 1798 the City Councils formed a “Joint Committee on the Subject of Bringing Water to the

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<sup>17</sup>Gertrude MacKinney, ed., Executive Minutes of the Governors, vol. 2 of Pennsylvania Archives, no. 9 (Harrisburg: State of Pennsylvania, 1931), 967 and James Hosmer Penniman, Philadelphia in the Early Eighteen Hundreds (Philadelphia: St. Stephen’s Church, 1923), 35.

<sup>18</sup>Powell, Bring Out Your Dead, 164.

<sup>19</sup>Samuel Breck, “Witty Sayings of the late Richard Peters, District Judge of the United States for Eastern Penna. Died in August 1828, aged 83. Collected, set down and arranged by Saml. Breck, who was his friend and neighbour in Blockley township, Belmont District for Thirty Years,” (mss., ), Breck Papers, Case 25, Historical Society of Pennsylvania.

<sup>20</sup>John K. Alexander, “Poverty, Fear, and Continuity: An Analysis of the Poor in Late Eighteenth-Century Philadelphia,” in The Peoples of Philadelphia: A History of Ethnic and Lower-Class Life, 1790 - 1940, ed. Allen F. Davis and Mark H. Haller (Philadelphia: Temple University Press, 1973), 23. Federalist candidates and their followers tended to be much more wealthy than their opponents, and election turnout was unusually low in the plague years of 1793 and 1797; see Table 5, “Distribution of Wealth by Party Candidates, 1800” in Richard G. Miller, Philadelphia—The Federalist City: A Study of Urban Politics, 1789-1801 (Port Washington, NY: Kennikat Press, 1976), 15, and Figure 3, “Voter Participation in Philadelphia; Miller, Philadelphia—The Federalist City, 150.

<sup>21</sup> For a full discussion of the connections between Philadelphia politics and the yellow fever epidemics, see Martin S. Pernick, “Politics, Parties, and Pestilence: Epidemic Yellow Fever in Philadelphia and the Rise of the First Party System,” WMQ 3d. Ser., 29 (October 1972), 559-586.

City” to investigate various options for supplying Philadelphia with fresh water. This Joint Committee was organized strictly for the temporary purpose of deciding what would be the best way to solve the water problem, and it explored three possible methods: the Delaware and Schuylkill Canal, which was an unfinished predecessor of the Schuylkill Navigation Company, and two plans for steam-engine powered waterworks, one from local inventor Oliver Evans and the other from British-trained architect and engineer Benjamin Henry Latrobe.

The Joint Committee settled on the last proposal, despite their wariness over steam engines. In some ways, Latrobe’s was the most technically dubious of the three plans; a canal booster derided it as “aerial castles.”<sup>22</sup> But after months of exasperating negotiations with the recalcitrant directors of the Delaware and Schuylkill Canal Company, committee opined that the poorly managed canal company appeared to be more concerned with “the profits to be made by supplying the city with water” than its obligations to the city, suspicions reinforced by the company’s exorbitant demands.<sup>23</sup> Moreover, the patrician Committee members may have been somewhat suspicious of Evans, a man fiercely proud of his artisanal background. More likely, the largely Federalist city councils had no desire to hand out plums in the form of large contracts to Republican Evans. Latrobe, on the other hand, nearly seethed sophistication,

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<sup>22</sup> Address of the Committee of the Delaware and Schuylkill Canal Company, to the Committees of the Senate and House of Representatives on the Memorial of Said Company (Philadelphia: John Ormrod, 1799).

<sup>23</sup>B. Henry Latrobe, Remarks on the Address of the Committee of the Delaware and Schuylkill Canal Company to the Committee of the Senate and House of Representatives, as Far as It Notices the “View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water. Printed by order of the Committee of the Councils (Philadelphia: Zachariah Poulson, Jr., 1799),14.

was English—always a plus with Federalists—and had no political ambitions.<sup>24</sup> Furthermore, three promises of Latrobe’s design proved crucial to its adoption: a pipe system which would distribute the water into more areas of the city, discounted water piped directly into investors’ homes, and, perhaps most importantly, the inclusion of public hydrants, which made the water available for free to the entire population.<sup>25</sup> Lastly, in a city undergoing an image crisis, Latrobe’s suggestion to sheath the upper engine in a graceful pumphouse, giving it the appearance of a temple of republican technology, provided an elegant landmark.<sup>26</sup>

The Joint Committee’s selection of a double steam engine system for the city’s water supply exemplified the myriad ways that politics and power shaped technological choice in the early republic, especially for large-scale infrastructure projects. Just as local governments would do throughout the antebellum period, the Philadelphia Councils were initially willing to engage in some type of partnership with a chartered company, in this case the Delaware and Schuylkill

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<sup>24</sup>David Freeman Hawke suggested that Evans was not patrician enough for the Watering Committee in Nuts and Bolts of the Past: A History of American Technology 1776-1860 (New York: Harper & Row, 1988), 63-68; he also argued that Latrobe’s pumphouse was crucial. While these may have been minor factors, the Council members were more concerned with politics. Although Latrobe was well-connected among Republicans—he had a letter of introduction from Thomas Jefferson—he also was friendly with prominent Federalist Bushrod Washington, respected by Philadelphia Federalist Samuel Fox, and had no political ambitions. Thus, the Federalist-dominated Council found Latrobe more politically palatable than staunch Republican Evans, who ran for election to the Councils on several occasions. In 1802, when Evans gained a seat on the city’s Common Council, he submitted a report arguing that much of the Latrobe system—already constructed—was inefficient, especially the two-engine design; the report was narrowly rejected. In 1812, the city finally scrapped the two-engine power plant, replacing both with one high-pressure engine built by none other than Oliver Evans.

<sup>25</sup>Benjamin Henry Latrobe, View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water in a Letter to John Miller, Esquire from B. Henry Latrobe, Engineer. December 29, 1798 (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>26</sup>Both the Centre Square waterworks and the Fairmount waterworks were excellent examples of the technological sublime in American culture. See Leo Marx, The Machine in the Garden: Technology and the Pastoral Ideal in America (New York: Oxford University Press, 1967) and David E. Nye, American Technological Sublime (Cambridge: MIT Press, 1994).

Canal Company, to provide a public service.<sup>27</sup> The city had an honored tradition of private entities serving the greater good: a host of fire companies, the Library Company, the Pennsylvania Hospital, and numerous mutual aid societies, to name a few. But in negotiations between the canal company and city officials, the company constantly overestimated the strength of its bargaining position. Perhaps in 1796, when it still had some money and its leadership was still active, the company might have been successful, but by 1798 its leadership had unraveled. Robert Morris, the company's founder and president, had speculated heavily in western lands; rather than seeing sturdy houses go up, he saw his financial house of cards collapse. In March 1797, he was frantically trying to unload a half million acres of land, and his former political clout quickly evaporated as news of his insolvency spread.<sup>28</sup> Joseph Ball, a canal company officer, had been a Philadelphia alderman in the early 1790s, but no longer held office; John Nicholson, former Philadelphia council member and Pennsylvania attorney general, had gone down with Morris. Delaware and Schuylkill Canal Company board representatives made proposal after proposal, each more unacceptable than the last: for the city to pay the \$350,000 to take the entire canal off their hands after years of failure; for the city just to buy stock in the enterprise and thus not have control over their own water; or for the city to pay \$200,000 to take water from the canal and still pay for part of the canal's

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<sup>27</sup>The considerable scholarly work done on the nature of public-private cooperation on infrastructure will be addressed in its particular relationships to finance, ideology, and corporations in their respective chapters.

<sup>28</sup>Morris tried to organize a holding company for all his lands, in the desperate hope that sales of shares would provide enough money to keep him afloat; see Plan of Association of the Pennsylvania Property Company, Established March 1797 (Philadelphia: R. Aitken, 1797). The plan was unsuccessful.

maintenance.<sup>29</sup> All this for a project that at its current rate of progress would have city residents die of old age if not yellow fever before they would drink Schuylkill water. After a long series of fruitless negotiations, Latrobe emerged as a *deus ex machina* to solve Philadelphia's water problem, despite the ambitious nature of his proposal.

Latrobe's plan worked as follows. A sea wall reaching into the river guided water into a small basin on the east side of the Schuylkill. By the bank, a large steam engine—with a 40" cylinder, far larger than any yet made in America, and so powerful that the city leased its excess power to its builder—pumped water through a 4'6" wide, 7' high tunnel from below the river's waterline to Centre Square, so called because it was in the middle of Penn's plan for the city, although then still at the western outskirts of city settlement. There, a smaller engine—at 32", still to be the third largest in the country—pumped the water from the conduit to an above-ground reservoir, basically a short water tower.<sup>30</sup> That Latrobe would think of using steam engines was not surprising, given his background. As a well-read engineer, he knew that steam engines had first been designed to pump water out of mines, and his design showed striking similarities to a waterworks in Chelsea, not far from his boyhood London home.<sup>31</sup> Once in the above-ground reservoir, the water flowed by gravity through wooden mains down the major streets, and residents got water from public hydrants or by

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<sup>29</sup>Report to the Select and Common Councils on the Progress and State of the Water Works on the 24<sup>th</sup> of November, 1799. (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>30</sup>Carroll W. Pursell, Early Stationary Steam Engines in America: A Study in the Migration of Technology (Washington, DC: Smithsonian Institution, 1969), 32.

building a connector at their own expense from the main to their property. The most aesthetically attractive part of the plan was the pumphouse in Centre Square, a beautiful, geometrical structure: a box (containing the engine, fuel, parts, and tools) fronted by Greek columns and topped by a dome (containing the upper reservoir). Smoke from the engine's fire escaped in a plume from the top of the dome. The plan impressed many Philadelphians as a sophisticated example of the application of the latest technology to one of their direst needs.

Despite the pumphouse's elegant shape, its contents proved unreliable. Latrobe's engines were inefficient, partly as a result of their design and partly because of the inexperience of the builders. The Watering Committee replaced the lower engine in 1808, and in 1813 scrapped both engines for a single, high-pressure one from Oliver Evans situated farther north on the Schuylkill, in an area soon to be renamed Fairmount. That engine, too, was replaced in 1819. Two years later, the city threw a dam across the river at Fairmount, finally harnessing the cheap power of the river. Above the dam, the city built the gorgeous Fairmount work; with gardens added in the 1830s, it became one of the most celebrated and pictured spots in antebellum America.

The decision of steam over a canal was motivated largely by non-technical considerations and held significant political consequences for Philadelphia. It meant that the water supply system would be run by the city. The Joint Committee became the Watering Committee, a *de facto* permanent body. Alone among subcommittees of the City Councils, the Watering

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<sup>31</sup>Latrobe, Correspondence 1784-1804, 141-142. Also see Darwin Stapleton, "Benjamin Henry Latrobe and the Transfer of Technology," in Carroll Pursell, ed., *Technology in America: A History of Individuals and*

Committee gained control over a separate budget, authority to enter into contracts, and the ability to hire and fire its own employees. As city councilmen, members of the Watering Committee were elected officials; nonetheless, they possessed far more influence and economic leverage than the entire city government had before the construction of the first waterworks. In effect, the Watering Committee became a government-within-a-government, collecting its own taxes in the form of water rents and making overtly political decisions about city development as it decreed where new water mains would go and when. It issued its own printed annual reports and kept its own records separately from the City Councils'. It owned land, paid its own bills, and ran a growing bureaucracy, running up substantial debts in doing so. The Watering Committee commanded a large part of Philadelphia's budget, the surest sign of power in any political entity.

Beyond the Watering Committee's new fiscal power, the construction of Latrobe's pipe distribution system as opposed to the above-ground gutters proposed by the canal company resulted in greater income, authority, and responsibility for the city government. The pipe system required hookups to use, either private ferrules (pipes connecting mains to delivery systems) to houses and businesses or public hydrants. Therefore, any person or neighborhood wanting water could only obtain it through the Watering Committee. When the system became operational in 1801, the city passed an ordinance setting residential water permits at five dollars a year and charging "brewers, sugar-refiners, hatters, soap-boilers, inn-keepers, dyers, carriers, and others, who will

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Ideas (Cambridge: MIT Press, 1982), 34-44.



require the water for other purposes than the supply of their private-dwelling houses” at rates proportional to the amount of water to be consumed.<sup>32</sup> A few wealthy residents were so anxious to get Schuylkill water that they advanced the city interest-free loans to have mains installed on their block.<sup>33</sup> All sorts of businesses signed up, including ones like distillers, whose work was water-intensive, and banks, whose officers wanted the running water for prestige and convenience. Some firms paid as much as \$80 for the privilege. The largest customer, year after year, was the almshouse, for an outrageous \$100, proving that even charities had to pay their share. The Watering Committee could not charge private fire companies because they used the public hydrants; however, as of 1812, private fire companies had to apply to the Watering Committee for permits to test or clean their engines and hoses. Three years later, the Watering Committee gained control over the annual \$2,000 disbursement to fire companies to help defray equipment costs.<sup>34</sup> In 1822, the city passed an ordinance giving the Watering Committee its own rent collectors, separate from city tax collectors; thus, the Watering Committee now had almost total control over its own cash flow.<sup>35</sup>

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<sup>32</sup>City of Philadelphia, PA., “An Ordinance for Regulating the distribution of water in the City of Philadelphia,” in John C. Lowber, comp. Ordinances of the Corporation of the City of Philadelphia; to Which are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 178-179.

<sup>33</sup>Report of the Watering Committee to the Select and Common Councils, November 1, 1803 (Philadelphia: William Duane, 1803), 20

<sup>34</sup>City of Philadelphia, PA., “A Further Supplement to ‘A Ordinance for regulating the Distribution of Water in the City of Philadelphia,’” Lowber, Ordinances, 229; City of Philadelphia, PA., “An Ordinance granting aid to the Fire Hose, Engine, and other Companies in the City,” Ordinances of the Corporation of the City of Philadelphia; Passed Since the Eighteenth Day of June, One Thousand Eight Hundred and Twelve (Philadelphia: Philadelphia Councils, 1815), 9-10.

<sup>35</sup> City of Philadelphia, PA., “An Ordinance for the Better Collection of Water Rents,” Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Seventh Day of December, One Thousand Eight Hundred and Twenty-One (Philadelphia: City Councils, 1823), 227-231.

Other more practical legislation included a series of measures specifying size and length of hookups, materials, and stopcocks, all of which had to be installed according the Watering Committee's exacting standards. The city councils enacted individual measures to solve specific, practical problems. For instance, an 1809 law specified that private hook-ups for city water include a stopcock attached "at the distance of twelve inches from the gutter to prevent accidents from the leakage of said pipe."<sup>36</sup> The sum of these laws, however, amounted to more than their individual parts: they represented an unprecedented degree of the city corporation's administrative control over its residents. Anyone in Philadelphia wanting Schuylkill water had to lobby the Watering Committee to have a main put in, pay a Watering Committee rent collector, and hire a Watering-Committee licensed plumber to install a hook-up according to Watering Committee specifications. The Watering Committee carefully parlayed its control over water distribution into many arenas of the city's operation.

Finally, through its handling of the financing and ongoing costs of the waterworks and its ability to award construction contracts, the Watering Committee became a powerful entity in financial matters, in party politics, and in city. Until the Fairmount works were converted to waterpower in 1821, the system's steam engines devoured fuel twenty-four hours a day. Constructing mains and connections required thousands of feet of wood, lead, and finally iron

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<sup>36</sup>City of Philadelphia, PA., "An Ordinance for Further Regulating the Distribution of Schuylkill Water, Collecting the Rents Thereof, and for other Purposes Therein Mentioned," John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 227.

pipes, all of which needed maintenance and replacements. Even the most casual readers of Philadelphia newspapers could not have missed the Watering Committee advertisements calling for bids on thousands of feet of lumber, on bushels of coal, on carpentry work, on masonry work, and on tunneling work. These were the routine expenditures, not including the enormous sums spent on initial construction. Almost all such costs were contracted out, giving the Watering Committee tremendous potential for patronage contracts.

The amount of money the Watering Committee had at its disposal for such contracts began high and grew astronomically. Latrobe's original estimate for his waterworks was \$127,000 for construction, not including maintenance.<sup>37</sup> According to Watering Committee calculations, the total cost as of October 12, 1801 was \$220,310.55; as of November 1, 1803, \$296,604.34; a year later, \$336,830.99; and five years after that, \$482,212.55<sup>38</sup>. In any given year, from the first acceptance of the Latrobe proposal in 1799 through 1825, the construction, maintenance, and financing of Philadelphia's water supply system commanded a huge portion of the city government's energies and resources, measured either in total dollars (see Figure 1) or as a percentage of city expenditures (see Figure 2).<sup>39</sup>

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<sup>37</sup>Latrobe, View of the Practicability.

<sup>38</sup>Report of the Committee for the Introduction of Wholesome Water into the City of Philadelphia (Philadelphia: Zachariah Poulson, Jr., 1801); Report of the Watering Committee to the Select and Common Councils, November 1, 1803 (Philadelphia: William Duane, 1803), 5; Report of the Watering Committee to the Select and Common Councils, November 1, 1804 (Philadelphia: Robert Cochran, 1804), 13; Report of the Watering Committee to the Select and Common Councils, November 2, 1809 (Philadelphia: Jane Aitken, 1809), 15.

<sup>39</sup>Not including 1804, for which the surviving data are incomplete. I have included in water expenditures all payments expressly dedicated to the waterworks as well as ancillary costs including paving over pipes, construction of pipes, machinery for pipe boring, the purchase of land and water rights for Fairmount, debt service on waterworks construction (as designated by the councils and as an estimated portion of overall debt service). From this total, I have subtracted waterworks income deposited in the sinking fund including

Figure 1  
Philadelphia Expenditures, 1799-1825:  
Total Annual Expenditures by Dollar Amount

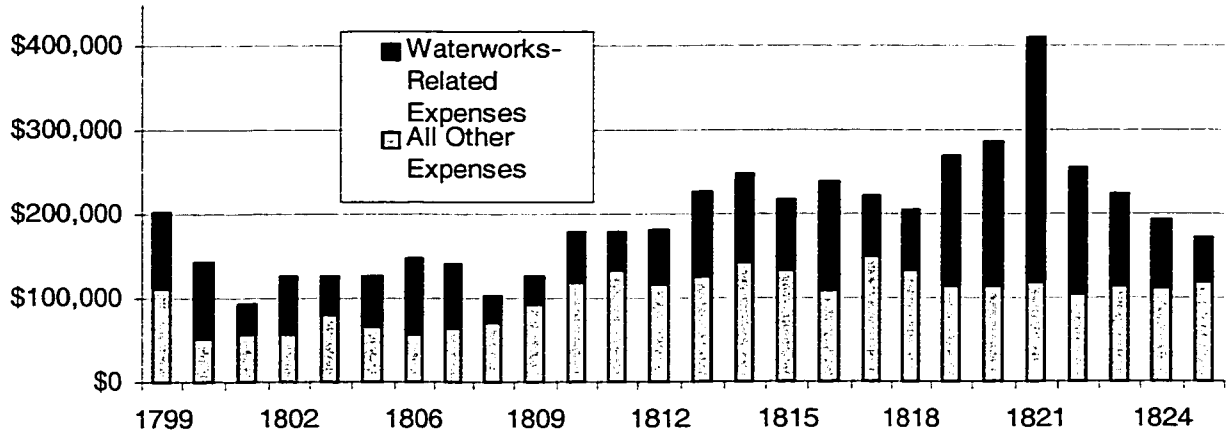
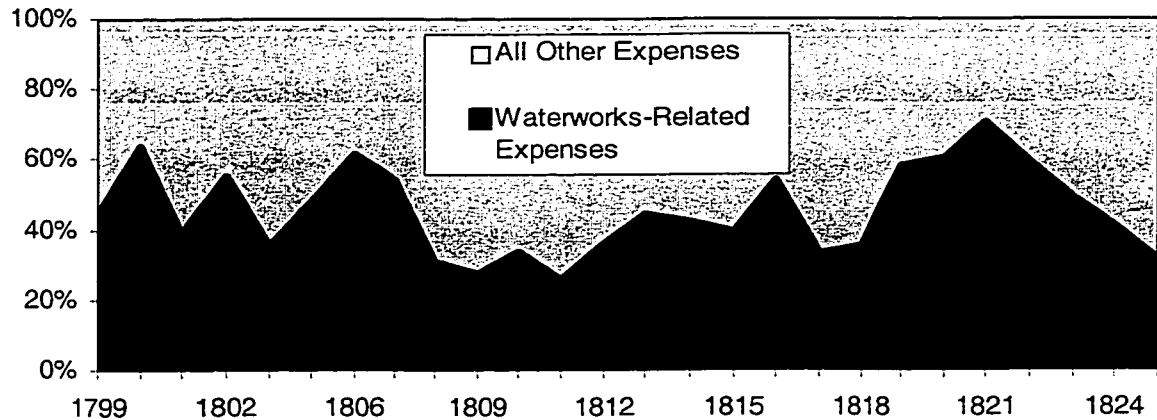


Figure 2  
Philadelphia Expenditures, 1799-1825:  
Waterworks as a Percentage of Total Expenditures



both water rent and sale of old or excess materials. Not included are funds for pumps and wells not connected to the central water supply system, interest on city loans because of cash-flow problems induced by payments for the waterworks, or opportunity cost on waterworks investment. Thus, the water expenditures as illustrated in Figures 1 and 2 are, if anything, probably lower than the actual costs of the waterworks born by the Corporation of Philadelphia.

Over the entire period from 1800 to 1825, the waterworks soaked up nearly 47% of total city expenditures; in every one of those years, total waterworks costs exceeded outlays for any other city service or project, even more than for fortifications during the War of 1812. Only twice during that period did the waterworks cost less than 30% of the city's dollars (1809 and 1811, at 27.4% and 25.3%, respectively); in nine different years, the waterworks constituted over half of all city spending, reaching over 60% at least four times.<sup>40</sup> By the 1820s, the Fairmount waterworks supplied water reliably to Philadelphia and several of its suburbs, and the Watering Committee decided how and where every penny was spent. With its hands on hundreds of thousands of municipal dollars in building and maintenance of the nation's first grand municipal infrastructure

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<sup>40</sup>An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799 (Philadelphia: Zachariah Poulson, Jr., 1799); Report of the Joint Committee of the Select and Common Councils, on the City Debts and Expenditures, and the City Credits and Resources (Philadelphia: Zachariah Poulson, Jr., 1801); Report of the Joint Committee of the Select and Common Councils, on the City Debts and Expenditures, and the City Credits and Resources (Philadelphia: Zachariah Poulson, Jr., 1802); Accounts of the Corporation, for the Year 1802 (Philadelphia: Robert Cochran, 1803); Report of the Committee of Councils, Exhibiting a Correct Statement of the Accounts of the Corporation of the City of Philadelphia, for the Year 1803 (Philadelphia: Wm. Duane, 1804); Report of the Committee of Accounts, to the Select and Common Councils, February 8th, 1804 (Philadelphia: Robert Cochran, 1804); Accounts of the Corporation of the City of Philadelphia, for the Year 1805 (Philadelphia: Jane Aitken, 1806); Committee of Ways and Means Report for Appropriations for 1806, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Six, and An Ordinance to Assess Levy and Collect a Tax on Personal Estate (Philadelphia: Jane Aitken, 1806); Accounts of the Corporation of the City of Philadelphia, for the Year 1806 (Philadelphia: Jane Aitken, 1807); Committee of Ways and Means Report for Appropriations for 1807, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Seven (Philadelphia: [Jane Aitken?], 1806); Accounts of the Corporation of the City of Philadelphia, For the Year 1806 (Philadelphia: Jane Aitken, 1807); Accounts of the Corporation of the City of Philadelphia, for the Year 1807 (Philadelphia: Robert Cochran, 1808); Accounts of the Corporation of the City of Philadelphia, for the Year 1808 (Philadelphia: Robert Cochran, 1809); Accounts of the Corporation of the City of Philadelphia, for the Year 1809 (Philadelphia: Jane Aitken, 1810); Accounts of the Corporation of the City of Philadelphia, for the Year 1810 (Philadelphia: Jane Aitken, 1811); Accounts of the Corporation of the City of Philadelphia for the Year 1811 (Philadelphia: Jane Aitken, 1812); Report of the Committee of Accounts, with the Report of the Schuylkill Permanent Bridge Company on the Present State of the Bridge (Philadelphia: Jane Aitken, 1813); Accounts of the Corporation of the City of Philadelphia for the Year 1812 (Philadelphia: Lydia R. Bailey, 1814) Accounts of the Corporation of the City of Philadelphia from the twenty-third of December, 1816, to the first of April, 1819 (Philadelphia: the Councils, 1819); Accounts of the Corporation of the City of Philadelphia from the first of April, 1819, to the first of April, 1823 (Philadelphia: the Councils, 1823); Accounts of the Corporation of the City of Philadelphia: from April 1, 1823, to January 1, 1828 (Philadelphia:

project, the Watering Committee had become the behemoth of Philadelphia politics.

Just as control over the waterworks gave the Watering Committee great leverage over municipal affairs, control over transportation projects provided great leverage over regional development issues.<sup>41</sup> From the very beginning, inland navigation schemes often resulted in intense political struggles. The design of a canal or river navigation dictated what kinds of goods, how many, and how fast those goods could travel, and what the costs of construction would be. Tremendously expensive, they begged the question of who would bear the cost of construction, the controllers, the users—usually represented by municipalities and state governments—or a combination of both. Perhaps the most pressing issue became that of control: who would run a given project once completed and the extent to which owners could profit from it. And of all the transportation improvements in the Philadelphia area, none had a greater impact upon the Philadelphia region in the 1810s and 1820s than that of the Schuylkill Navigation as it made the Schuylkill River navigable for both upstream and downstream traffic.

The Schuylkill Navigation Company initially was typical of early internal improvements in that its first promoters generally did not expect stock dividends; rather, they wanted transportation projects to provide synergies with other investments, making their land speculations or commercial forays inland more

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Philadelphia Councils, 1828); General Accounts, Corporation of Philadelphia, vols. 3-5, Philadelphia City Archives.

profitable.<sup>42</sup> Proponents of internal improvements in the early republic usually supported their projects other rationales beyond the possibility of dividends, touting national or regional economic development, defense preparedness, and the further unification of the new nation in terms of interregional trade, communication, and goodwill.<sup>43</sup> They did so with good reason. Despite the protestations of pro-canal and pro-turnpike literature, up until the 1810s everyone understood that such projects tended to lose money, and so did not provide enticements of direct profit.<sup>44</sup> Hinterland trade and land speculation, though, were both popular investments, and smart money knew that accessibility to the market, that is, cheap transportation for the bulky produce of the backcountry, could mean the difference between gain and loss. Accordingly, land speculators and merchants in the hinterland trade carefully rationed money into ancillary projects that would make their primary investments profitable: roads, turnpikes, canals, and river improvements.<sup>45</sup>

Josiah White's first attempt to provide better water transportation exemplified early internal improvement efforts. He entered the field not to profit from the transportation itself but because the transportation could make his main business more remunerative. White ran a wire-pulling plant on the east bank of

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<sup>41</sup>With the possible exception of one predecessor, Boston's Long Wharf, no municipal project approached the scale of the Philadelphia first waterworks for twenty years, about when the Fairmount works would replace them as the standard-bearer for another two decades.

<sup>42</sup>See Chapter 4 for a detailed discussion of motives for investment in internal improvements.

<sup>43</sup>See Chapter 5 for a detailed discussion of the ideology and rhetoric of internal improvement in the early republic.

<sup>44</sup>The most successful of early canal projects in terms of physical utility was the Middlesex Canal, which eventually paid some dividends but never recouped its investors' capital. For a detailed investigation of the trials and tribulations of that project, see Christopher Roberts, The Middlesex Canal, 1793-1860 (Cambridge: Harvard University Press, 1938).

the Schuylkill, just north of the city, on lands at the Falls of the Schuylkill. The War of 1812 proved to be a mixed blessing: suddenly there was great demand for his iron products, but British coal and Virginia coal became scarce, and lumber costs skyrocketed.<sup>46</sup> Like many others in the Philadelphia area, White began looking for alternative sources of fuel.

The immediate solution to Philadelphia's fuel crisis turned out to be the end of the war. Not only did British coal become more available, but also a flood of cheap British finished iron goods to America sent the domestic American iron industry into a tailspin. However, during the War, expectations were even higher than profit margins, and Philadelphia's artisans cast about desperately for a cheap source of energy. The long-term solution to Philadelphia's energy shortage was a technological innovation typical for its combination of conscious intent and random luck, one that could "afford a supply of fuel to the capital, not only indispensably required at this period of distressing want, occasioned by the interdiction and destruction of the coasting trade, but commensurate with its utmost demands for centuries to come."<sup>47</sup> The discovery of anthracite coal held huge implications for Pennsylvania's industrial future. White had heard of a kind of "hard" or "stone" coal available from up the Schuylkill. He knew that Frederick Graff, the superintendent of the waterworks, had tried to use it in 1808 to no

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<sup>45</sup>And vice versa: land speculators often asked, before purchasing unsettled plots, whether "they lay near the proposed route of the Canal or any turnpike Road of consequence?" March 4, 1826, Andrew Bayard, Letterbook, personal business, 1806-1831, Historical Society of Pennsylvania.

<sup>46</sup>Josiah White's autobiography, Josiah White's History Given By Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909) is interesting but episodic. For a lively account of White's long career, see Eleanor Morton [Elizabeth Gertrude Stern], Josiah White: Prince of Pioneers (New York: Stephen Daye Press, 1946).



avail; this Watering Committee failure remained on humiliating public display, the unburned rocks used to gravel paths around the central pumphouse. The problem was simple: no one could get the stuff to light. White bought some and his workmen tried and tried, one day finally slamming the door of the furnace shut and knocking off for supper. When one came back, having forgotten his coat, he found the furnace red-hot and called back his coworkers. They proceeded through four runs of iron before the furnace finally cooled. White immediately realized that this different kind of coal, anthracite coal, could solve Philadelphia's fuel dilemma and quickly set out to find a way to transport large quantities of it to the city.

The slow adoption of anthracite coal as a viable fuel testifies to the importance of accumulated knowledge in our understanding of technological diffusion, that is, the rate at which the use of a given technology spreads.<sup>48</sup> A newer, "superior" technology—although that notion is problematic—does not immediately or completely supplant an older, perhaps less efficient one, especially when the new one requires different skills, equipment, or methods than the old. Anthracite coal burned hotter and longer than the "soft" or bituminous coal Philadelphians shipped in from Britain and Virginia, important qualities for anyone working with metal, and it burned with less residue. But anthracite did not ignite easily; Frederick Graff, the superintendent of the waterworks, had abandoned its use in 1806 because, when his workmen had

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<sup>47</sup>Berks County petition to the Pennsylvania Legislature from 1814, as quoted in History of the Coal Lands, and Other Real Estate, Owned by the New-York and Schuylkill Coal Company (New York: Geo. F. Hopkins, 1826), 15.

shoveled some on the fire, the anthracite smothered it. Lighting anthracite, in fact, turned out to be counterintuitive because the high temperature necessary to ignite it required a method fundamentally different than that currently used to light other materials. Early nineteenth-century Americans set fire to wood, charcoal, and “soft” coal by giving them as much air as possible. But anthracite proved completely different; as one observer later explained, “the more they scratched and poked at it—an operation necessary with the bituminous coal—the worse it was with the anthracite.”<sup>49</sup> When workers at White’s shop slammed shut the door of the furnace, they most likely did so in utter frustration, because for them closing the door meant putting out the fire. Their accidental discovery, though, was not the first successful use of anthracite in Philadelphia. In 1785, the omnipresent Benjamin Franklin printed a pamphlet explaining how to burn anthracite coal in his famous stove, and Oliver Evans patented his own stove specifically designed for burning anthracite thirteen years later.<sup>50</sup> Charles Cist, a Lehigh valley entrepreneur, had tried for years to sell anthracite in Philadelphia, at one point helping to publish a pamphlet with endorsements from Evans, White, and the now more knowledgeable Graff.<sup>51</sup> But not until well after Josiah White widely publicized “his” discovery and large supplies began floating down the Schuylkill and Lehigh navigations in the mid-1820s did the use of anthracite

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<sup>48</sup>See Joel Mokyr, “Technological Inertia in Economic History,” *Journal of Economic History* 52 (June 1992), 325-338 for an interpretation of the reluctance to adopt technological innovations.

<sup>49</sup>Charles V. Hagner, Early History of the Falls of Schuylkill, Manayunk, Schuylkill and Lehigh Navigation Companies, Fairmount Waterworks, Etc. (Philadelphia: Claxton, Remsen, and Haffelfinger, 1869), 42.

<sup>50</sup>Oliver Evans to Charles Miner, as quoted in Charles Miner, ed., Lehigh Coal. Certificates from a Number of Persons, Shewing the use and Value of the Lehigh Stone Coal, with Some Prefatory Remarks (Wilkes-Barre, PA: Charles Miner, 1815), 5.

become widespread. The Watering Committee had been willing to leap to a new technology, steam engines, for labyrinthine political reasons, but most of Philadelphia's artisans and other residents were reluctant to use the new technology of anthracite because of the more mundane motivations of habit and familiarity.

Josiah White not only promoted the use of anthracite, but he also decided to make it available to consumers. Unfortunately, the lack of supply became even more difficult to solve than the lack of demand: the closest anthracite fields lay up the Schuylkill, which was unnavigable upriver beyond Philadelphia. Here again, politics determined the solution to a technological problem, in this case the challenge of transporting anthracite coal to a market one hundred miles away from where it was mined. White had trouble rounding up investors, and when he finally did, they lobbied the Pennsylvania legislature to charter the Schuylkill Navigation Company. Its purpose was to render navigable the length of the Schuylkill River that stretched from the coal fields in sparsely settled central eastern Pennsylvania through Reading and on to Philadelphia before it flowed lazily into the Delaware River. Three years and much wrangling later, White and his backers finally got their charter.<sup>52</sup> Even then, the state stipulated that the company spend an equal amount of money and time completing the potentially less profitable section above Reading. Once the charter was granted, financial

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<sup>51</sup>Miner, Lehigh Coal. For a detailed treatment of one entrepreneur's early efforts to sell anthracite, see H. Benjamin Powell, Philadelphia's First Fuel Crisis: Jacob Cist and the Developing Market for Pennsylvania Anthracite (University Park, PA: The Pennsylvania State University Press, 1978).

<sup>52</sup>See Chapter 6 for a more detailed discussion of the Schuylkill Navigation Company's problems in acquiring its charter.

troubles and technical reverses convinced impatient investors to force White from the Company, but work continued.

Schuylkill Navigation Company officials had to deal with a host of obstacles. They built canals to bypass falls and rapids; they used hammers or gunpowder to eliminate impediments such as rocks and tree-stumps; they used dams to alleviate shallows; and they used reinforced locks and especially strong dams to negotiate spring freshets (what are now referred to as flash floods). By the time it was finished, the Schuylkill Navigation ran 108 miles, 62 of them by canals that skirted falls, rapids, and shallows, and the other 46 by channels and pools in the river, all having towpaths. There were 120 locks and lock-keeper's 65 houses. Company officials estimated traveling speed along the navigation to be four miles per hour through the pools and channels and three through the canals. Whether those were downstream or upstream rates was unclear, but, for the first time, barges filled with goods could travel the length of the Schuylkill.<sup>53</sup>

Routing provides an example of how different groups shaped inland navigation technologies, often in ways that hindered the project's efficiency. The response of the citizens of Reading to the Schuylkill Navigation Company's original routing plans was a typical case of politics overcoming engineering. Reading lay on the east side of the Schuylkill River at one of its rapids. Because the town's economy was based upon its service as both a milling site and as an entrepôt for the surrounding countryside, Reading residents made sure that no

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<sup>53</sup>January 2, 1826, Minute Books, October 1815-November 26, 1849, Box 1, MG-110, Schuylkill Navigation Company, Pennsylvania State Archives.

local transportation project bypassed their town. In the 1820s, when the Union Canal was to connect the Susquehanna River to the Schuylkill navigation, company officials planned the route to enter the Schuylkill below Reading. They did so as a matter of economy: it was a cheap solution that involved building a dam and putting the canal over bedrock rather than going through Reading. The latter route necessitated an expensive aqueduct and included a path over limestone, which because of its porous quality forms an inferior bed for canals. However, Reading residents complained that the new route would “avoid Reading altogether and thereby deprive the citizens of any chance of navigation, the river, or the canal,” which they feared “would be productive of the most fatal consequences to their town.”<sup>54</sup> So some prominent Reading citizens formed a committee that promised to waive damages—one of the main reasons for avoiding densely settled areas—and successfully negotiated with the Union Canal Company, the Schuylkill Navigation Company, and the legislature for a more advantageous route. The new arrangement took nearly four years to settle, pushed back the completion of the Union Canal, and proved to be a “great source of interruption and delay” for the Schuylkill navigation “caused by the nature of the limestone formation over which it pass[ed].”<sup>55</sup> The citizens of Reading influenced canal engineering through the use of lobbying and letter-writing; all the parties involved understood that well-to-do mill owners with connections in the statehouse could be just as daunting obstacles to canal

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<sup>54</sup>Letter dated August 4, 1825, quoted January 25, 1828, V-1674, Minutes of Board of Managers of Union Canal Company, 7/30/1827-12/31/1831, Reading Company, Accession 1520, Hagley Museum and Library.

<sup>55</sup>Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 3, 1831 (Philadelphia: James Kay, Jun. & Co., 1831), 13.

construction as more physical barriers. Canal operators were especially cognizant of the economic dimensions of the routes, and planned accordingly. Maurice Wurts, president of the Delaware and Hudson Canal, recalled an incident in which “the line [of the canal] was changed to the manifest injury of public interest after the work was commenced, first to effect the purchase [of property along the route], and again altered back to the original design, after the object was accomplished.”<sup>56</sup> Cost had everything to do with it, physical engineering none.

The width of canal and river navigations became another engineering issue influenced by social concerns. Unlike later standardization controversies such as railroad gauge and electrical voltage, canals and river navigation companies never agreed upon regional or national specifications for depth and width. For one, they lacked many of the features that engendered the standardization of other technologies. Canals were not the dominant form of transportation long enough to form governing bodies, their heyday lasting a mere decade from the mid-1820s to the mid-1830s. They never formed a national or even a regional system; most inland navigations connected rivers to other lakes or rivers which then led to large bodies of water rather than other canals, and so no one perceived a need for uniformity. Secondly and more importantly, river navigations and canals technologies were particularly sensitive to local geography. True, American canal engineers found ingenious solutions to a variety of challenges, including long tunnels through mountains, aqueducts over

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<sup>56</sup>Maurice Wurts Papers, Series 2, Undated, 1805-1822. Wurts Family Paper, Vanuxem Collection, Hagley Museum and Library.

valleys and rivers, special locks that regulated water flow, steam-powered engines to pump water uphill, and cement that could dry underwater. One problem no engineer could solve was a lack of water. A canal could only be as wide and deep as the water supply warranted. However, the Union Canal Company tried desperately to keep a route that clearly had serious water-supply problems. They eventually fired engineer Laommi Baldwin, even engaging in a pamphlet war with their disgruntled ex-employee over the proper width of the canal. Both sides considered which kinds of cargoes they would encourage coming down the navigation, the possible size of boats that might use it, and the costs associated with excavating canals of various widths and differently designed cross-sections<sup>57</sup> Neither, however, ever addressed the main problem that underlay their differences: the Union Canal did not have an adequate water supply to support a very wide waterway. In this controversy in which the physical limitations of the technology should have been the main point of consideration, concerns of cost and economic potential dominated.

Once its routing decisions were made, the Schuylkill Navigation Company acquired its first license to charge tolls before the spring season in 1819 and a trickle of coal and other goods found its way down the river that spring and summer.<sup>58</sup> It was for the most part completed by 1825, the year the anthracite coal market took off carrying the corporation's fortunes with it. The company

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<sup>57</sup>Letters on the Union Canal of Pennsylvania, First Published in the "Boston Daily Advertiser [Boston?, 1826].

<sup>58</sup>Philip Justice and Seth Craige to William Findlay, Governor of Pennsylvania, January 30, 1819, Pennsylvania Department of State, Record Group 26, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Schuylkill Navigation Company No. 42, Folder 1, Pennsylvania State Archives.

took in \$20,123.91 in tolls and in rents for company real estate during 1825, almost six times the previous year's total. In 1829, the Schuylkill Navigation Company declared its first dividend, paying \$3.50 a share in profits. Company stock reflected its newfound success; only a few years before, the company had not been able to sell any at the original price of \$50 a share; now they fetched around \$75.<sup>59</sup>

The completion of the Schuylkill Navigation along with the Union Canal that fed into it marked the beginning of the economic explosion of the Schuylkill River Valley.<sup>60</sup> The navigation's construction involved a huge infusion of money into the region in the form of wages and the purchase of construction materials such as lumber, stone, and lime as well as other supplies. Through 1826, the Schuylkill Navigation Company had spent over \$1.8 million on improving the river.<sup>61</sup> Real estate values rose, both because the company purchased parcels for canals and tollhouses and because farmlands, mines, and mills along the river became more profitable now that residents could transport their goods more cheaply. By a stipulation in its charter, the company deposited its operating funds at the Farmers Bank of Reading, thereby increasing the area's money supply.<sup>62</sup> Although the overseas demand for wheat dropped at the end of the

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<sup>59</sup>Schuylkill Navigation Company, Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders. January 4, 1830. (Philadelphia: James Kay, Jun. & Co., 1830), 6.

<sup>60</sup>See Diane Lindstrom, Economic Development in the Philadelphia Region, 1810-1850 (New York: Columbia University Press, 1978), 121-151.

<sup>61</sup>According to official company reports, \$1,858,985.42; Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 1, 1827 (Philadelphia: Lydia R. Bailey, 1827), 9.

<sup>62</sup>Acts of the Legislature of Pennsylvania, Relating to the Schuylkill Navigation Company (Philadelphia: Joseph & William Kite, 1838), 3. The above were all typical benefits of canal and navigation construction; see Harvey Segal, "Canals and Economic Development," in Carter Goodrich, Canals and American Economic Development (New York: Columbia University Press, 1961), 224.



War of 1812, Schuylkill valley residents used the navigation to specialize in more marketable crops and to better exploit the miles and miles of coal beneath them.<sup>63</sup> They began sending not only huge quantities of anthracite downstream but also all sorts of goods extracted from the ground. In 1827, for example, 31,630 tons of coal, 1472 tons of limestone, 526 tons of iron ore, 678 tons of marble, and 6,078 tons of building stone found their way down the Schuylkill, accompanied by traditional agricultural products including 31,436 barrels of flour, 24,244 bushels of wheat, 12,951 bushels of corn, 1,643 bushels of rye, 6,151 bushels of flaxseed, and ample quantities of other commodities such as live hogs, apples, eggs, soap, nuts, glue, whiskey, tallow, bark, and even rags.<sup>64</sup> Such increased market participation made them better able to afford the cornucopia of goods flowing up the navigation. These included regular household products such as china and cloth, delicacies such as fresh oysters, and construction materials like limestone and plaster. If the Schuylkill navigation allowed residents to wet their feet in the market, a good many of them dove in head first.

Because economic development in the Schuylkill River Valley depended upon the navigation, the Schuylkill Navigation Company, in its ability to determine toll rates for various commodities, modulate the volume of traffic, change the route of the navigation, and modify the width of the waterway held huge influence over local economies along the 108 miles of the improved river's

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<sup>63</sup>Lindstrom, 121-151.

<sup>64</sup>Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 7, 1828 (Philadelphia: Lydia R. Bailey, 1828), 9.

banks.<sup>65</sup> Just as the Watering Committee became a center of municipal power, the Schuylkill Navigation Company became a center of regional power. What common characteristics did their technologies hold that helped their administrators grasp such power?

The centralizing phenomenon shared by waterworks and the navigation resulted from the effects of their serving as “nexus technologies.” The navigation and waterworks each formed a nexus of constant interaction between controllers and the customers who employed these technologies in countless ways.

Philadelphia residents used Fairmount water every day for a myriad of purposes: to cook dinner, wash clothes, distill spirits, and fight fires. They also heated their houses and fueled their furnaces with coal that had been shipped down the navigation, and used the Schuylkill navigation to sell their finished goods in upriver markets. In essence, the waterworks and the navigation produced nothing tangible. Rather, they provided constant occasion for Philadelphia’s residents to exchange opportunities in return for the tolls the navigation company demanded or the water rents and taxes that the Watering Committee levied.

The navigation and the waterworks, as nexus technologies, diffused benefits to nearly everyone in the areas they affected. In other words, not only could stockholders prosper, but also others could use the technologies for their own ends. Furthermore, such benefits were continuous, as opposed to discrete:

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<sup>65</sup>The Schuylkill Navigation Company, by its original charter, could charge up to 12.5¢ a ton below Reading, and 8¢ a ton above; however, it could set its own toll any amount less than that, and could also charge different rates for different commodities. In 1821, the Pennsylvania legislature amended the charter so that the Schuylkill Navigation Company could charge whatever it wanted, as long as its annual dividends did not exceed 25%. Given competition from the Lehigh Coal and Canal Company from 1828 on, the Schuylkill Navigation Company’s rates fell well below the legal maximum. Acts...Relating to the Schuylkill Navigation Company, 3, 24.

people used them constantly, rather than making a single purchase or interaction. These two qualities, diffusion of reward and continuity of exchange, made nexus technologies qualitatively different than other technologies in terms of their increasing centrality to the growth of the market exchange economy in the early republic.<sup>66</sup> The Philadelphia region's economy expanded intensively and extensively, that is, in terms of productivity and income as well as the increasing pervasiveness of market participation and behavior. The use of infrastructure technologies allowed people to enter the market more fully and to become more productive once engaged in it.<sup>67</sup> New market participants found that nexus technologies soon became indispensable to their engagement with the economy, and the people who controlled such technologies thus placed themselves in positions of great leverage over the market activities of others.<sup>68</sup>

The waterworks' and canals' centrality in the market and diffusion of reward distinguished these projects from previous economic ventures in the

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<sup>66</sup>For insightful discussions on the inherently political nature of technology, see Langdon Winner, The Whale and the Reactor: A Search for Limits in an Age of High Technology (Chicago: The University of Chicago Press, 1986), p. 19-58, and Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought (Cambridge: MIT Press, 1979).

<sup>67</sup>For the classic account of the role of transportation in American economic expansion during this period, see George Rogers Taylor, The Transportation Revolution, 1815-1860 (Armonk, New York: M.E. Sharpe, 1951). Shaw's Canals for a Nation provides a good overview of the effects of that particular technology; Nathan Miller, in The Enterprise of a Free People: Aspects of Economic Development in New York State During the Canal Period, 1792-1838 (Ithaca: Cornell University Press, 1962), argued that the Canal Fund was just as instrumental as the canal in New York's development. Also see Carter Goodrich, ed., Canals and American Economic Development (New York: Columbia University Press, 1961).

<sup>68</sup>Perhaps nexus technology in early nineteenth-century America most purely manifested itself in the form of banks. Banks were essentially a technology for multiplying investors' money for use by the community; banks, insurance companies, various financial instruments, investment strategies, and the like will be addressed in the next chapter.

Furthermore, although this chapter addresses technologies in the context of a marketplace, distributed benefits should not be confused with the purely economic terms "multiplier effects," "social benefits," "indirect benefits," or "externalities," each of which refer to a theoretically quantifiable return enjoyed by those other than the investors. I am using distributed benefits to define the way nexus technologies, by their strategic location at the center of social and economic activities, can be exploited by their controllers (investors or administrators) and their users (who are usually not principally the controllers) in fundamentally different ways, ways that have deep political and social implications not measured or properly defined in economic theory.

United States that could not diffuse benefits on the same scale. That is, only the owners, planters, farmers, tradesmen, or merchants who owned a stake in such projects profited from them. Various technological advances in agriculture and manufacture tended to provide limited benefits. Agricultural advances, such as the cotton gin or introduction of new farming equipment, could increase production either through reducing labor costs or increasing yields, respectively. Yet, in either case, only the people who adopted such new machinery or techniques made more money. The same holds true for industrial innovations: for example, while the clattering of the looms at Lowell barely drowned out the clanking of coins in the Boston associates' bank accounts, those who did not invest in textile factories had little to show for America's newfound textile-manufacturing competence.<sup>69</sup> These technologies proved effective in producing physical goods, but proved comparatively limited as far as providing returns of profit and power.

Nexus technologies formed a critical innovation in scale for the accumulation of influence because of their potential to "lock in" customers whose own activities would increase with the use of the technology. Economists Robin Cowan and W. Brian Arthur have described the phenomenon of "technological lock-in," in which the adoption of a given technology becomes more and more prevalent until that technology becomes dominant. Lock-in is particularly likely

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<sup>69</sup>Some manufacturing technologies could be considered to have limited nexus technology qualities. A good example for early nineteenth-century America was the adoption of Oliver Evans's techniques for fully mechanizing flourmills, which increased the mill owner's profits while potentially lowering milling costs for neighboring farmers. However, such interaction occurred only once a year—harvest time—and was fairly localized in nature. Additionally, one of the central tenets of neoclassical economics is that the individual pursuit of self-interest always contributes to economic growth and efficiency; however, neoclassical

when, as in the case of nexus technologies, use of the technology has increasing returns and when high barriers exist for potential competitors.<sup>70</sup> Both of these conditions held for waterworks and for internal navigations. Whereas profits, and thus power, from other technologies grew only geometrically, nexus technologies had potential for exponential growth. Revenue from technologies such as the cotton gin or mill improvements only grew in proportion to the amount of labor and either land or machinery an owner could put into production; double the land or the spindles, double the profit, triple the land or spindles, triple the profit. But for nexus technologies, growth seemed unbounded. While the Philadelphia waterworks required high initial investments, it had the potential to grow with the city. Upon completion in 1802, it provided water to less than a quarter of Philadelphia's approximately 43,000 residents; by 1830, it provided all of the water for Philadelphia's population of 80,000, and perhaps half for the additional 87,000 in nearby suburbs, a total of approximately 123,000 people.<sup>71</sup> Thus, the Watering Committee had indirect influence over a huge number of people, all through a technology that, by the late 1820s, had begun to pay back the city's huge investment. The Schuylkill Navigation, meanwhile, was the lifeblood of economies all along the river: Pottsville, Port Carbon, Schuylkill Haven, Hamburg, Reading, Pottstown, Phoenixville, Norristown, Conshohocken, Manayunk, and western Philadelphia. From a trickle in 1818, the goods going up

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economics does not address the ways that different kinds of economic activity have different political and social consequences, which is at the center of this argument.

<sup>70</sup>See W. Brian Arthur, "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," *The Economic Journal*, 99 (Mar. 1989), 116-131 and Robin Cowan, "Nuclear Power Reactors: A Study in Technological Lock-In," *Journal of Economic History* 50 (Sep. 1990), 541-567.

<sup>71</sup>Population statistics from drawn from Lindstrom, *Economic Development*, 25.

and down the river turned into a flood in the late 1820s: tolls increased almost every year well into the 1830s, reaching a high of \$604,190 in 1837 (see Figure 3C).<sup>72</sup> The navigation had a place in as many lives as did the waterworks, and so the controllers of these two nexus technologies touched a great many people.

Nexus technologies also exhibited great potential for extending power across vast distances. Patrons usually limited their power to certain neighborhoods or groups in the case of a city, or at most two or three adjoining counties in the hinterland. For the Watering Committee, influence reached wherever they could install a water main, thus extending through all of Philadelphia proper by the 1810s and into connecting suburbs in the 1820s. Meanwhile, the Schuylkill Navigation Company's Board of Managers made decisions affecting perhaps most of the people living within twenty miles of their navigation, an area of 2,000 square miles, for the Schuylkill was now their connection to markets regional and beyond. No one depending upon other technologies could hope to project influence on anything approaching that scale in terms of physical space.

More subtly, but also more profoundly, controllers of nexus technologies learned to exploit them to create a new kind of power. The employment of nexus technologies created new dependencies among their customers, ones that, unlike patron-client power, did not depend upon face-to-face contact. As early as 1818, subscribers to the waterworks included 3,296 dwellings and 194 other

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<sup>72</sup>Because the Schuylkill Navigation Company lowered tolls several times in response to competition from the Lehigh and elsewhere, the accounting of tolls under-represents Schuylkill Navigation Company traffic growth in terms of both traffic and value of goods. Minute Books, Box 1, Oct. 15-Nov. 26, 1849, MG-100, Schuylkill Navigation Company, Pennsylvania State Archives.

customers such as soap boilers, distillers, paper factories, hatters, inns, stables, and banks, to name a few; other Philadelphians got their water from ubiquitous public hydrants.<sup>73</sup> Meanwhile, local economies all along the Schuylkill grew because of the availability of fast and inexpensive transportation up and down the navigation. In each case, a tremendous number of people depended upon either the waterworks or the canal for their water, their livelihood, or both. When the waterworks did not work, neither could tanners or brewers, much less those who needed water to drink, cook, or clean. Therefore, prospective bondholders were not the only boosters for the usually costly improvements in the waterworks; the people whose businesses or jobs depended on the water formed a powerful constituency in favor of such policies.

Controllers of nexus technologies could demonstrated their power in either brash or subtle ways. Administration of the waterworks required the enactment and enforcement of a series of measures for “regulating the distribution of Schuylkill water.”<sup>74</sup> Water was a public resource, so the Watering Committee had to conserve and protect it, but their doing so held consequences beyond mere reservoir levels. In 1801, the city councils passed one law imposing fines ranging from \$3 to \$50 plus costs of repair and recovery for intentionally breaking pipes or mains, and another law imposing a \$1 fine plus cost of recovery for “a wanton or willful waste of... water.”<sup>75</sup> Five years later, the

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<sup>73</sup>Report of the Watering Committee to the Select and Common Councils, Read January 14, 1819 (Philadelphia: Philadelphia Councils, 1819).

<sup>74</sup>The first was in 1801, “An Ordinance for Regulating the Distribution of Water in the City of Philadelphia.” Lowber; it was supplemented again in 1801, in 1806, twice in 1809, in 1818, and in 1821.

<sup>75</sup>May 7, 1801, “An Ordinance for Regulating the Distribution of Water in the City of Philadelphia,” The Ordinances of the City of Philadelphia to Which Are Prefixed, the Act of Incorporation and the Several

city added \$5 fines for “soaking, or rinsing... manufactured” goods such as hats, dyes, and leather, opening hydrants unnecessarily, and a hefty \$20 penalty for illegally adding connections to a main and for augmenting one beyond the contracted size.<sup>76</sup> Eventually, Philadelphians could incur legal punishments for not using strong enough stop-cocks, for not covering them properly, for using someone else’s water, for not using licensed plumbers, and for not having pipes at the right depth among a host of other petty offenses. These measures were necessary for the efficient operation of the waterworks: improper installations made repair difficult and caused leaks that resulted in mud in the summer and treacherous ice in the winter. Nonetheless, such ordinances did more than merely ease maintenance and save water: by criminalizing any “improper” water use, the Watering Committee could use the force of the state to establish and defend the city corporation’s position as arbiter of water supply and distribution.

Meanwhile, boatmen, merchants, farmers, and operators depended upon the Schuylkill Navigation Company for their economic wellbeing. Such people, who usually owned no stock, would support company officials when they lobbied for laws that would give them more leverage in eminent domain suits or that would impose harsh penalties for those convicted of sabotage on canals. Several clauses in the Schuylkill Navigation Company’s charter—a rather typical early nineteenth century canal charter—addressed the important issue of

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Supplements Thereto; Together with the Address of George Washington, Late President of the United States, to His Fellow Citizens (Philadelphia: Zachariah Poulson, Jr., 1798). May 22, 1801, “A supplement to an Ordinance for Regulating the Distribution of water in the City of Philadelphia,” Lowber.

<sup>76</sup> March 15, 1806, “A supplement to the Ordinance for Regulating the Distribution of Water of the City of Philadelphia,” Lowber.



damages.<sup>77</sup> “Damages” encompassed any cost to landowners contiguous to the waterway whose property had been injured by the company, including flooding from the dammed river, crops trampled by workmen, and construction detritus. Pennsylvania granted the company the right to put its constructions anywhere along the river, that is, on anyone’s property, and to pay the damage done, taking into account not only the cost of replacement but the also the advantage the landowner received by being along the navigation—advantage being defined as increased property value. This definition of advantage represented a hidden subsidy to the navigation company: offsetting the legally retrievable cost of damages with increased real estate market value meant that company workmen and officials could cause substantial harm to properties along the navigation without having to pay for them.<sup>78</sup> The navigation company had thus gained an economic advantage over other participants in the marketplace.

The navigation company's leverage was not limited to its relationships with neighboring property owners. When anyone, including boatmen, teamsters, or local residents, in some way injured the navigation, he or she had to pay twice the damages, as well as the company’s cost in recovering them. Not only that, but also the company decided upon the cost of damages against the navigation, while a six-member, theoretically impartial panel decided upon damages to landholders. In 1821, the company managed to have the legislature amend its

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<sup>77</sup> Acts... Relating to the Schuylkill Navigation Company, 3.

<sup>78</sup> Legal scholar Morton Horwitz has argued that the changes in laws dealing with damages amounted to a juridical redistribution of the wealth from poor property owners to corporations. He somewhat over-emphasized the upward redistribution of wealth in that the land bordering canals or rivers tended to be valuable land or mill property, but was correct in the general principle. Morton J. Horwitz, The Transformation of American Law, 1780-1860 (Cambridge: Harvard University Press, 1977), 67-70.

charter so that the company could appeal any decision on damages to a panel from any county in the state; whomever lost the appeal would pay for all court and travel costs—a risk that plaintiffs against the company could ill afford.<sup>79</sup> Thus, in its confrontations, Schuylkill Navigation Company officials held all the cards: lower settlements, the cost of “improvement” (whether or not landholders wanted a navigation along their property), a lower burden of proof, double damages, potentially friendly appeals panels, and the risk of high court costs. The Schuylkill Navigation Company’s Board of Managers successfully used its nexus leverage to press for laws allowing it to bully its less powerful neighbors.

River navigations and waterworks operated as nexus technologies because of their peculiar historical context. Early nineteenth-century Philadelphia was engaged in a market exchange economy. Goods transported along a canal brought profits, and the ability to transport goods cheaply in turn gave motivation for others to enter the market or to increase current market production. Nexus technologies did not create the market; rather, people used them to extend the market. The Philadelphia region was undergoing spectacular demographic and economic expansion. Without such growth, water rents and canal tolls might have remained constant or increased only in direct proportion to extensions in either system, limiting the attraction for large investments and large investors. In many cases, profits never approached expectations for many infrastructure improvements. And despite the potential for the consolidation of power and authority, nexus technologies did not necessarily reach the extreme

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<sup>79</sup>Acts... Relating to the Schuylkill Navigation Company, 24.

of “authoritarian technics,” to borrow Lewis Mumford’s phrase.<sup>80</sup> To be sure, Joseph S. Lewis, as president of the Schuylkill Navigation Company after 1825, seemed to be the most powerful person in Philadelphia. On the other hand, the Watering Committee was composed of elected representatives; on at least one occasion, incumbents lost reelection because of cost overruns on the waterworks. Indeed, Mumford noted that the power that large-scale technological systems could confer was limited by the structure of the organization that administered them. For many nineteenth-century projects that lost money, such as the feeders to the Erie Canal, users fared better than investors; the exchange of power had the potential to tip toward the users rather than the controllers.

In the case of the waterworks, though, the leverage of nexus technology, like the water, generally flowed in one direction despite the benefits drawn by users. For the Watering Committee, the ability to employ the waterworks to extend its own power and the power of the city corporation even beyond its borders became evident during the planning stages of the expansion of the works at Fairmount in the late 1810s. As fast as the city of Philadelphia proper was growing, its suburbs gained population at an even higher rate. Like any adolescent, one of the Philadelphia’s growing pains involved learning how to control and coordinate its extremities, in this case the residents and governments of neighboring communities: the Northern Liberties, Spring Gardens, Southwark, and Moyamensing, all of which bordered the city but were separately

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<sup>80</sup>Lewis Mumford, “Authoritarian and Democratic Technics,” *Technology and Culture* 5, (Winter 1964), 1-8. Mumford postulated that large technological systems were particularly vulnerable to centralized control and

incorporated municipalities of Philadelphia County. In 1818 and 1819, the Watering Committee began investigating ways to lower costs and make sure that the water supply would keep pace with the population. They planned to replace the old, steam-powered waterworks with a system whose energy came from a dam thrown across the Schuylkill. Considerations for the new system included higher reliability, greater output, and the elimination of fuel costs, all important practical goals for water supply systems.

The Watering Committee also saw the proposal as a way to make money for the city and extend its administrative influence over the suburbs through the sale of surplus water. In 1819, a Watering Committee report pointed out that “the adequacy of the supply of Water to the City, and the ability it affords of supplying the districts, and thereby adding materially to the income of the City, will... justify the expenditure” on the new system.<sup>81</sup> Thus, the city could potentially reduce its own tax burden by charging the suburbs for water. The suburbs would pay annual tribute to the city. The city soon built its fabulous Fairmount waterworks with its surrounding parks and gardens, and the suburbs provided much of its ongoing maintenance costs. For the suburbs, paying Philadelphia for water was like paying rent as opposed to owning. Suburban governments could avoid the large up-front costs of building their own systems. They implicitly decided to pay a different price: rather than building equity in their own independence, they became ever more dependent upon Philadelphia for

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thus contributed to the consolidation of bureaucratic power.

<sup>81</sup>“Report of the Watering Committee on the Subject of Obtaining Water Power from the River Schuylkill,” February 5, 1819, City Council 120.42, Committee on Water, Papers 1804-1854, Box A3118, Philadelphia City Archives.

their water needs. In political systems, the ability to command taxes is a nearly direct measure of power, and the Watering Committee was now using the nexus of the waterworks to rein in the city's smaller neighbors.

While control over water pricing gave Philadelphia leverage over its suburbs, the regulation of that water proved to be an even more insidious form of conscious municipal manipulation. Philadelphia's 1827 contract with Spring Garden, an agreement typical of those between the suburbs and the city, included many seemingly mundane conditions: Spring Garden's pipes and ferrules had to be a certain size and its hydrants had to meet the same specifications as those in Philadelphia. Such restrictions made extensions to the system much less difficult to construct because mains and fittings could be ordered in standardized sizes. Other parts of the contract displayed some concern for overall water supply stability: Spring Garden could only wash its streets during the same periods as the city, times generally chosen when the reservoir was full and demand low. Many clauses of the agreement more baldly demonstrated Spring Garden's subordination. The suburb was only to receive water if Philadelphia had enough for its own needs; Spring Garden was to appoint a local water rent collector, but all books and assessments had to be approved by Watering Committee; Philadelphia charged Spring Garden residents 50% more than its own residents for private water; Spring Garden was required to enact all the same ordinances and regulations as Philadelphia had relating to the distribution and wasting of water; and, most crucially, the Watering Committee could shut off the suburb's water if Spring Garden did not pay rent or

if its pipes were not properly maintained.<sup>82</sup> This final stipulation, giving Philadelphia inspectors—Watering Committee employees—the authority to shut off Spring Garden’s water, provided the Watering Committee with the most leverage: as anyone who is familiar with plumbing knows, if one wants to “find” a leak one need only look. Thus, Spring Garden was vulnerable to municipal blackmail. Taken as a whole, such contracts provided the Watering Committee with more than control over Philadelphia suburbs’ water; the nexus technology of water supply gave the Watering Committee influence over suburban administration, tax collection, and legislation. In driving such hard bargains, the Watering Committee definitely demonstrated the potentially centralizing effects of nexus technology.<sup>83</sup>

For the Schuylkill Navigation Company, tension between founder White and the company’s boardmembers, who had been elected by big investors, symbolized the distinction between interest in the waterway for its physical utility and interest in its potential for profits. While White came up with the idea of making the Schuylkill navigable, he did not have the cash necessary to implement it; a collection of financial bigwigs not only helped push the charter through the legislature but also became the commissioners named in the charter to be responsible for supervising the company’s 1815 general stock offering. The stockholders soon elected a Board of Managers—the early nineteenth-

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<sup>82</sup> “Contract between Corporation of Philadelphia and Spring Garden, February 16, 1827,” City Council 120.42, Committee on Water, Papers 1804-1854, Box A3118, Philadelphia City Archives.

<sup>83</sup> For a brief discussion of suburban ambivalence to the Fairmount works, and the role of the waterworks in Philadelphia’s eventual annexation of its suburbs, see Howard Gillette, Jr., “The Emergence of the Modern Metropolis: Philadelphia in the Age of Its Consolidation,” in William W. Cutler, III and Howard Gillette, Jr., eds., The Divided Metropolis: Social and Spatial Dimensions of Philadelphia, 1800-1975 (Westport, CT: Greenwood Press, 1980), 5-6, 21.

century equivalent of a board of directors. The board included, among others, such financial and political notables as company president Cadwalader Evans, Jr., who together with his father, Cadwalader, Sr., oversaw one of the city's grandest mercantile empires; treasurer Clement C. Biddle, of the banking Biddles; merchants Manuel Eyre and Caspar W. Morris, and brewer Joseph Watson, the latter three all once or future members of Philadelphia's city councils. White, despite his efforts and enthusiasm, did not have the political or financial heft to gain election. Nonetheless, having put in a good part of his small fortune, he worked nearly full-time on the navigation, and the company benefited greatly from his energy and his experience in already having dammed the lower Schuylkill.

In the spring of 1817, White proposed constructing a temporary channel to allow transport along the lower Schuylkill, from below Reading to Fairmount, just above Philadelphia. He remained committed to getting anthracite to market and to his factory and submitted a plan to the board that included charging the nominal amount of five cents a bushel. White reasoned that this small fee, being a large discount from turnpike tolls, would encourage traffic and would keep business on the Schuylkill rather than shunting it to the Lehigh River. However, boardmembers pointed out that, by law, they could charge up to twelve dollars a bushel, which was exactly what they intended to do; they were even willing to wait another year or two for the permanent navigation to be in place. White later lamented that the Board "spurned my offer of 5 c a bushel & laughed at our pretended Rivalship from the Lehigh, & thus ended our last intercourse with them

on the subject of using their navigation.”<sup>84</sup> Clearly, the Board, representing large investors, and White, representing those who would use the navigation, had diverged: the controllers of the project saw the navigation in terms of long-term profit rather than its immediate physical utility.

Seven years after the Board laughed White out of their meeting, they sent an even more unmistakable message that they knew how to manipulate the navigation's nexus characteristics to their advantage. Because both the navigation and the Fairmount works required the Schuylkill's waters for their operations, the Watering Committee and the Schuylkill Navigation Company clashed frequently over who owned the rights to the Schuylkill's water, water power, and banks. In 1824, as part of a series of complicated agreements between the city and the company, the Watering Committee was supervising the construction of a dam and a canal, both of which would be owned by the company. The company and the Watering Committee bickered constantly over the materials, design, route, and specifications; in short, just about everything they could find to disagree about. The largest controversy concerned the building of an expensive retaining wall, for which the city would foot the bill. Company officials sent a letter to Joseph S. Lewis, erstwhile president of the Watering Committee, that concluded by reminding him that if the dam and canal were not well-made, “the Board of Managers do not think it necessary to add any thing more to enduce the Watering Committee whose constituents are so deeply

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<sup>84</sup>Josiah White, Josiah White's History Given by Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909), 18. White accepted the Board's dare, going on to found the Lehigh Coal & Navigation Company, whose business eventually eclipsed the Schuylkill Navigation Company's in nearly every measure of corporate success, including revenues, profits, and longevity.



interested in the navigation of the Schuylkill to order the walls to be immediately made.”<sup>85</sup> In other words, if the city corporation continued to drag its feet, the company could would bring its case to the council members’ “deeply interested” constituents—the Philadelphia voters—in the next election. The wall was soon finished according to Schuylkill Navigation Company specifications. The Board of Managers had used their nexus leverage well.

If, in both of these cases, one can determine when a technology’s controllers began to use it to extend their economic and political clout, how can that knowledge suggest a general pattern for identifying the initiation of political exploitation of nexus technologies? There are three conditions to be met. One indication of the turning point is the moment of prospective profitability: in other words, when investors who have enough leverage (administrative or level of ownership) to exert significant control over the project begin to see it as a way to extract profits. From then on, they invest not for the project’s physical utility, for example, to supply fresh water or to lower transportation costs, but to make money, regardless of what physical tasks the project performs. However, profitability, or the probability of it, does not alone distinguish nexus technologies; after all, one would invest in either a canal or a widget-making machine given the expectation of good returns.

The second necessary condition for identifying the intentional manipulation of nexus technology is a pattern of behavior on the part of a project’s controllers that suggests their use of the project in such a way that

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<sup>85</sup>Letter from Schuylkill Navigation Company to Joseph S. Lewis, June 6, 1820. Letter Books, Box 1, June 5, 1816–November 25, 1824. Manuscript Group 11, Schuylkill Navigation Company, Pennsylvania State

acknowledges the technology's conferring of special leverage. Such behavior can include subtle forms of blackmail, such as threatened withdrawal of services or raising of rates should opponents not give in to political demands—weapons at the disposal of both the waterworks and canal companies—or the enlistment of those dependent upon the nexus technology for political support of special privileges, such as the Schuylkill Navigation Company's monopoly of Schuylkill water. The latter gave the company all rights to waterpower generated along the Schuylkill, rights that formerly had belonged to those who owned property along the river. By moving in when profits were likely and using the projects to pursue privileges in politics or the marketplace, the men who controlled such projects as the Philadelphia waterworks and the Schuylkill Navigation demonstrated quite clearly their perception of the power they could grab through the use of technology.

The final condition necessary for indicating exploitation of nexus technology is the employment of the state to enforce the social interests—defined broadly—of those who control the technology. Obvious cases include laws to criminalize unauthorized use. For example, in May 1801 the Watering Committee put a measure through the City Councils imposing a one dollar fine on “idle and disorderly persons... in practice of collecting about the hydrants... and wasting water.”<sup>86</sup> When the waterworks had first been approved, one justification Latrobe offered for the works was to “cool the city”; however, a bunch

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Archives.

<sup>86</sup>The Ordinances of the City of Philadelphia to Which Are Prefixed, the Act of Incorporation and the Several Supplements Thereto; Together with the Address of George Washington, Late President of the United States, to His Fellow Citizens (Philadelphia: Zachariah Poulson, Jr., 1798).

of ne'er-do-wells hanging about open hydrants on summer nights, while not wasting water from their own point of view, appeared a public nuisance to the good and proper members of the city council.<sup>87</sup> Laws that allowed Schuylkill Navigation Company officials to call local sheriffs to arrest those who interfered with the navigation worked much the same way: in 1826, the Pennsylvania legislature passed a law that imposed fines and even jail sentences for bringing animals not used for towing on company towpaths, for going too slow or too fast, or for blocking or damaging the navigation, among other petty offenses.<sup>88</sup> That measure even gave the navigation company the authority to enforce speed limits at its own discretion: boatmen could be fined \$20 for going over four miles per hour, but the company could give written or printed permission to exceed that rate. The sort of protests that often had been tolerated almost as a matter of course in a patron-dominated society, a "clients will be clients" attitude of patron forbearance, now could be quashed or at least more easily discouraged through fines and arrests. Furthermore, the navigation company and Watering Committee had the advantage in legal disputes over damages, precedents that all sorts of corporations would later use to entrench their power. The monopoly over water rights, either in Philadelphia by the Watering Committee or along the Schuylkill by the navigation company, interposed the state between economic actors, namely, the Watering Committee and the Schuylkill Navigation Company on one side, their customers and other citizens on the other. In all of these examples, the ability of those who controlled nexus technologies to impose their

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<sup>87</sup>Benjamin Henry Latrobe, View of the Practicability.

social and economic interests through the use of the state against all comers—patrons or clients—testified to the ways that use of such projects subtly changed the construction of power in early nineteenth-century America.

The phenomenon of nexus technology seems to form a tantalizing paradox, both for the history of technology and for the study of the early republic. Those who have looked at the development of large infrastructure projects from the standpoint of technological determinism either praised such advances as heralding a new order of democracy based on increased access to markets, energy, information, or natural resources, or castigated them just as strongly as modes of increased authoritarianism.<sup>89</sup> Similarly, early republic historiography has focused on the creation of a market economy—made possible by transportation improvements—that both stimulated greater mass participation in politics and precipitated greater consolidation of political and economic power.<sup>90</sup> While these two historiographic traditions show remarkable parallels in addressing the concomitant diffusion and consolidation of power, they often interpret such developments as being contradictory. What the examination of

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<sup>88</sup>Acts... Relating to the Schuylkill Navigation Company, 28.

<sup>89</sup>For a typical contemporary account lauding the democratic potential of infrastructure technologies, see William J. Duane's Letters, Addressed to the People of Pennsylvania Respecting the Internal Improvement, of the Commonwealth; By Means of Roads and Canals (Philadelphia: Jane Aitken, 1811), or, for a twentieth-century equivalent, David Lillienthal, T.V.A.: Democracy on the March (New York: Harper and Brothers, 1944). Daniel J. Boorstin, The Republic of Technology (New York: Harper and Rowe, 1978) provides a more historical view. The seminal works warning against the centralizing effects of such technologies are Lewis Mumford, Technics and Civilization (New York: Harcourt, Brace, 1934) and Jacques Ellul, The Technological System, Joachim Neugroschel, trans. (New York: Continuum, 1980).

<sup>90</sup>For a nearly encyclopedic treatment of rising democracy and power during this period, see Charles Sellers, The Market Revolution: Jacksonian America, 1815-1846 (New York, Oxford University Press, 1991); Sellers sees the rise of the market as antithetical to broad-based democratic political participation and power. Also see Louis Hartz, Economic Policy and Democratic Thought: Pennsylvania, 1776-1860 (Cambridge: Harvard University Press, 1948). For the role of transportation improvements, see George Rogers Taylor's classic The Transportation Revolution (White Plains: M.E. Sharpe, 1951), which is the most forceful argument for transportation infrastructure growth as central to American economic and territorial growth; for canals in particular see Goodrich, Canals and American Economic Development and Ronald E.

nexus technologies reveals is that these apparent paradoxes are in fact the complementary developments that such projects entailed. Nexus technologies acted as media for a few to concentrate political and economic power in exchange for the many's ability use them to pursue their own agenda. The more central the nexus technology is to the economy, and the more benefits that are distributed, the greater the extent of consolidation.

Economic exchanges, whether by barter, cash, or credit, inherently include an exchange of power. It may be power over the actions of others, such as wages or a bribe; it may be power in terms of social prestige, such as a title or a fashionable piece of clothing; it may be power over one's physical environment, such as food or shelter. In barter transactions, both parties give and receive a good or service; thus their exchange is limited to themselves.<sup>91</sup> In transactions marked by currency, a party that receives cash or credit now has the ability to make transactions with other members of society.<sup>92</sup> The facility of exchange that cash and credit offer means more than greater efficiency. Economic transactions also represent the trading of one kind of power for another, and, with the spread of money and credit, how quickly that power can be diffused or concentrated. Buying or selling something for the prevailing market price seems a fair trade, but it can involve a greatly unbalanced exchange of power. Wages for unskilled labor is a typical case: while the going

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Shaw, Canals for a Nation: The Canal Era in the United States, 1790-1860 (Lexington: United Press of Kentucky, 1990). For Philadelphia's growth, see Diane Lindstrom, Economic Development.

<sup>91</sup>These transactions, too, have great propensity toward inequality; for example, slavery was essentially a trade of labor and sexual submission for food and clothing. The balance of power depends upon who defines the rate of exchange. In this case, of course, the slaveholders did.

<sup>92</sup>Chapter 4, on financial institutions, elaborates on the distinctions between cash and credit as they become relevant to this discussion.

rate of pay may be extremely low, the employer can exact great physical sacrifice from workers. Economic transactions may not always be equal, and they certainly are rarely what one might call fair, but they are voluntary and conscious.

From the turn of the nineteenth century on, nexus technologies like canals and water distribution systems constantly facilitated exchanges, turning the balance toward their controllers. Those dictating the terms of the transactions controlled the balance of power exchange in the economy. For example, the Watering Committee acted as a filter between citizens, suburbs, and the city government. By deciding what money would be spent on the waterworks and what individuals should pay for water, it entrenched itself in Philadelphia's political landscape. Likewise, those who can position themselves as a medium of transactions gain power from all transactions. Because anyone wanting to participate in the market between Philadelphia and the Schuylkill valley sections of its hinterland needed to transport their goods down the navigation, the Schuylkill Navigation Company's Board of Managers gained money and political clout for every sale up or down the river. Previously, patrons had dictated those exchanges for their clients; now, municipal bodies or private companies used technologies such as the waterworks or canals to affect the terms of economic interactions.

Those who controlled nexus technologies gained influence, but, as the term exchange implies, the technologies' users gained something as well. Just as the waterworks brought water to a central reservoir before pumping it to every

corner of the city, nexus technology tended to centralize one kind of power while diffusing another. For many in the City of Brotherly Love, the resources expended on the waterworks seemed well spent, for the waterworks were a great source of municipal pride. Philadelphians boasted of their waterworks, first the pumphouse in Centre Square and eventually the fabulous Fairmount Works. Latrobe designed the first to be a temple of technology, its elegant classical lines hiding the steam engine inside. Residents called the structure the “pepperbox,” because of its distinctive shape, a dome atop a box. They reveled when people from the country visiting the big city “gaped with astonishment [at a hydrant], as at the tenth wonder of the world.”<sup>93</sup> If Philadelphia could no longer be the political or the financial capital, it could lead the nation in manufacturing and technology. Within a few years, exclaimed one city-dweller, “Philadelphians were more proud of the water works than of Independence Hall. They said one might as well visit London without viewing Westminster Abbey as come to Philadelphia and not see the water works.”<sup>94</sup> Residents faced the nineteenth century with the waterworks as a sign that Philadelphia would continue its role as one of the great cities of the America. The Centre Square and especially the Fairmount works and its surrounding gardens appeared in dozens of engravings and lithographs at home and abroad. The waterworks gave residents the

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<sup>93</sup>“Poulson's Daily Advertiser,” January 29, 1801, as quoted in Blake, Water for the Cities, p. 18.

<sup>94</sup>James Hosmer Penniman, Philadelphia in the Early Eighteen Hundreds, (Philadelphia: St. Stephen's Church, 1923): 43.

psychic benefits of living in the self-proclaimed "Metropolis of America" in exchange for the considerable resources spent on the works.<sup>95</sup>

More practically, those who could afford to receive the fresh, cool Schuylkill water pumped into their homes gained convenience, prestige, and privacy in exchange for their water rent; those who could not now got their daily water from public hydrants on nearly every block. By the late 1820s, suburbs Spring Garden, the Northern Liberties, and Southwark bought their water from the Corporation of the City, falling into the orbit of the city that would incorporate them in 1854. Owners and workers at soap factories, breweries, stables, and various other ventures used the water for their work. The ability of certain suburbs or people to get their own water signaled their growing ability to distance themselves from those below them, a critical juncture in forming class identity in nineteenth-century America. While the Watering Committee centralized its control of city finance and politics, nearly all of Philadelphia's residents gained something by the waterworks.

The Schuylkill Navigation also facilitated many levels of exchange. The waterway made the transport of anthracite coal to market in large quantities from the mines of northeastern Pennsylvania economically feasible. For Philadelphians, the coal brought a better source of heat for metalworking, for steam engines, and for heating homes. The flood of anthracite catalyzed Philadelphia's development into a national center for the manufacture of steam

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<sup>95</sup>This is roughly the same phenomena as the current trend of municipally funded stadia for professional sports teams: residents have the pride of living in a city with a professional team that has national exposure, in exchange for millions of tax dollars, essentially subsidizing the franchise, while at the same time contributing to the concentration of capital in both the city and the team ownership.



engines and heavy machinery.<sup>96</sup> Just as important, transportation improvements such as the Schuylkill Navigation significantly reduced the cost of intra-regional transport, thus allowing the localized specialization that boosted efficiency and provided an engine for the area's economic expansion in the first half of the nineteenth century.<sup>97</sup>

The Schuylkill Navigation brought ways to distribute a greater quantity of goods into the hinterland, spurring commerce and market production all along the Schuylkill. Here again, the company's control of the economy was complemented by increased general prosperity. Towns such as Reading, Schuylkill Haven, Mt. Carbon, and Pottsville experienced great growth. Such gains could be wonderful, such as the joy of eating fresh sea bass 100 miles inland, "which had such an effect upon the visages of our mountaineers that it would have been a fit subject for the pencil of a Hogarth to imitate," or troubling, as many people found the "progress" that came with the navigation ambivalent at best. The work of Paul E. Johnson, Mary Ryan, and Carol Sheriff on the Erie Canal and the people who lived by it during this period testify to the unsettling nature of the emerging market.<sup>98</sup> However, all of them demonstrated the countless ways that area residents took advantage of the access to markets to

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<sup>96</sup>Alfred D. Chandler, Jr., "Anthracite Coal and the Beginnings of the Industrial Revolution in the United States," *Business History Review* 46 (Summer 1972): 141-181.

<sup>97</sup>This is one of the central points of Lindstrom, *Economic Development*. For a summary of this argument, see Diane Lindstrom, "American Economic Growth before 1840: New Evidence and New Directions," *Journal of Economic History* 39 (March 1979), 289-301.

<sup>98</sup>Pottsville *Miner's Journal*, October 3, 1829, as quoted in J. Bennett Nolan, *The Schuylkill* (New Brunswick: Rutgers University Press, 1951), 29. For the ambiguous meanings and social upheaval associated with "progress," see Paul E. Johnson, *A Shopkeepers' Millennium: Society and Revivals in Rochester, New York, 1815-1837* (New York: Hill and Wang, 1978); Mary P. Ryan, *Cradle of the Middle Class: The Family in Oneida County, New York, 1790-1865* (New York: Cambridge University Press, 1981); Carol Sheriff, *The Artificial River: The Erie Canal and the Paradox of Progress, 1817-1862* (New York: Hill and Wang, 1996).

carve their niche in society. As each of these authors in some way showed, the ability to participate successfully in the market gave many the opportunity to distance themselves from other social groups. Economic historian Joel Mokyr has argued that, while technology's various uses have been the source of much anguish and destruction, in total its use has resulted in a higher standard of living for almost everyone, a rising tide that has lifted all boats.<sup>99</sup> In early nineteenth-century America, use of nexus technologies allowed workers in the market economy to become less beholden politically to local patrons, by taking advantage of the quick transportation along the river to turn their own labor into a marketable commodity. In exchange, the Schuylkill Navigation Company not only collected tolls but also subtly exercised great influence over regional development.

In short, a great number of people exploited the waterworks and the canal to establish a distance from workers, while both groups used such technologies to help themselves break free of the political and social power of the rich local merchants. The bonus for the proprietors of such ventures, beyond their profits, was the ability to engage those who made the exchange in a growing cycle of even more subtle, and yet in other ways more profound, dependence. Owners used nexus technologies to project power across space on a scale far greater than their gentry predecessors. Some forms of power were diffused toward the many, while others were concentrated by the few.

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<sup>99</sup>See Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (New York: Oxford University Press, 1990).

By the late 1820s, one would have great difficulties trying to hear the Schuylkill in Philadelphia, even standing on its banks. If for some reason the busy wharves and warehouses built in conjunction with the great traffic up and down the navigation were quiet and no children or grownups were playing or shouting along the park by the waterworks, one still could not listen to its roar: the falls had been rendered forever silent. Beginning with Josiah White's dam in 1811, and continuing with Schuylkill Navigation's constant improvements and the Watering Committee's Fairmount dam, the lower Schuylkill had been transformed into a series of slow-moving pools, and the falls were no more. Only a few rocks showed above the water to mark their demise. Philadelphians had subdued the rage of the river; now it only boiled when heated for tea by coal that had been shipped down it. The men who had harnessed the river, however, had used the technologies involved for less trivial matters: to remake power in the early republic. During the same period, other Philadelphians were using their indirect dividends of the waterworks and the Schuylkill navigation to distinguish themselves from each other and to create lifestyles and rituals that projected their own identities and interests.<sup>100</sup> Nexus technologies acted as one of the lenses of that transformation, spreading power in one direction while focusing it in the other. But for people to control technologies, they had to find ways to pay for them. The use and role of money will be the subject of the next chapter.

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<sup>100</sup>Perhaps it is no coincidence that two of the best studies of middle class formation during this period, Paul E. Johnson's *A Shopkeeper's Millennium* and Mary Ryan's *Cradle of the Middle Class* both examine communities along the greatest of nexus technologies, the Erie Canal.

## Consolidating Finance

In 1790, Philadelphia had inadequate transportation to its growing hinterland, no centralized water supply system, and no institutional methods for financing the necessary improvements. Over the next four decades, the general public paid little in cash up front for expensive technologies that fostered Philadelphia's growth and reaped the rewards in terms of greater economic opportunities, but later paid dearly in tolls and water rents and even more in terms of lost control over some of the most important institutions governing the city's economic future. Corporations at first struggled to make ends meet. America's first major turnpike corporation, the Philadelphia and Lancaster Turnpike Company, begun in 1792, would have a mediocre financial record, but one much better than the failed Delaware and Schuylkill Canal Company and Schuylkill and Susquehanna Canal Navigation Company projects of the 1790s. The city corporation struggled mightily to pay for its first waterworks at the turn of the century, shouldering big debts in the process. But by the late 1820s, the Fairmount waterworks profitably supplied fresh water to both city and suburban residents, while various artificial waterways—the Schuylkill navigation, the Lehigh navigation, and the Union Canal—provided efficient transportation for coal, produce, and manufactured goods for the entire Philadelphia region, as well as returns for their stockholders. Meanwhile, through the clever use of a sinking fund, the City Councils found a way to eliminate risk for investors while insulating council financial decisions from the political process. As vital as such technologies were to Philadelphia residents, financial control over the institutions that administered these technologies came to rest in a few hands, only nominally

subject to the electorate in the case of the waterworks and not at all for inland navigations

In the 1790s, the first efforts at public improvements in the Philadelphia region—turnpike, bridge, and canal companies—raised money the same way as their British predecessors had. A group of local prominent men announced a public meeting, often at a tavern or county courthouse, to discuss a proposed improvement. The attendees then nominated a committee to look into possible routes and estimate general costs; expenses at this point usually were paid through a small collection from meeting attendees, generally a few dollars each. When the committee made its favorable report at a subsequent meeting, attendees nominated a prospective board of managers responsible for petitioning the state legislature for incorporation and for administering the new company. They also appointed commissioners responsible for canvassing the area for investment subscriptions.<sup>1</sup> Once the legislature passed the charter—a fairly routine proposition for turnpikes and river navigations, but often a more difficult one for canals because of haggling over routes—the board of managers and the commissioners set to work.

Subscription was the most typical form of soliciting investment in the early republic: individuals gave a low deposit—usually five or ten dollars—signed an agreement with the company to pay additional installments. Some companies set a particular schedule for subsequent payments, many called for payments whenever the company needed additional funds, while still others practiced a

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<sup>1</sup>This way of associating and raising funds was fairly typical in the Anglo-Atlantic world, being nearly identical to British canal company organization methods as well as the methods of prominent American

combination of the two. Raising money through subscriptions proved popular because it did not require investors to put up much money initially in projects that were not likely to deliver a return in the near future (or, as was the norm with internal improvements, ever); nor did it require sending in a large sum at any one time. Furthermore, despite a legal obligation to pay the company in full, subscribers always had the option of not fulfilling their contract. Subscriptions potentially appealed both to the money-savvy and to a broader swath of the population.

Unfortunately for early canal companies, the subscription system often failed to raise the requisite capital. Investors let their subscriptions lapse for a variety of reasons that could range from personal, family, or business financial straits to a growing, well-warranted lack of confidence in the completion of the projects. Corporate charters did hold subscribers legally responsible for subsequent calls for capital, but company officials eventually had trouble collecting from even the most patient investors. Although companies did have the right to sue their subscribers for nonpayment, the cost and trouble of doing so did not justify the effort, and such action might alienate potential new investors.<sup>2</sup>

The need for subscriptions and for lotteries—yet another widespread and typically unreliable method for raising canal and turnpike company funds—

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manufacturing societies. See George Heberton Evans, Jr., British Corporation Finance, 1775-1850: A Study of Preference Shares (Baltimore: The Johns Hopkins University Press, 1936), 13-14.

<sup>2</sup>Company officials repeatedly tried to coax lapsed investors to complete their subscriptions offering the carrot of full shares rather than the stick of legal action; see for example Delaware and Schuylkill Navigation broadside, Secretary of the Commonwealth, Internal Improvements File, Canal and Navigation Companies, Delaware and Schuylkill Navigation, File 14, Record Group 26, Pennsylvania Department of State, Pennsylvania State Archives. Also, while the company was owed tens of thousands of dollars collectively,

persisted because even the most successful of these initial ventures were poor direct investments.<sup>3</sup> The most famous of the 1790s turnpikes, and the one that set off a turnpike-building craze throughout the nation in its first decade of operation, was the Philadelphia and Lancaster Turnpike. With an initial cost of \$465,000 and with yearly maintenance and wages costing around \$8,000, the company issued annual dividends around 2% for its first three decades except for the war years 1813-1815, when company dividends crept up to 4.5%.<sup>4</sup> Given that the contemporary standard for investment remained six percent throughout the early republican period, returns that averaged a third of that widely accepted figure did not provide the main impetus for the stampede to build turnpike roads that occurred in the years following the completion of the Philadelphia and Lancaster Turnpike. Had investors bought federal treasury bonds during the same period—considered a comparatively safe investment—they would have brought home close to six percent in profits year after year. Because the dividends on even the most traveled of turnpikes were so low, any turnpike investment, considered purely on its own, was effectively a losing proposition.<sup>5</sup>

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the court costs, lawyer's fees, and general inconvenience of collecting money from any one investor did not justify the effort to take all of them to court individually.

<sup>3</sup>For example, the Middlesex Canal, the most famous and successful of the New England internal navigation projects, was incorporated by Massachusetts in 1793. By 1819, each share had been assessed for \$740, and by the time it closed in 1853, only repaid a total of \$559.50 including all dividends and liquidation disbursements. "The canal company was a financial failure from the end of the first year of business to the day, fifty years later, when the last boat traversed its nearly abandoned works." Christopher Roberts, *The Middlesex Canal, 1793-1860* (Cambridge: Harvard University Press, 1938), 186.

<sup>4</sup>Donald C. Jackson, "Roads Most Traveled: Turnpikes in Southeastern Pennsylvania in the Early Republic," in Judith McGaw, ed., *Early American Technology: Making and Doing Things from the Colonial Era to 1850* (Chapel Hill: University of North Carolina Press, 1994), 231. Jackson argues that these dividends demonstrated the great profitability of the Lancaster turnpike; however, he does so in a vacuum, not considering that the original stockholders did not receive their dividend for several years after their first investment, and when they did, those dividends were well below the standard accepted contemporary benchmark of six percent a year.

<sup>5</sup>In 1825, one investor complained about the high costs of maintenance and calculated that since 1796, the shares had yielded an annual return of 3.69% a share, hardly the best of investments. Anonymous to Mathew Carey, March 25, 1825, Edward Carey Gardiner Papers, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Historical Society of Pennsylvania.

However, the Philadelphia and Lancaster Turnpike showed Americans that a paved toll road could cover its costs on a regular basis while significantly lowering the cost of overland transport, and that became enough to trigger a nationwide turnpike mania. Turnpike boosters rarely harbored sober, realistic expectations to get rich from the roadway. Rather, they hoped that lower transportation costs would result in better business opportunities and increased property values in the communities through which the turnpike traveled. Investment in turnpikes remained predominantly local, because it only made sense in conjunction with other local investments.

Whether early canal boosters expected to make money on their favored projects is hard to divine, but the financial struggles of the Delaware and Schuylkill Canal Company and the Schuylkill and Susquehanna Navigation Company suggest that the few optimistic investors who might have hoped for direct profits were quickly disillusioned. Chartered in early April, 1792, the Delaware and Schuylkill Canal Company had sold its full allotment of 2,000 shares by the end of May, a sign that the project held great promise. The stocks were widely distributed: 1,124 different individuals had bought in, none holding more than three shares.<sup>6</sup> First on the list were Robert Morris and John Nicholson, each signing for only one share, hardly the sort of commitment the two opportunistic financial operators and land speculators would have made had they thought the project likely to provide ample returns.<sup>7</sup> Some people doubtless

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<sup>6</sup>William Smith to Governor, May 26, 1792, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Delaware and Schuylkill Canal Navigation, No. 14, Pennsylvania Department of State, Record Group 26, Pennsylvania State Archives.

<sup>7</sup>According to its charter, individuals were allowed to buy one share on the first day of the offering, another two shares on the second day, up to three shares on the third day, and as many as available thereafter; "An Act to Enable the Governor of the this Commonwealth to incorporate a Company, for opening a Canal and



were overly optimistic about early projects: the Susquehanna and Schuylkill company shares were so popular that the company was oversubscribed, and the board had to assign shares by lottery. Susquehanna and Schuylkill shares were widely distributed too, with the vast majority of investors holding only one or two shares.<sup>8</sup> Even if no one invested large sums, at least the projects elicited investor enthusiasm.

However, difficulties in retaining an engineer, choosing routes, buying out or compensating property owners, and lining up contractors for construction plagued both companies. When the Duc de la Rouchefoucauld-Liancourt passed through Pennsylvania in April 1795 he counted only 50 men working on the Delaware and Schuylkill Canal. Observing the canal's route through hard-to-cut marble and porous sand, he saw "little chance of success."<sup>9</sup> Since the Company's charter three years before, it had managed to cut only three miles from the Norristown end and an equal distance from the southern terminus. At the same time, a decreasing number of the subscribers were willing to pay the installments on their subscriptions. The companies' directors found themselves caught in a vicious cycle: they had trouble covering construction costs because

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Water Communication between the Rivers Delaware and Schuylkill, and for other purposes therein mentioned," April 10, 1792, Acts of the Legislature of Pennsylvania, Relating to the Union Canal Company of Pennsylvania (Philadelphia: Lydia r. Bailey, 1825), 13. Even given the possibility that the project sold out in two days—thus explaining the maximum holding of three shares—the reluctance of men such as Morris and Nicholson to buy the maximum allowed suggests that they did not think that the project would be profitable. Considering their experience with the founding of Bank of North America, shares of which skyrocketed in price immediately after its initial stock sale, Morris and Nicholson most likely believed that the canal would not be a financial success.

<sup>8</sup>Report of the Commissioners Appointed to receive subscriptions to the Capital Stock for opening a Canal between the waters of the Quittapahila and Tulpehocken in the Counties of Berks and Dauphine, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Schuylkill & Susquehanna Canal & Lock Navigation Company, No. 41, Folder Pennsylvania Department of State, Record Group #26. Pennsylvania State Archives. The Quittapahila and Tulpehocken are tributaries of the Susquehanna and Schuylkill, respectively.

subscribers did not pay installments, and subscribers did not want to make payments on projects that did not make adequate progress.<sup>10</sup> The companies' Boards of Managers repeatedly warned that "suits will be commenced... [against] every person in solvent circumstances... indebted to this Corporation," but never they made good on the threats when subscribers were concerned.<sup>11</sup> By 1810, over two thirds of the subscriptions of the Delaware and Schuylkill and the Susquehanna and Schuylkill companies had reverted back to the company because of non-payment.<sup>12</sup> Few investors were faithful or optimistic enough to continue throwing away good money after bad.

Desperate to rescue their failing projects and unable to procure money from subscribers, the companies turned to the Pennsylvania General Assembly for help, asking the state government for a privilege typically granted to cash-strapped organizations: the authorization to conduct lotteries.<sup>13</sup> On May 14, 1795, the canal companies successfully lobbied the General Assembly for a lottery to raise \$400,000. The legislature also granted them exclusive lottery

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<sup>9</sup>François Alexandre Frederic, Duc de La Rouchefoucauld-Liancourt. Travels Through the United States of North America, The Country of the Iroquois, and Upper Canada, in the Years 1795, 1796, and 1797; With an Authentic Account of Lower Canada (London: R. Phillips, 1799).

<sup>10</sup>New York State's Western Inland Lock Company, a predecessor to the Erie Canal, suffered a similar fate in its struggles with subscription default; see Nathan Miller, "Private Enterprise in Inland Navigation: The Mohawk Route Prior to the Erie Canal," *New York History* 31, 398-413

<sup>11</sup>December 12, 1798, Series II, Subseries 2, Delaware & Schuylkill Navigation Company, Board of Managers Minutes, Reading Company Collection, Accession 1520, Hagley Museum and Library.

<sup>12</sup>Delaware and Schuylkill Canal Navigation, and Schuylkill and Susquehanna Navigation [ledgers for 1810], Society Miscellaneous Collection, Historical Society of Pennsylvania. Of the original 1,000 subscriptions to the Susquehanna and Schuylkill Navigation Company, 867 had been forfeited; the Delaware and Schuylkill Canal Navigation Company fared slightly better, with 464 out of the original 1,000 subscriptions totally paid in.

<sup>13</sup>See Irma A. Watts, "Pennsylvania Lotteries of Other Days," *Pennsylvania History* 2 (Winter 1935), 40-53. The Massachusetts state legislature also authorized lotteries frequently; see Oscar Handlin and Mary Flug Handlin, Commonwealth: A Study of the Role of Government in the American Economy (Cambridge: Harvard University Press, 1947), 68-70. Maryland, too, authorized lotteries to aid internal improvements; see William J. Duane, Letters, Addressed to the People of Pennsylvania Respecting the Internal Improvement, of the Commonwealth: By Means of Roads and Canals (Philadelphia: Jane Aitken, 1811), 110; as did New Jersey, see Harry B. Weiss and Grace M. Weiss, The Early Lotteries of New Jersey (Trenton: Past Times Press, 1966).

rights in Pennsylvania in the hopes that, without competition, the canal companies would be able to sell their tickets easily.<sup>14</sup> The lottery offered substantial prizes in cash and in company stock, with the grand prize valued at \$100,000.<sup>15</sup> Unfortunately, the companies' efforts to raise money through state-sponsored lotteries became as frustrating and as disappointing as their subscription travails. Competing with several out-of-state lotteries, the Company had trouble finding ticket buyers. Also, despite initial promises from the General Assembly of an exclusive franchise, legislators could not resist the pleas of countless other organizations such as bridge companies, religious congregations, and libraries to conduct their own lotteries. For legislators, authorizing lotteries was an easy political decision: they could show concern for their constituents by pressing for lotteries to build schools, churches, and hospitals while not having to raise taxes a dime.<sup>16</sup> Such legislative generosity resulted in stiff local competition for the legal gambling dollar, especially for the canal companies. Their difficulties in selling tickets, however, did not exempt companies from having to award the promised prizes. They got embroiled in several lawsuits over disputed prize payments, proceedings that diverted the companies' money and attention away from construction.<sup>17</sup> Editor and pamphleteer William Duane later suggested that the companies netted only \$50,000 in their lotteries, although George Paleske, a booster and insider

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<sup>14</sup>Gertrude MacKinney, ed. Executive Minutes of the Governors, vol. 4. Pennsylvania Chronicles, no. 9 (Harrisburg: State of Pennsylvania, 1931), 979-980.

<sup>15</sup>"Plan for Lottery," April 27, 1795, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Schuylkill & Susquehanna Canal & Lock Navigation Company, No. 41, Folder 2, Department of State, Pennsylvania State Archives.

<sup>16</sup>"Memorial to the Senate and House of Representatives of the Commonwealth of Pennsylvania, by the President, Mannagers [sic] and Company of the Schuylkill and Susquehanna Navigation," Society Miscellaneous Collection, Historical Society of Pennsylvania.

perhaps more familiar with company finances, argued that “the lotteries heretofore granted to the canal companies, have actually involved them in debt.”<sup>18</sup> Lotteries, then, did not provide a viable solution for the financial woes of inland navigation companies.

Canal company boardmembers may have made quiet inquiries to potentially sympathetic legislators, but neither company effected a wholehearted campaign to gain direct funding from the biggest potential source of funding, the state of Pennsylvania. They did, however, try to get the legislature to grant them a percentage of the duties placed on certain auctions in Philadelphia. The auctions in question were most likely the ones used to liquidate large lots of manufactured goods imported from Britain. In the decades following the American Revolution, British manufacturers often flooded United States ports with products for which they could not get a good price in Britain in an attempt to alleviate problems of overproduction and to secure the American market. The most active canal boosters chose to push duties on auctions as their source of state-sponsored funding out of shrewd political calculation. Although state revenues would be going to a project that primarily benefited the Philadelphia region, the tax would be levied only in Philadelphia. Philadelphia manufacturers and tradesmen would not object to the tax because it would effectively raise the final price to the consumer for their overseas competitors’ goods, and local

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<sup>17</sup>Delaware and Schuylkill Canal Navigation, and Schuylkill and Susquehanna Navigation [ledgers for 1810], Box 4-b (mss., 1810), Society Miscellaneous Collection, Historical Society of Pennsylvania.

<sup>18</sup>William J. Duane, Letters, Addressed to the People of Pennsylvania Respecting the Internal Improvement, of the Commonwealth; By Means of Roads and Canals (Philadelphia: Jane Aitken, 1811), 69; Charles G. Paleske, Observations on the Application for a Law to Incorporate “The Union Canal Company” Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania (Philadelphia: Duane, 1808), 6. Nonetheless, Paleske advocated a lottery for the Union Canal Company on the condition that the state grant the company exclusive lottery rights.

Philadelphia merchants already grumbled that low auction prices allowed British merchants to undersell them. The duties would provide a steady annual income that would not come out of the General Assembly's main budget and therefore would not visibly threaten the pet projects of other regions and interests.<sup>19</sup>

Nonetheless, the legislature never did grant the duty on auctions to the canal companies. Central and western representatives were reluctant to support any initiative for eastern and especially Philadelphian interests, as they showed when they insisted upon moving the state capital from the Quaker City to Lancaster and eventually to Harrisburg. They may also have opposed the duty as they did federal tariffs on imported goods because of the consequent rise in prices and the danger of trade retaliation against American grain exports. The General Assembly rejected the companies' request for tax-supported funding, and by 1796 work on both the Delaware and Schuylkill Canal and the Susquehanna and Schuylkill Canal had come to a halt. The companies might have been able to overcome either their technical obstacles or their financial difficulties, but the two sets of problems combined proved insuperable. Furthermore, in keeping with its policies regarding business corporations, the state did not step in to rescue these struggling companies.<sup>20</sup> Not until after the War of 1812 would an internal navigation company successfully raise enough money to complete construction; meanwhile, the City Corporation of Philadelphia had money problems of its own.

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<sup>19</sup>The end result would still be that the state would take in less revenue; however, this way the canals' money would not be subjected to the annual budgeting and appropriations process, a notoriously unreliable source of funds in early republican Pennsylvania.

<sup>20</sup> See Chapter 6 for an analysis of state-corporate relations.

Despite overwhelming public support for a better supply of fresh water, the city government struggled mightily to finance the waterworks. Because of the yellow fever epidemics of 1793, 1797, and 1798, the City Councils certainly had a mandate to spend some public money to improve the city's water supply; indeed, one Joint Council report argued that yellow fever "rendered a copious supply of more wholesome water, in the estimation of many, indispensable to the health and preservation of the city."<sup>21</sup> However, even then, council members, politicians that they were, wanted to avoid large tax-hikes. In 1799, the total city budget amounted to \$72,397.18, of which \$56,000 was to come from tax revenue and the remainder from fixed-income sources such as rental of corporate properties, licensing fees, and fines.<sup>22</sup> Meanwhile, each of the Delaware and Schuylkill Canal Company's proposals would cost the city up to several hundred thousand dollars.<sup>23</sup> Even the Latrobe plan that the City Councils finally selected carried an original estimated price tag of \$150,000, all hopefully to be spent on construction in the space of one year.<sup>24</sup> To raise that sort of money through local taxes would mean nearly quadrupling them, a politically unfeasible solution.

From their initial negotiations with the Delaware and Schuylkill Canal Company through their construction of the works at Fairmount in 1819, the

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<sup>21</sup>Report to the Select and Common Councils on the Progress and State of the Water Works on the 24th of November, 1799 (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>22</sup>An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799 (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>23</sup>The City Corporation and the Delaware and Schuylkill Canal Company negotiated for much of 1798 and 1799, to no avail. The canal company offered, at various junctures, to sell the entire stock to the city at first cost (meaning that the city would pay for the company's mistakes) and for the city to pay annual rent or make a one-time payment for the water at fairly exorbitant rates. See January 31, 1799, Series II, Subseries 2, Delaware & Schuylkill Navigation Company, Board of Managers Minutes, Accession 1520, Reading Company Collection, Hagley Museum and Library.

<sup>24</sup>February 17, 1799, Select Council Minutes, October 14, 1796- April 14, 1799, Philadelphia City Archives.

Councils attempted to raise money in other ways besides taxing the electorate. The timeless, universally preferred form of budget management is to find a way to spend someone else's money with no strings attached, and indeed, the Philadelphia Corporation certainly tried its best to do so. While the boards of business corporations worried constantly about the strings associated with state aid, the city government could reasonably expect that financial help from the statehouse would not come with conditions of unwonted state interference in city affairs. With hope in their hearts, in 1797 the City Councils appealed to the General Assembly for direct aid. Not surprisingly, no funds were forthcoming from a legislature that had recently relocated Pennsylvania's seat of government away from Philadelphia because of sectional jealousy and general rural uneasiness with the big city. The General Assembly also rejected the city corporation's pleas for another politically painless solution (from local politicians' point of view, that is), the right to receive taxes on all auctions taking place in the city, the revenue from which currently went into state coffers.<sup>25</sup> Given the canal companies' fiascoes, the City Councils could easily rule out the possibility of state-sanctioned lotteries as an effective fund-raiser. The Corporation of Philadelphia was forced to look for new methods to gather enough capital to build its waterworks.

Just as business corporations took their institutional structure and fund-raising schemes from British precedents, the Corporation of Philadelphia took advantage of British experience with water-supply companies. London-born

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<sup>25</sup>The legislature had just spurned a request from the City Corporation to grant auction duties to contribute to the construction of a bridge across the Schuylkill, too. December 4, 1797, Select Council Minutes, October 14, 1796- April 14, 1799, Philadelphia City Archives.

Benjamin Henry Latrobe's plan to use steam engines to pump Schuylkill water to the city came as a godsend to the Philadelphia's Councils for reasons beyond the frustration with the Delaware and Schuylkill Canal Company. Use of the canal for water supply would have entailed a system of open access: residents would have gotten their water either directly from the canal or from smaller branches that ran down gutters through streets in the various neighborhoods. The water would have been there for the taking, free for every resident. Because Latrobe's design called for a closed system, the city could charge for access to the water. Latrobe took his inspiration from London water-supply companies, which had been constructed with the intention both to supply water and to provide return on investment.<sup>26</sup> From a financial point of view, Latrobe's underground distribution system held a great advantage over the canal system because the water would be distributed in pipes that had to be tapped by city-authorized workmen for private connections to residences or businesses. The city government could hope to gain substantial revenue by charging businesses and residents for "water rent." Not only would such a system arguably be more fair than the canal in that those who used the water would pay for it, but also the city could charge extra to those businesses such as breweries, inns, tanneries, and soapboilers that were particularly water-intensive. The British engineer suggested the installation of public hydrants on the streets, offering the free public access to "the poorer inhabitants" that would make the plan easier to sell

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<sup>26</sup>See Benjamin Henry Latrobe, View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water in a Letter to John Miller, Esquire from B. Henry Latrobe, Engineer. December 29, 1798 (Philadelphia: Zachariah Poulson, Jr., 1799); also see "Philadelphia Waterworks, Editorial Note" in John C. Van Home and Lee W. Formwalt, ed. Correspondence and Miscellaneous Papers of Benjamin Henry Latrobe, vol. 1, 1784-1804 (New Haven: Yale University Press, 1984), 109-110.



politically across class lines.<sup>27</sup> He also optimistically pointed out that if the owners of two-thirds of the approximately 6,000 houses in the city paid \$10 each annually, the resulting \$40,000 in revenue would pay the interest for a loan of up to \$666,666.66, far more than the projected bill for building the system. Such grand revenues would be sufficient to cover interest on the initial construction and an estimated annual \$6,000 in costs for the steam engines.<sup>28</sup> Latrobe's proposal, then, carried the possibility of offsetting its considerable estimated annual costs for fuel and labor by having its own revenue stream from private domestic users and intensive industrial customers while affording everyone access to the public water.

Despite these rosy estimates for future solvency, the city corporation could not collect water rents until it had built the waterworks, requiring a considerable expenditure up front. Not wanting to risk further epidemics, the city councils decided to proceed alone rather than wait for money from the statehouse. Instead of raising taxes, the City Councils first resorted to the fundraising method that had met with such success for the federal government: the issuance of interest-bearing bonds. The Councils used Latrobe's estimate of \$150,000 for the completion of the waterworks, proposing to sell up to 1,500 bonds, each for \$100. They would be sold as subscriptions: the buyer was to pay \$10 at the time of subscription, and \$30 in each of three subsequent payments scheduled over the subsequent six months. Once paid up, subscribers received six percent annual interest in semiannual payments, in other words, two payments a year of three dollars each. In addition, the

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<sup>27</sup>Latrobe, View of the Practicability.

subscriber's house would be hooked up to the city water for three years free of the usual five-dollar annual charge, increasing the bond's annual yield for the first three years to a substantial eleven percent.<sup>29</sup> That impressive interest rate, the council members hoped, would be more than enough to attract significant investment.

They were wrong. The city's unsuccessful attempts to fill all, or even most, of the 1,500 subscriptions demonstrated the novelty and fragility of complex municipal finance in the early republic. The City Councils employed the same methods as did the canal companies: they appointed a group of respected and responsible men to serve as commissioners who would supervise the subscription books and solicit investment among their neighbors and business associates. These men were chosen because they were influential in the merchant community and familiar with—and trusted by—the people most likely to have funds to invest. However, they only managed to sell around \$73,000 of the \$150,000 dollar issue.<sup>30</sup> They partly blamed the weather: the weeks following the passage of the ordinance had been cold and snowy, preventing the commissioners from making the rounds in their neighborhoods as thoroughly as they had hoped. Still, between appeals to the financial community—bankers and insurance company insiders—and door-to-door canvasses, the city's seemingly attractive offer fell short. The city's biggest obstacle was its inefficiency in tax collection. Federal bonds sold well because investors had confidence in the

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<sup>28</sup>Latrobe, View of the Practicability.

<sup>29</sup>An Ordinance Providing for the Raising of a Sum of Money, on Loan, for Supplying the City of Philadelphia with Wholesome Water," February 7, 1799, An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799 (Philadelphia: Zachariah Poulson, Jr., 1799), 3.

national government's ability to collect taxes and so felt assured that the government would have the necessary cash flow to pay interest on the bonds. However, the yellow fever epidemics had coincided with local summertime tax collection efforts, and the city corporation had encountered great difficulties collecting its entire assessments during the 1790s.<sup>31</sup> After 1805, with an overhaul of the tax-collection system and an alleviation of the summertime scourges, the city's revenue became more solid, but in 1801 such prospects provided no consolation.

For the city to sell these long-term bonds—the first issue actually had no stated maturation date at all—the Councils had to come up with a way of paying down the debt or at least of paying the interest into the indefinite future. In 1807, after struggling to fill out their third bond issue, they turned to a financial device that was first suggested nearly a decade before, had been all the rage in British financial circles from the 1760s on, and became popular in the United States in the 1790s: the sinking fund.<sup>32</sup> The city corporation would contribute a given amount every year into an account set aside specifically to pay off the debt; this sum would be an appropriation in the annual budget just like those for salaries,

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<sup>30</sup> August 1, 1799, Common Council Minutes, vol. 2. February 18, 1799- January 13, 1803. (mss.), Philadelphia City Archives.

<sup>31</sup> In the ordinance authorizing the bonds, the Councils admitted that "though there is reason to hope a liberal aid will be granted by the legislature, towards enabling the city to complete this important work... the speedy accomplishment thereof appears to require the immediate exertions and resources of the citizens of Philadelphia." Clearly, given that they had unsuccessfully appealed for state money before with the lobbying assistance of the Delaware and Schuylkill Canal Company, the chance that they would get any money over the Company's objections was slim indeed. However, the Councils hoped that invoking the General Legislature would give potential investors confidence that the state might back the city's ability to make good on its loans. An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799 (Philadelphia: Zachariah Poulson, Jr., 1799), 3.

<sup>32</sup> The use of a "sinking fund" is now generally referred to as "funded debt." The city had first considered starting one to pay for shares in the Delaware and Schuylkill Canal Company in exchange for watering the city; see Report of the Joint Committee of the Select and Common Councils, on the Subject of Bringing Water to the City (Philadelphia: Zachariah Poulson, Jr., 1798). Also see Donald F. Swanson and Andrew

paving the streets, and fuel for public buildings. The money in the fund could then be used in several non-exclusive ways, including paying off current interest, gaining returns through investment in state or federal bonds, or buying back city bonds until the corporation owned them all, at which point the debt could be retired.<sup>33</sup> The City Councils quickly found that the very existence of a sinking fund gave potential bondholders much greater confidence in the corporation's ability to redeem bond issues. Prudent administration of the sinking fund could also give the city the financial security to attract investment in city bonds and to pay off city debts.

The City Councils established the corporation's sinking fund in 1807. From then on, the corporation had little trouble selling the bonds, sometimes even above par value in the early 1820s.<sup>34</sup> Declaring their intent that "the reduction and payment of the debt due from the city of Philadelphia should be effected as speedily as circumstances will permit," the Councils passed an ordinance allocating \$5,000 a year from the income of the corporate estates—city-owned buildings, wharves, market-space, and real estate leased on an annual basis—to be put in a "sinking fund," to be applied to the purchase and redemption of the several species of stock, constituting the funded debt of the

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P. Trout, "Alexander Hamilton's Hidden Sinking Fund," *William & Mary Quarterly* 3d.Ser., 49 (Jan. 1992), 108-116 for the popularity in sinking funds in Britain and America.

<sup>33</sup>An Ordinance for the Reduction and Payment of the Funded Debt of the City," March 26, 1807, John C. Lower, ed., Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 212-214.

<sup>34</sup>From 1821 to early 1822, demand for bonds was so high that the city even managed to refinance much of its outstanding debt at 6% rather than 5%. See Ordinances of the Corporation of the City of Philadelphia, Passed Since the Third Day of August, One Thousand Eight Hundred and Twenty (Philadelphia: City Councils, 1822), 168-169; Ordinances of the Corporation of the City of Philadelphia, Passed Since the Twenty-Seventh Day of December, One Thousand Eight Hundred and Twenty-One (Philadelphia: City Councils, 1823), 209-210, 221.

city.”<sup>35</sup> At first the money in the sinking fund could only be invested in federal bonds, although the Councils later relaxed that requirement to allow the fund managers to buy stock in local internal improvements, thereby investing in the community at the same time as paying down the debt. Councils increased the annual appropriation from the corporate estates to the sinking fund to \$7,000 in 1811 and then to \$8,000 in 1816.<sup>36</sup> Once the annual operations of the waterworks exceeded routine costs, the Councils began to set \$4,000 aside every year from the water rents, increasing that amount to \$10,000 and eventually to \$14,000.<sup>37</sup> From time to time the Councils added stock from investments in local projects such as the Schuylkill Permanent Bridge Company and the Schuylkill Navigation Company as well as premiums (that is, any amount paid above par) on the sale of bonds. When interest rates temporarily fell slightly in the early 1820s, the city consolidated much of its debt by selling a total of \$535,000 in bonds at five percent annual interest to pay off earlier debts

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On other occasions, the city sold bonds above par and put the premiums into the sinking fund, for example for the loans of 1819 and 1820. See Accounts of the Corporation of the City of Philadelphia from the first of April, 1819, to the first of April, 1823 (Philadelphia: the Councils, 1823).

<sup>35</sup>John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 212-214.

Hendrik Hartog, in Public Property and Private Power: The Corporation of the City of New York in American Law, 1730-1870 (Chapel Hill: University of North Carolina Press, 1983), argues that New York City was typical of municipal corporations at the turn of the nineteenth century in its selling of corporation-owned lands as a policy of keeping as much property as possible in private rather than public hands. However, he also admits that the New York City Corporation had trouble collecting rent and could not be sure in its legal authority from the state to collect taxes, either, and so the selling of property was a rational way for the city to raise money. Because Philadelphia had the legal authority to collect taxes, and had no problem collecting rents, it held on to and even enlarged its corporate property in this period, buying the old statehouse (Independence Hall) and collecting rent on it.

<sup>36</sup>John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 212-214, 239-240; Ordinances of the Corporation of the City of Philadelphia; Passed Since the Fourteenth Day of September, One Thousand Eight Hundred and Fifteen (Philadelphia: City Councils, 1817), 69-71.

<sup>37</sup>Ordinances of the Corporation of the City of Philadelphia. Passed Since the Sixteenth of July, One Thousand Eight Hundred and Seventeen (Philadelphia: City Councils, 1819), 117-118, 126-128; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Third Day of August, One Thousand Eight Hundred and Twenty (Philadelphia: City Councils, 1822), 171-172.

contracted at six percent.<sup>38</sup> The fund grew accordingly from its modest establishment in 1807 to one of the largest single pools of assets in the Philadelphia area by the late 1820s, reaching a value of \$383,266.88 by March of 1830.<sup>39</sup>

The use of a sinking fund revealed two assumptions on the part of the men who ran Philadelphia's City Councils. The first was that the Councils would have the political discipline to make significant appropriations to the fund on a regular basis while not raiding it for purposes other than debt reduction. This assumption held true. From its inception in 1807 through 1830, every disbursement made from the sinking fund went either to the purchase of financial instruments for the purpose of income or towards the acquisition of city bonds to retire the debt. The second assumption behind the sinking fund was that the corporation's revenue base would continue to increase at a rate that equaled or exceeded the growth in the corporation's routine costs. In other words, as long as the city grew faster than the cost of governing it did, the Councils could afford to pay off the interest on their loans without resorting to higher taxes with potentially adverse economic (and electoral) effects. As early as 1807, a City Council subcommittee argued against higher taxes, claiming that the increased tax burden resulting from the cost of the waterworks had been "very injurious by lowering the value of real estates, and discouraging improvements." The subcommittee believed that loans to be paid off by future revenue made more

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<sup>38</sup>Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Second Day of April, One Thousand Eight Hundred and Nineteen (Philadelphia: City Councils, 1821), 158-159; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Third Day of August, One Thousand Eight Hundred and Twenty (Philadelphia: City Councils, 1822), 164-165; Accounts of the Corporation of the City of Philadelphia from the first of April, 1819, to the first of April, 1823 (Philadelphia: the Councils, 1823).

sense because “the benefits arising from the water works are of a permanent nature, and the income from that source likely to increase.” The committee suggested that the most “expedient” course would be “to raise by tax no more than the sum necessary for the usual expences of the year, and that the moneys necessary to pay for...permanent improvements, ought to be borrowed.”<sup>40</sup> Here, too, the Councils proved prescient: Philadelphia’s economy and its waterworks revenue expanded fast enough to accommodate the cost of government and government services without necessitating significant tax hikes. For these reasons, the sinking fund did become an efficient tool in the City Councils’ finances.

Despite their discipline in refraining from raiding the sinking fund directly for routine costs, the City Councils did use the sinking fund and the city budget in creative ways to lessen the immediate tax burden and to pay for potentially controversial projects. Because the city now had a fund expressly dedicated to eradicating debt, investors proved much more willing to buy city bonds: they knew that their money would be on a safe footing and likely to be repaid. The success of the sinking fund device to liquidate debt and to assure potential bond buyers of the security of their investment offered unexpected flexibility to the Councils in dealing with cost overruns and other costly contingencies. After the sinking fund’s establishment, the Councils routinely took out loans for capital projects and for budgetary overruns on annual appropriations: between 1807 and

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<sup>39</sup>March 1, 1830, Philadelphia City Councils, Committee on the Sinking Fund, Minutes 1824-1834, Series 120.32, Philadelphia City Archives.

<sup>40</sup>Committee of Ways and Means Report for Appropriations for 1807, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Seven (Philadelphia: [Jane Aitken?], 1806), 3.

1811, the Councils authorized six loans for enlarging markets, improving streets, and building sewers and another three loans for making up budgetary shortfalls.<sup>41</sup> The pattern continued: \$20,000 to prepare for the defense of the city in 1813, \$25,000 to make up for shortfalls in 1813 and 1815, \$70,000 in 1816 to buy the old statehouse (Independence Hall) from the Pennsylvania state government, and \$12,000 for the construction of a culvert in 1817.<sup>42</sup> The City Councils also issued bonds to fund improvements to the waterworks. To expand the pipe distribution system, the Councils authorized another \$70,000 in bond issues in 1818. The following year the city began its efforts to expand the waterworks at Fairmount, giving Josiah White and Joseph Gillingham \$150,000 in city bonds in exchange for land and water rights at the Falls (in addition to issuing bonds worth the \$200,000 earmarked for construction). White interpreted the bonds-for-land swap to be politically possible specifically because of the use of bonds rather than tax moneys: incumbents could point to their acquisition of lands to expand the waterworks while holding down taxes.<sup>43</sup>

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<sup>41</sup>"Supplement to the Ordinance Entitled 'An Ordinance for the Reduction and Payment of the Funded Debt of the City,'" February 28, 1811; John C. Lowber, Ordinances of the Corporation of the City of Philadelphia: to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 239-240.

<sup>42</sup>"Ordinance Authorizing the Mayor to Borrow Twenty Thousand Dollars, and to Loan the Same to the United States, for the Erection of Forts and Batteries on the Island in the River Delaware, Commonly Called the Pea Patch," June 23, 1813; "An Ordinance Authorizing the Borrowing Ten Thousand Dollars, in Anticipation of the Taxes of the Present Year," September 30, 1813; "An Ordinance Authorizing the Mayor to Borrow Money in Anticipation of the Taxes of the Present Year," June 15, 1815; Ordinances of the Corporation of the City of Philadelphia: Passed Since the Eighteenth Day of June, One Thousand Eight Hundred and Twelve (Philadelphia: Philadelphia Councils, 1815), 11, 12-13, 54; "An Ordinance Providing For the Purchase of the State House, and State House Square in the City of Philadelphia, and raising the funds to make payment therefor," April 11, 1816; "An ordinance providing for the construction of a culvert in Tenth street and Spruce street," July 14, 1817, Ordinances of the Corporation of the City of Philadelphia: Passed Since the Fourteenth Day of September, One Thousand Eight Hundred and Fifteen (Philadelphia: City Councils, 1817), 69-71.

<sup>43</sup>"Ordinance empowering the Mayor of the City to raise Money to be applied to laying down Iron Pipes of Conduit, from the Water Works at Fair Mount," December 17, 1818; "An ordinance empowering the Watering Committee to purchase from Josiah White and Joseph Gillingham their rights to the Water Power of the river Schuylkill, and also to raise money on loan for the purpose of erecting a dam and other works at or near Fair Mount," April 8, 1819; Ordinances of the Corporation of the City of Philadelphia. Passed Since



On at least one occasion, the Councils used the sinking fund to absorb directly a budgetary overrun. In late 1824, the City Councils found that the corporation needed approximately \$26,000 to provide for unexpected costs in a variety of categories and voted to authorize a bond issue for that amount.<sup>44</sup> A week later, the sinking fund committee pointed out that the fund had \$19,315.77 in cash on hand, and the committee could sell enough of its federal bonds to make up the difference to buy the entire issue, a proposal soon approved.<sup>45</sup> In this particular incident, the account for the ensuing year's tax fund was charged, meaning that the money would still have to be accounted for out of taxes somehow. However, this case is only a particularly clear example of the general purpose for which the Councils used the sinking fund: to put off indefinitely the consequences of tough financial decisions. For the members of the Common Council, who were up for reelection annually, postponing budgetary crises essentially meant avoiding them altogether because the sitting council would not be blamed for problems inherited from the previous session. The loss of a council seat because of budget problems was not an idle threat: in 1802, Democrats swept the incumbent Federalists out of the Councils largely by blaming the officeholders for cost overruns on the waterworks and the taxes that those extra expenditures necessitated. Wise use of the sinking fund gave the City Councils the wherewithal to spend tomorrow's money today rather than raise taxes, relieving politicians on the Council of the politically heavy burdens of

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the Sixteenth of July, One Thousand Eight Hundred and Seventeen (Philadelphia: City Councils, 1819); Morton, Josiah White, 100.

<sup>44</sup>"Ordinance to Provide for the extraordinary expenses incurred during the present year," November 5, 1824, Ordinances of the Corporation of the City of Philadelphia. Passed Since the Eighth Day of January, One Thousand Eight Hundred and Twenty-Four (Philadelphia: City Councils, 1825), 275

unpopular tax hikes or cuts in services. They could cut their revenue pie and eat it too, as long as the city brought in enough dough to bake a bigger one the following year.

The ability to float bonds either for budget overruns or for potentially unpopular projects in essence insulated the City Councils from making controversial decisions over budgeting because it allowed them to postpone cutting services, raising taxes, or answering to the electorate for particular appropriations that might be objectionable. This is not to say that the City Councils demonstrably misled the public about how much the corporation was spending or on what projects. Furthermore, manipulation of the Sinking Fund allowed the corporation a welcome flexibility to pay for unforeseen expenses and for waterworks-related construction without raising taxes significantly. However, any time the Councils felt pressure on the corporation's bottom line, they could simply issue bonds that investors willingly snapped up. The cost associated with the bonds would be transferred to the sinking fund and therefore out of the year-to-year, potentially contentious process of deciding upon appropriations. The annual appropriation to the sinking fund amounted to a discretionary fund for the Councils to build or to spend: the overruns and the building projects they funded only appeared in the annual appropriations under the rubric of the sinking fund. No one would be willing to oppose Council incumbents on a political platform suggesting that the corporation should not pay

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<sup>45</sup>November 13, 1824, Philadelphia City Councils, . Committee on the Sinking Fund, Minutes 1824-1834, Series 120.32, Philadelphia City Archives.

its bills—especially if he ever expected to get a loan from any Philadelphia-based bank, several of which held large blocks of city bonds.<sup>46</sup>

Through its flexibility and its potential for being manipulated, the sinking fund increasingly fulfilled a political role beyond that of a convenient financial device: its use allowed the City Councils to make significant financial decisions regarding the corporation in ways that limited public scrutiny of City Council policy. *Non-investing residents got something, too: the best citywide waterworks in America and low taxes, at least as long as the city grew.* Meanwhile, the sinking fund provided investors with city bonds, an extremely safe vehicle for capital appreciation.

Use of a sinking fund was only possible if private individuals were willing to buy Philadelphia municipal bonds. The Corporation of Philadelphia and all Philadelphia-area business corporations—internal improvement companies, banks, and insurance companies—competed for investment dollars from individuals and, occasionally, each other. The questions of who invested in these corporations and why are fundamentally different from those concerning the motivations for founding or controlling such institutions, although sometimes the two overlapped. Insiders who invested in banks wished both to make money from their stocks and to have access to capital for their other business dealings. Men who owned large parcels of land up the Schuylkill expected their property to appreciate because of the navigation and hoped the navigation company would turn a profit. Some Philadelphia residents wanted their homes or businesses

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<sup>46</sup>In 1817, for example, the city owed the Bank of Pennsylvania \$54,000 and the Philadelphia Bank \$59,000; Statements Submitted to the Senate, from the Pennsylvania, Philadelphia, and Farmers' and Mechanics' Banks ([Harrisburg?], 1817).

protected and counted on steady returns from their insurance company stock. Nonetheless, many people invested in city bonds or company stocks did not do so out of a commitment to local development or a desire for control over economic resources. The majority of investors bought company shares knowing that they would never become company customers, and the purchase of city bonds (after the initial discount on city water for the 1801 issue) had no direct effect on services to individuals: for most people, there was no relation between investment and services rendered.<sup>47</sup> Although a few speculators may have made a pretty penny from exploiting fluctuations in the value of bank notes, government bonds, and corporate stock, the prospect of getting rich quickly rarely formed the primary motive for investment in these firms, either. Motivations for investment varied somewhat by the kind of institution and the size of investment. For some institutions, the reasons for investment changed as the fortunes of the company waxed or waned, but in nearly all cases, investors emphasized long-term, stable returns and a desire for minimal involvement in company affairs.<sup>48</sup> Those passive investors allowed institutional officers great leeway in their administration of the organizations they financed.

City bonds and financial institution stock tended to appeal to similar investors. From the beginning, banks represented a stable investment that promised and usually delivered high dividends year after year. Boosters and bank opponents alike regarded such corporations as nearly mystical machines for multiplying investors' dollars. The basic principle by which they operated was

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<sup>47</sup>See Robert E. Wright, "Bank Ownership and Lending Patterns in New York and Pennsylvania, 1781-1831," *Business History Review* 73 (Spring 1999), 40-60.

<sup>48</sup>Wright, 48.

fairly simple: lending out a sum of money at six percent interest—the highest rate allowed by law—could lead to profits of up to six percent a year, the same as United States bonds generally paid. However, the ability to lend that same amount to three people at once could lead to much higher profits, up to eighteen percent. Banks in the early republic were able to lend out the same amount of money several times over by being allowed to issue their own currency with a face value up to four or five times the amount of specie, that is, hard money, in their vaults. In practice, banks yielded dividends considerably lower than eighteen percent a year, more often paying out profits in the seven-to-eleven percent range. A number of practical factors limited bank revenues to that level: some customers did not pay back their loans, many banks' paid-in capital was lower than their paper capital, the lending process was not completely efficient (new loans were not necessarily issued the instant old loans were paid back), and banks had ancillary costs including salary for employees, renting or owning a place of business, and the printing of banknotes.<sup>49</sup> Still, dollar for dollar, banks represented the surest bet in early republic investments.

The composition of investors and investment in early banks reflected the notion that banks would yield consistent dividends without much attention from shareholders.<sup>50</sup> In its initial stock offering in February, 1807, the Farmers and

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<sup>49</sup>In the founding of many banks, inside investors were allowed to take loans from the bank to pay for their stock shares, with the stock shares used as collateral. With no money changing hands, the insider would own stock which would net a profit because dividends would be higher than the interest rate paid on the stock. Furthermore, the insider could sell the stock; bank stock usually rose far higher than par fairly quickly. Even though a bank may have sold all its shares authorized by the charter, it did not necessarily have all its capital paid in for a long while, and in the case of some banks, ever.

<sup>50</sup>In terms of motivation for investment, Philadelphia-area banks and insurance companies mirrored other early nineteenth-century American corporate ventures. Contrary to previous interpretations suggesting that investment in Massachusetts textile corporations was triggered by lower shipping profits, Robert Dalzell convincingly demonstrated that Boston merchants, still quite successful, invested to diversify their portfolio and to provide more stable returns with greatly decreased direct involvement in management. Robert F.

Mechanics Banks attracted investment ranging from the 113 buyers acquiring three or fewer shares at a par value of \$50 to the 30 investors who put in over \$5,000 each, with a top initial holding of \$15,250.<sup>51</sup> The median holding was 10 shares, or \$500, a significant amount of money, and far more than the median in potentially risky ventures such as internal improvements. The large number of big investors suggests an impression among men of capital that the bank would be a profitable venture worthy of tying up large blocks of money for an extended period of time. Especially telling, only four of the top 30 investors were on the board, meaning that many of those men may have invested without the purpose or even expectation of getting special treatment when applying for loans.<sup>52</sup>

Without the motive of access to credit, these investors must have seen the bank as a likely vehicle for income. Their lack of participation in the board shows their willingness to have others guard a significant portion of their wealth. These investors had either made their fortune on their own or who had at least stewarded family money wisely, and so had the ability to use it in their own businesses ventures had they so chosen.<sup>53</sup> Men of capital, then, saw banks as a safe and convenient investment vehicle.<sup>54</sup>

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Dalzell, Jr., *Enterprising Elite: The Boston Associates and the World They Made* (Cambridge: Harvard University Press, 1987), 61-67.

<sup>51</sup>These statistics and the ones that follow regarding the stockholders of the Farmers and Mechanics Bank were compiled and calculated from Corporate Series, Vol. 8, Stock Ledger, Farmers and Mechanics National Bank, Accession 1658 Hagley Museum and Library .

<sup>52</sup>This analysis agrees exactly with that of Wright's interpretation of the motivation for investment in middle Atlantic state banks, as opposed to Lamoreaux's interpretation of New England banks that loaned a much higher percentage of their capital to insiders who invested because they wanted access to the banks' credit.

<sup>53</sup>According to James Willard Hurst, "the obverse of creating a firm, substantially autonomous center of direction for corporate business was assurance to investors that they had a vehicle for limiting their investments of time and energy as well as of money"; *The Legitimacy of the Business Corporation in the Law of the United States, 1780-1970* (Charlottesville: University Press of Virginia, 1970), 26.

<sup>54</sup>See Robert F. Dalzell, Jr., *Enterprising Elite: The Boston Associates and the World They Made* (Cambridge: Harvard University Press, 1987), for an account of how Boston-area merchants increasingly invested in manufacturing and banking because of their relative safety compared to mercantile activities rather than out of an expectation of higher returns.

The number and size of investments made by and for women, in trusts for children, and by charitable and social organizations also indicated that many people perceived shareholding in banks as being prudent but profitable. Because minors and, to a varying degree, some women were unable (or unwilling) to run their own businesses, investment on their behalf was generally intended to provide for a stable income over a long period without requiring business expertise or investors' time.<sup>55</sup> Some trustees were also stockholders in their own right, while others only held stock for dependents. At least one trust, consisting of 16 shares, was the property of a local Mason's Lodge. Out of the shares listed as originally issued by the Farmers and Mechanics Bank, 1,837, or 15.3% were held by women or in trust for women or minors.<sup>56</sup> The size of holdings in trust nearly exactly mirrored those of all investors: the median holding was ten shares, or \$500. Women, however, tended to own half as many shares, with a median holding of five, or \$250. Perhaps this lower figure indicates that some independent women, though having on average lower assets than men, invested for themselves, whereas wealthy men set up many of the trusts. The Farmers and Mechanics Bank clearly had a reputation as a worry-free investment.

The Farmers and Mechanics Bank did not stand alone in this regard. In 1805, the Board of Directors of the Bank of Pennsylvania proudly claimed that "the stock of the Bank of Pennsylvania has long been considered as a most

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<sup>55</sup>Possibly, some investors put shares in trust for their children or in the names of female relatives to protect assets from creditors; however, because such practices would account for a small minority of these investments and because many men likely bought shares in their own name intending to keep money safe for their legal dependents, if anything the following analysis most likely undercounts the overall percentage of stock bought for family purposes.

secure and provident fund, for the investment of the monies of widows, orphans, and benevolent associations, to whom the safety of their capital, and the punctual payment of its product are all important.”<sup>57</sup> While bank directors were not above using hyperbole for political effect—references to helpless widows and orphans are the second refuge of a scoundrel—the bank did include many women and trusts among its stockholders. The number of shares held in trust and by women strongly indicated a widespread perception that banks were a safe haven for those depending upon stable long-term gains.<sup>58</sup>

That need for steady income over the long haul, in turn, influenced the way directors ran the big Philadelphia banks.<sup>59</sup> Cashiers, under the watchful eyes of Boards of Directors, tended to value long-term safety in their loans over the ability to stretch out available capital in an effort to maximize immediate gains.<sup>60</sup> As long as the bank could provide dividends in the seven-to-nine percent range, bank officers eschewed lending out as much money as they possibly could, preferring to keep reserves against runs so as to promote confidence in the bank and to do their part to stabilize the money supply. Besides, banks could and did use excess capital to buy federal and local bonds that in effect yielded nearly as much as loans did anyway.<sup>61</sup> At the same time,

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<sup>56</sup>Of the original issue of 12,000 shares, 11,970 are accounted for in the list of original stockholders; the 1,837 are taken as a percentage of 11,970 in the text.

<sup>57</sup>To the Senate and House of Representatives of the Commonwealth of Pennsylvania, the Memorial of the President and Directors of the Bank of Pennsylvania (Philadelphia: 1805?), 2

<sup>58</sup>Ownership in stocks, bonds, and other financial instruments was spread well beyond the richest sectors of society. See Winifred Rothenberg, “The Emergence of a Capital Market in Rural Massachusetts, 1730-1838 (Journal of Economic History, 45 (1984), 781-808.

<sup>59</sup>This discussion does not hold for many of the Pennsylvania country banks, especially those established in 1814, that often worked on little paid-in capital, paid scandalously high dividends, suspended specie payments at the drop of a hat, and folded at the slightest whiff of economic trouble.

<sup>60</sup>See Perkins, American Public Finance, 266-281; J. Van Fenstermaker, The Development of American Commercial Banking, 1782-1837 (Kent: Kent State University, 1965).

<sup>61</sup>Eventually, the state legislature tried to curb bank investments as a percentage of overall capital in order to increase the amount available for lending.



the notorious policies of early republican banks to reserve much of their loans for merchants in general and insiders in particular—those on the board, their families, and business associates—certainly excluded many would-be bank customers, but it also operated as a credit-checking device. By definition, insiders were known quantities, people with whom the bankers had been familiar for a long time and whose businesses and expertise had been well established. They therefore appeared to be a safer bet for loans than strangers who had unfamiliar business credentials and who might not feel the same social pressure from friends and relatives to be punctual as far as paying the bank back.<sup>62</sup> The desires of investors and the lending policies of banks dovetailed to produce institutions with a long-term focus that nonetheless could operate mostly beyond the supervision of the general population of stockholders.

The investment priorities both of insurance companies and their shareholders tended to be even more conservative than those of banks. The very reason for their founding was to mitigate the financial risks of business, of property ownership, and, eventually, of mortality itself. Philadelphia companies specialized in particular sectors of the insurance business: the earliest insured ships and cargoes; then came firms that insured houses, warehouses, and their contents against fire; and finally, in the 1810s the first of life insurance

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<sup>62</sup>Philadelphia banks were also reluctant to lend to manufacturers rather than merchants, claiming that merchants could pay back 30- and 60-day loans promptly while manufacturers needed long-term loans to buy machines, build workspace, and acquire raw materials. However, that reasoning is questionable, given that a great number of the short-term loans to merchants were continuously rolled over, essentially making them long-term loans, and that, once manufacturers were established, they were better able to generate continuous cash flow and therefore more likely to be able to pay back loans than were merchants. Wright argued that bank officers were able to

companies began writing policies.<sup>63</sup> Regardless of what line of business insurance companies were in, they all operated according to the same general pattern. Companies competed heavily, advertising their premium rates. They were all offering the same service to the same pool of potential customers and tried to keep the cost of premiums close to their estimated costs of business, that is, the calculated chance of total losses as well as salaries and office rent.<sup>64</sup> Because of this stiff rate competition and the inexactitudes of contemporary actuarial methods, insurance companies struggled to make significant profits on the differences between premiums and claims.

However, insurance companies always kept a large pool of capital in reserve: the original capital paid in by investors along with all the paid-in premiums, from which the occasional claim was paid. They made their often-significant earnings from investing their reserves in a variety of ways including buying federal and Philadelphia city bonds, owning stock in other corporations, and making commercial loans and private mortgages. As Jacob Shoemaker, the actuary for the Pennsylvania Company for Insuring Lives and Granting Annuities, reported to his Board, they were losing potential customers to the Union Insurance Company of New-York, which was offering lower premium rates. He suggested that the Pennsylvania Company “can safely reduce their terms to the Scale acceptable by the NY Company,” because “hitherto we have been able to

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<sup>63</sup>See Harold Edgar Gillingham, Marine Insurance in Philadelphia 1721-1850 (self-published, 1933); Mary Ruwell, Eighteenth-Century Capitalism: The Transformation of American Marine Insurance Companies (New York: Garland, 1993); and Vivian A. Rotman Zelizer, Morals and Markets: The Development of Life Insurance in the United States (New York: Columbia University Press, 1979).

<sup>64</sup>The Pennsylvania Company for Insurance on Lives and Granting Annuities advertised its rates in Philadelphia, New York, and Baltimore, and sometimes adjusted its rates in response to competition from New York companies. July 1, 1815, Minutes, Board of Directors, Vol. 1, Pennsylvania Company for Insurance on Lives and Granting Annuities, Accession #1476, Hagley Museum and Library.

employ money to better advantage than 6 pCent compound interest.”<sup>65</sup>

Insurance companies’ ability to invest their reserves provided the great majority of their profits. These investments had to be on the safe side to guard against a rash of big claims, for example, when a hurricane sank several ships warranted by marine insurance company, when a large conflagration burned several buildings covered by the same fire insurance company, or when an epidemic took the lives of many life insurance policy holders. That way, one company told prospective customers, they “should ever be impressed with a firm conviction of the solid foundation of the institution, and of its entire capacity to comply with all its engagements.”<sup>66</sup> As part of their conservative investment strategy, insurance companies included a clause in their articles of association or in their charters that forbade them “to buy or trade in any stock whatsoever, for the purpose of making a profit by such buying and selling.”<sup>67</sup> Doing so committed insurance companies to make investments based on long-term stability from dividend-based revenue rather than short-term profitability from the fluctuation of stock values. Nonetheless, insurance company charters allowed them to invest in stocks and bonds in any Pennsylvania corporation, and invest they did.<sup>68</sup>

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<sup>65</sup> June 3, 1819, Minutes, Board of Directors, Vol. 1, 163, Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476, Hagley Museum and Library.

<sup>66</sup> Typescript copy of “An Address from the President and Directors of the Pennsylvania Company for Insurances on lives and granting annuities, to the Inhabitants of the United States, upon the subject of the beneficial objects of that institution. Philadelphia: J. Maxwell, 1814,” 47 in Pennsylvania Company for Insurance on Lives and Granting Annuities, Accession #1476, Hagley Museum and Library.

<sup>67</sup> The Charter and By-Laws of the Pennsylvania Company for Insurance on Lives, Granting Annuities, and Executing Trusts (Philadelphia: James Kay, Jun. & Brother, 1836), 8.

<sup>68</sup> For example, the Insurance Company of North America, chartered on April 14, 1794, was allowed to “be vested in securities for or evidence of debts due by the United States, or in the stock of the Bank of Pennsylvania, or of the Bank of the United States, or of the Bank of North-America, or of the Susquehanna and Delaware Canal, or of the Susquehanna and Schuylkill Navigation Company, or of the Lancaster and Philadelphia Turnpike Company” or any other company subsequently incorporated by Pennsylvania. An Act to Incorporate the Subscribers to the Insurance Company of North-America (Philadelphia: William W. Woodward, 1801), 4.

Insurance companies were a fairly safe haven for investors who wanted reliable dividends over a long period.

While the motivation for putting money in insurance companies remained constant, motivation for investment in Philadelphia city bonds shifted over the course of the first two decades of the nineteenth century. The people and organizations buying bonds in the first issue of 1801 and 1802 invested either out of civic duty or because of a potential increase in property values, much like internal improvement investors. Most bondholders purchased only one bond, many of them doubtless doing so because of the combined inducement of interest and the free water subscription for the first three years.<sup>69</sup> Institutional investors certainly hoped for gains, but they also bought bonds because the successful completion and operation of the waterworks could contribute to their respective missions. The Insurance Company of Pennsylvania bought 20 of the \$100 bonds and the Mutual Assurance Company bought 30. Each most likely hoped that the waterworks would greatly enhance the city's ability to fight fires. The Pennsylvania Hospital purchased another ten, both because of the medical consensus that fresh water would make the city's residents healthier and more resistant to yellow fever and because the hospital was extremely water-intensive.<sup>70</sup> Although some investors bought multiple bonds, most seemed to be content with buying one to do their part in keeping the city pleasant and livable.

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<sup>69</sup>Statistics compiled from Loan Certificate Transfer Journal, City Treasurer, Feb. 1801-Aug. 1820, Philadelphia City Archives.

<sup>70</sup>As of 1809, the Pennsylvania Hospital was the waterworks' second largest consumer, behind the city alms house. See Report of the Watering Committee to the Select and Common Councils, November 2, 1809 (Philadelphia: Jane Aitken, 1809), 16.

Unfortunately for the city, though, a few institutional investors were not enough to buy up the whole issue at first. In 1799 the federal government had just issued bonds paying eight percent, and the Delaware and Schuylkill Canal Company had lobbied the General Assembly to declare the city's use of Schuylkill water a violation of the canal company's charter, both of which made the city bonds seem less attractive because the city might not be able to collect water rents.<sup>71</sup> The city's difficulty in collecting taxes in several of the previous years because of the chaos of the nearly annual yellow-fever epidemics probably also discouraged those looking for a safe place to put their money.

Eventually, the city's prompt payment of interest on the first issue of city bonds, the creation of the sinking fund, and the city's more efficient tax collection efforts combined to establish confidence among investors in city bonds. From 1805 on, the City Councils borrowed money by issuing interest-bearing bonds nearly every single year and sometimes several times in a year for a variety of purposes. They borrowed the most money for expenditures relating to the waterworks and the water distribution system: \$25,000 for pipes and repairs in 1805, \$70,000 to replace wooden pipes with iron ones in 1818, \$150,000 to buy the land and water rights at Fairmount and an additional \$200,000 for construction in 1819, and another \$75,000 for the extension of the iron water main system in 1822.<sup>72</sup> They also took out loans to pay for other capital

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<sup>71</sup> Report to the Select and Common Councils on the Progress and State of the Water Works on the 24th of November, 1799 (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>72</sup> John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 239-240; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Sixteenth of July, One Thousand Eight Hundred and Seventeen (Philadelphia: City Councils, 1819), 117-118, 126-128; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-

improvements to the city such as the construction of culverts and markets in 1808, 1809, 1810, 1817, 1821, and 1824.<sup>73</sup> They issued bonds to pay for emergencies, such as to build fortifications to defend the city in the War of 1812 or to make up for budgetary shortfalls.<sup>74</sup> They even sold bonds to buy the old statehouse, soon to be called Liberty Hall, from the state of Pennsylvania for \$70,000 in 1817.<sup>75</sup> The city's ability to fund all these projects as well as shortfalls in its more routine activities stemmed directly from the willingness of investors to snap up the city's bonds.

City Council members probably thought of bondholders as the best kind of partners in their building of Philadelphia: investors who footed the bill with no questions asked. Although taxpayers were willing to pay for a budget that included incrementally larger appropriations into a sinking fund—payment for debts already contracted—they were loathe to approve big new expenditures or

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Seventh Day of December, One Thousand Eight Hundred and Twenty-One (Philadelphia: City Councils, 1823), 109-110.

<sup>73</sup>John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 239-240; Ordinances of the Corporation of the City of Philadelphia: Passed Since the Fourteenth Day of September, One Thousand Eight Hundred and Fifteen (Philadelphia: City Councils, 1817), 87; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Third Day of August, One Thousand Eight Hundred and Twenty (Philadelphia: City Councils, 1822), 168-169; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Fourth Day of February, One Thousand Eight Hundred and Twenty-Three (Philadelphia: City Councils, 1824), 253-254; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Eighth Day of January, One Thousand Eight Hundred and Twenty-Four (Philadelphia: City Councils, 1825), 280-282.

<sup>74</sup>Committee of Ways and Means Report for Appropriations for 1807, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Seven (Philadelphia: [Jane Aitken?], 1806), 5; John C. Lowber, Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City (Philadelphia: Moses Thomas, 1812), 191, 239-240; Ordinances of the Corporation of the City of Philadelphia: Passed Since the Eighteenth Day of June, One Thousand Eight Hundred and Twelve (Philadelphia: Philadelphia Councils, 1815), 11, 12-13, 54; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Second Day of April, One Thousand Eight Hundred and Nineteen (Philadelphia: City Councils, 1821), 158-159; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Seventh Day of December, One Thousand Eight Hundred and Twenty-One (Philadelphia: City Councils, 1823), 182; Ordinances of the Corporation of the City of Philadelphia. Passed Since the Fourth Day of February, One Thousand Eight Hundred and Twenty-Three (Philadelphia: City Councils, 1824), 248-250.

<sup>75</sup>Ordinances of the Corporation of the City of Philadelphia; Passed Since the Fourteenth Day of September, One Thousand Eight Hundred and Fifteen (Philadelphia: City Councils, 1817), 69-71.

to support unexpected costs. Bondholders were much less fickle than taxpayers as a source of immediate funding for large capital projects and for overruns and annual expenditures. They did not expect efficiency, responsibility, or competence, merely their interest payments twice yearly. They invested in city bonds for the same reasons that they invested in banks or insurance companies: precisely because they did not want to spend the time and energy necessary for other potentially profitable pursuits. That lack of energy suited the politicians on the City Councils, especially the Common Council whose members who were up for annual reelection: through the sinking fund and city bond issues, the corporation shifted the burden of financial scrutiny of its affairs from the electorate to people whose precondition for investment was the ability to ignore the details of the corporation's finances altogether.

City bond values stayed fairly steady during the first decades of the nineteenth century, but because of the poor success rate of internal improvement companies, canal stocks often fluctuated wildly. Investors were much more likely to sell these corporate stocks merely to recoup some of their losses than they were interest-bearing bonds. Conflict over rights of original investors as opposed to subsequent owners was typical of early republic debates concerning the ownership and exchange of financial instruments and company stocks. The earliest battle between first and subsequent owners had raged most fiercely in the 1780s and early 1790s as a result of the economic chaos during and after the Revolution. To finance both the prosecution of the Revolutionary War and more pedestrian government activities when even routine tax collection was difficult, both the Continental Congress and the states resorted to a variety

of tactics including printing paper money, selling interest-bearing certificates, and issuing scrip that amounted to nothing more than the government's IOU.

Because of the post-war economic slump and the widespread uncertainty over the ability of the fledgling governments to make good on their considerable financial commitments, all of these instruments depreciated greatly during the 1780s, leading most of the farmers and soldiers who held such paper to unload it for what little they could get in return. Speculators and urban merchants often ended up with large amounts of such paper. Then, in the late 1780s and early 1790s, the states, following the federal government's lead, began to make good on those debts either at par or at least well above their lowest market value. The new owners now held paper of value, and many of the original owners felt as though they had been swindled.

Protests against the Union Canal Company charter reprised the same controversies along similar terms. Once the Watering Committee had rebuffed the Delaware and Schuylkill Canal Company's overtures in 1799, both that company and its sister, the Susquehanna and Schuylkill Navigation Company, fell nearly dormant, victim to the entire litany of problems that beset early canals. The routes had been poorly chosen, there was trouble finding competent engineers to stay on the job, contractors fleeced the companies, land costs skyrocketed because of speculation, and capital-raising efforts could not keep up with the ballooning costs. At one point, the workmen even got involved in a tavern brawl with locals in an affair so violent that the governor finally had to mediate between company president Robert Morris and angered Myerstown



residents.<sup>76</sup> Although the Delaware and Schuylkill project was all but abandoned, in 1807 a number of men still harbored the notion that connecting the Susquehanna and Schuylkill Rivers was a goal worth pursuing. However, the Susquehanna and Schuylkill Navigation Company's finances were by that point unsalvageable because of the large number of defaulted subscriptions, the failure of the state-sponsored lotteries, and its complicated relationship with the Delaware and Schuylkill Canal. So, in 1807, some of its investors decided to try out another solution of British origin: a merger of the two companies into the new Union Canal Company, in the hopes that it could provide a better institutional and financial footing for the project.<sup>77</sup>

To begin operations, the sponsors of the new company had to obtain a charter and determine what stake the stockholders of the old companies would have. The legislature did not pass a charter until 1811, four years after the first proposal. In the end, boosters successfully applied to the legislature under a plan in which those who had paid their full subscriptions of Schuylkill and Susquehanna Navigation Company stock would receive two shares of the new company, and paid-up stockholders in the Delaware and Schuylkill Canal Navigation Company would receive one share in the Union Canal Company for each completed subscription.<sup>78</sup> The application for and the granting of the charter precipitated wrangling in the legislature and the newspapers between rival factions of stockholders. Those who had paid up their full subscriptions—

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<sup>76</sup>Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Schuylkill & Susquehanna Canal & Lock Navigation Company, No. 41, Folder 2, Pennsylvania State Archives.

<sup>77</sup>The Birmingham Canal Navigation and the Birmingham and Fazeley Canal Navigation merged by act of Parliament in 1794; Armand Budington DuBois, The English Business Company after the Bubble Act, 1720-1800 (New York: Octagon Books, 1971), 375.

both original subscribers and speculators who had bought completed subscriptions at bargain-basement prices—generally favored the arrangement: the possibility that their investment would retain some of its value or at least result in a completed waterway had drastically increased.<sup>79</sup> Those subscribers who had not paid in all their subscriptions complained loudly because only completed subscriptions could be exchanged for shares of the new company. They lost whatever money they had paid in. Others, who had sold their completed subscriptions well below par in a desperate attempt to salvage some of their investment, also protested, arguing that they had put far more money into the project than the speculators to whom they had sold their shares and who would now get shares in the new company. Opponents to the new charter also pointed out that it limited ownership to American citizens, shutting out foreign stockholders in the original companies.<sup>80</sup> This last objection was moot because as of yet neither canal had attracted significant foreign investment. Still, it was a point worthy of consideration because banks did have large numbers of foreign stockholders and company founders hoped that a successful navigation company could, as well.

Arguments concerning stockholding in the chartering of the Union Canal Company seemed like a recurrence of the debates in the 1780s and 1790s concerning federal and state financial instruments: those who had sold out were

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<sup>78</sup> Acts of the Legislature of Pennsylvania, Relating to the Union Canal Company of Pennsylvania (Philadelphia: Lydia R. Bailey, 1828), 40.

<sup>79</sup> See for example Charles G. Paleske, Observations on the Application for a Law to Incorporate "The Union Canal Company" Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania (Philadelphia: Duane, 1808) and January 3, 1812, *Aurora General Advertiser*.

<sup>80</sup> Memorial to the Senate and House of Representatives of the Commonwealth of PA, in General Assembly met, from Stockholders in the Schuylkill and Susquehanna Navigation, and the Delaware and Schuylkill

accusing speculators of cashing in while the investors who had made a greater initial sacrifice would be left with nothing. In this case, as in the previous debates over the holding of Continental Congress debt from the Revolution, those who had the stock in their possession last won the day. After this debate, the Pennsylvania legislature did not revisit the subject, essentially settling the issue with profound consequences for the finance of large projects and institutions.

The assurance that all transactions were final and not subject to *ex post facto* review by civil authority gave investors the security to invest in stocks and bonds knowing that such instruments would keep their value independent of the political climate. At the same time, the refusal of the General Assembly to compensate the original investors who had sold their shares in the defunct canal companies made the investment world a much riskier place. Together with the government's haphazard support of big projects such as the waterworks and internal improvement companies, the decision of the legislature to leave stock values to the marketplace most likely discouraged those with little to spend from investing in local projects because of the risk involved. For the rich, such investment remained possible because they had more opportunity to diversify their portfolios and because they had greater access to credit and so could weather economic storms while others would be forced to sell assets like stocks and bonds. The continued insistence of corporations and the legislature alike to keep initial stock prices at \$50, \$100, or more further exacerbated the investment gap between the rich and the middling and lower sorts. The combination of all these factors ensured that investment and therefore control of

banks, insurance companies, city bonds, and especially internal improvements would stay in the hands of a small sector of the population.

After the War of 1812, the consolidation of the control of internal improvement projects in fewer hands became increasingly pronounced, especially in those that would become profitable through the anthracite trade. The first major Philadelphia-area coal-related internal improvement, the Schuylkill Navigation Company, started out in 1815 with a roster of investors closely resembling those of previous projects. The average investment in the Schuylkill Navigation Company was just over \$350, with a maximum single holding of \$2,500.<sup>81</sup> Subsequent efforts, though, especially to make the Lehigh River navigable, involved fewer investors pouring in larger sums.

Once ousted from the Schuylkill Navigation Company—after his suggestion that they reduce tolls—company founder Josiah White remained determined to bring coal cheaply to Philadelphia. He set his sights on the Lehigh River, a fast-flowing and rocky waterway running from the coalfields to the Delaware River some sixty miles above Philadelphia. He decided that the Lehigh could be made navigable, and hoped to do so on his own after his bitter experience with the Schuylkill Navigation Company. Within two years, though, White's travails in his quest for funding for the Lehigh Navigation and Coal Company demonstrated that Philadelphia's capital formation market retained some features of its old, clubby system of merchant networks. At the same time,

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Pennsylvania.

<sup>81</sup>Statistics compiled from C-Miscellaneous Records; Reel 3327; Stock subscription book, Schuylkill Navigation Company, MG-110, Pennsylvania State Archives.

that market was gaining the advantages and efficiencies related to the growth of and access to large pools of capital from banks and insurance companies.

Knowing that no bank would be willing to loan hundreds of thousands of dollars for years to a man with little collateral, White used the tried and true method of capital formation in the early republic: he went to moneyed friends and acquaintances who had access to capital. He had made these rounds before, first when trying to find backing for his nail mill in 1811 and again when he started the Schuylkill Navigation Company. Because he came from a prominent Quaker family, and because of his experience with the Schuylkill Navigation and as a local manufacturer, White was at least familiar with many of the men most prominently involved in financial activities in Philadelphia. Armed with pamphlets he had had printed trumpeting the advantages of the Lehigh River and Lehigh coal, he and his partner Erskine Hazard made a long series of fruitless calls; reactions ranged from only passive encouragement to outright rudeness. Joseph Buonaparte—the Emperor’s wayward brother who settled for a time in Pennsylvania—demurred in a note; Samuel Archer “agreed to give us a hearing on the subject for 5 minutes by the watch” before saying no; “Stephen Girard said he formed no partnerships”; Samuel Spackman was to call back in three days, but never did; Benjamin Stille “was polite enough to allow of some general Remarks, but said he was unable to appreciate them”; John Friese claimed “he ha[d] no money at his command”; Joshua Longstreth made appointment, “but he was gone next door to a party to have some fun”; Jacob Ridgway “treated the project & ourselves with much Contempt”; John Rogers “hoped we would do well”; John Stille “proceeded to Read his news paper, & alltho we bid him, good

afternoon, he was so much engaged at Reading the chit chat, occurrences of the day, that he had no time to bid us good night.”<sup>82</sup> After so many rebuffs, the prospects for support seemed slim.

Finally, White appealed to Jacob Shoemaker, a fellow Quaker. Shoemaker had been a founding director of both the Delaware Insurance Company and the Bank of Philadelphia before helping organize and becoming the actuary of the Pennsylvania Company for Insuring Lives and Granting Annuities in 1809. In the Pennsylvania Company office, Shoemaker revealed “hav9 formerly an intention of forming a Co. for a similar purpose up the Lehigh,” and told White that in exchange “for 20 shares of stock he agreed to give... his weight and influence to get [the] Stock subscribed.”<sup>83</sup> Shoemaker quickly delivered on his promise, enlisting company president Condy Raguet for \$10,000 and company board member James Spencer and speculator John Stoddart for identical stakes. According to White, “the Balance of the stock was then fill’d in about 24 hours.”<sup>84</sup> On the one hand, raising money through business partners and their associates reflected nearly timeless practice. On the other hand, the amounts involved, the speed in which they were pledged, and the motivation for their investment signaled a significant shift in transportation improvement financing.

The sums that major investors were willing to grant to the Lehigh Navigation and Coal Company dwarfed the amounts previous investors had put into other public improvements. The average investment in the Schuylkill

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<sup>82</sup>Josiah White's History Given by Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909), 23-26.

<sup>83</sup>Josiah White's History Given by Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909), 27.

Permanent Bridge in 1801 was only \$36 and the highest only \$220 despite its obvious potential for success. Perhaps the reason for this broad distribution of shares was the initial sale price of only \$10, allowing a greater slice of the population the chance to invest in the city's and the company's futures.<sup>85</sup> A listing of stockholders in the Delaware and Schuylkill Canal as of 1807—by which time many of the smaller shareholders had defaulted on their subscriptions—revealed the average holding to be \$325, with a maximum single investment of \$2,200.<sup>86</sup> These projects were typical of early improvements whose wide distribution of small, local investors reflected an expectation that a lack of direct profitability would be more than made up for by higher property values and cheaper transportation to and from the metropolis.<sup>87</sup> As one Union Canal Company booster pointed out in 1808, “people of moderate fortunes can turn their money to superior advantage in a shorter time, and with less supposed risk” than in internal improvement ventures.<sup>88</sup>

By the early 1820s, the possibility of huge profits from the transportation of coal distinguished the Lehigh navigation and the Schuylkill Navigation from previous efforts. Here, as in so many other facets of American economic and technological development in the early nineteenth century, the British precedent loomed large. English coal canals numbered among the most profitable

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<sup>84</sup>Josiah White's *History Given by Himself* (Philadelphia: Lehigh Coal and Navigation Company, 1909), 27.

<sup>85</sup>Statistics compiled from Schuylkill Permanent Bridge Company, List of Subscribers (mss., 1801), Historical Society of Pennsylvania.

<sup>86</sup>Statistics compiled from List of Subscribers, May 26, 1792, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Delaware and Schuylkill Canal Navigation, No. 14, Pennsylvania Department of State, Record Group #26, Pennsylvania State Archives

<sup>87</sup>See John Majewski, “Who Financed the Transportation Revolution? Regional Divergence and Internal Improvements in Antebellum Pennsylvania and Virginia,” *Journal of Economic History* 56 (Dec, 1996), 763-788.

corporate projects in the Atlantic world during the preceding few decades.<sup>89</sup> Furthermore, not only would the Lehigh navigation be able to deliver much needed coal to the metropolis, but also, unlike other improvement companies, the Lehigh Navigation and Coal Company held mineral-rich properties not far from the river. The company could mine its own coal and bring it to market considerably more cheaply than potential competitors. Some of the investors thought that the navigation would be the main revenue-producing part of the operation, while others calculated that the coal lands would be more profitable.<sup>90</sup> The two together, though, represented an investment more likely to thrive than either would by itself.

The early Lehigh Coal and Navigation Company and the later Schuylkill Navigation Company differed from their internal improvement predecessors in their potential for profit; the investors in these two ventures also had easier access to larger amounts of capital. The proliferation of banks and insurance companies in the Philadelphia area had given many more city residents the ability to invest their own cash or to borrow money to invest in big, risky ventures. In addition, the banks, insurance companies, and the city of Philadelphia had reserves of money available for underwriting area projects. Furthermore, the coal-region navigation companies had fewer barriers to large investors than did banks and insurance companies. The state legislature had always carefully regulated the issuing of stock in banks—and to a lesser extent insurance

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<sup>88</sup>Charles G. Paleske, Observations on the Application for a Law to Incorporate "The Union Canal Company" Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania (Philadelphia: Duane, 1808), 4.

<sup>89</sup>See J.R. Ward, The Finance of Canal Building in Eighteenth-Century England (New York: Oxford University Press, 1974).



companies—in the hope of making the opportunity for profits widely available and out of the fear that a few individuals could easily gain control of financial institutions crucial to the workings of the economy.<sup>91</sup> Many internal improvement company charters contained the same kinds of provisions that banks and insurance companies did regarding distribution of stockholding.<sup>92</sup> However, the great difficulties canal and turnpike companies faced in attracting subscribers resulted in far more leniency than banks received in terms of limiting individual shareholding: here, the sense of urgency for transportation improvements trumped anxieties about the undue influence of a few individuals in the corporation. The onset of construction on the Erie Canal served to deepen the rush for internal improvements in Pennsylvania and to lead legislators to look the other way when the Lehigh Coal and Navigation Company and the Schuylkill Navigation Company went searching for large sums of money to finish their projects.<sup>93</sup>

The chronic shortage of cash on the part of the internal navigation companies in the late 1810s and early 1820s gave potential large investors a strong position in dictating terms to Boards of Managers of struggling projects, further concentrating control of those institutions in fewer hands. Those

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<sup>90</sup>Josiah White, *Josiah White's History Given by Himself* (Philadelphia: Lehigh Coal and Navigation Company, 1909), 46.

<sup>91</sup>See Pauline Maier, "The Revolutionary Origins of the American Corporation," *William and Mary Quarterly* 3d Ser., 50 (1993), 51-84 for an analysis of this debate; see Chapter 4 for an analysis of the corporate boosters' responses.

<sup>92</sup>Pennsylvania corporate charters generally carried stipulations limiting individuals from acquiring large blocks of stock at a company's founding. The most usual way of doing so was to limit buyers to the purchase of one stock on the first day available, two stocks on the second day, and three on the third. Should here by any stocks left after the first three days, they would be distributed in proportion to the size of bids for those remaining. Some charters also limited the total number of stocks that any individual could purchase in the initial issue.

<sup>93</sup>See Chapter 4 for an analysis of the ways that Pennsylvania inland navigation companies exploited concerns over competition from Baltimore and New York City.

investors used their leverage to protect their money in a variety of ways, each of which placed their rights and privileges ahead of earlier stockholders and lenders. In 1817, the Schuylkill Navigation Company board bent to the demands of large investors when not enough small ones came forward to buy up a stock issue. "From the backwardness of the people to come forward and make further additions," the board reported, "it appears not probable that much progress can soon be made therein." Board members weighed the offer of "a number of monied men...to subscribe large amounts on condition that such subscriptions shall not be binding on them unless the full amount of five thousand shares now wanting shall be fully made up and subscribed."<sup>94</sup> In the end, the board voted to accept the rich men's offer, having no other alternatives to raise the needed sums.

In these sorts of affairs, too, the companies and investors cooperated to use financial devices already pioneered by British internal navigation companies. For example, in 1821 the Lehigh Canal and Coal Company began using preferred stock.<sup>95</sup> The company had run out of cash, and the stockholders did not want to throw even more into a project that as yet had produced no revenue. Their money had already been tied up in the concern for several years, and potential returns still appeared to be a few years in coming. The Board of Managers solved the problem by dividing shares into two classes. Josiah White and Erskine Hazard, who jointly held \$150,000 in stock and by far the largest

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<sup>94</sup> August 22, 1817, Minutes, Board of Managers, Roll 1, Oct 7, 1815- January 5, 1846, MG-110, Schuylkill Navigation Company, Pennsylvania State Archives.

<sup>95</sup> See George Heberton Evans, Jr., British Corporation Finance, 1775-1850: A Study of Preference Shares (Baltimore: The Johns Hopkins University Press, 1936) for an extended discussion of the use of various kinds of preference shares in British canal finance. Pioneered in Britain, these methods of raising capital were replicated nearly identically in America.

stake in the company (over 30% of it), agreed to accept a lower priority on dividends for that block of stock.<sup>96</sup> In other words, should the company make a profit, all the other stockholders—old and new—would get to share the dividends first, and White and Hazard would only get a share of the profits once everyone else had received a reasonable return. The practical effect of this arrangement for prospective investors was that the threshold for returns had become much lower: the company only had to make \$21,000 in total profits to yield new investors a 6% return on investment, rather than the \$30,000 previously required.<sup>97</sup> White and Hazard agreed to this deal because they knew that, should the company be unable to attract more money, their entire investment would go down the drain. They also understood that the stock had not been selling under the current arrangement. Hence, new investors could now take advantage of the company's straits to demand better terms.

Stephen Girard, no stranger to financial machinations, found another way to use investment at a critical time to gain a significant stake in a struggling company. In 1823, the Schuylkill Navigation Company ran out of cash and projected needing another several hundred thousand dollars to finish the waterway. The Board of Managers realized that it had already exhausted the usual methods of raising funds: no more would be forthcoming from the state, the company had already spent all the money generated by the sale of stock under its charter, and it despaired of selling yet more stock to an unenthusiastic public. Accordingly, the company board turned to yet another method of raising

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<sup>96</sup>May 25, 1821, MG-311 Lehigh Coal & Navigation Company Records, Roll 1, Minutes of the Stockholders, 1821-1831, Pennsylvania State Archives.

<sup>97</sup>Calculated out of a total capitalization of \$500,000.

money pioneered by British internal improvement companies, in this case the Manchester New Ashton Canal in 1797 and the Grand Junction Canal in 1798: the loan convertible to stock.<sup>98</sup> The Board negotiated a series of loans from the ever-adroit Girard amounting to a total of \$230,850, an incredible sum for one individual to be able to offer.<sup>99</sup> The final agreement was structured first as a mortgage on the entire navigation paying Girard six percent interest annually; however, he reserved the option to convert any value of the loan into company stock at par value. By coming in at a particularly vulnerable juncture for the company and by being able to commit a princely amount of money, Girard had wrangled fabulous terms that nearly guaranteed him a profit at the expense of previous investors, regardless of the company's ultimate fate. Should the Schuylkill Navigation Company go bankrupt, Girard would own all its land and its water rights, whose value far exceeded the amount he had put in. Furthermore, the whole navigation could probably be finished with limited additional investment, so he would get a corporation potentially worth a million dollars or more at a bargain price. Should the company be successful and start to issue substantial dividends, he could convert his loan into stock at par—probably well below the market price—and he could then either sell the stock at a handsome profit or collect the dividends. Somewhere in the middle, that is, were the navigation to be finished but be only marginally profitable, Girard could sit back and receive the interest due on the loan. Girard had found a way to ensure that he would profit in any given scenario, while previous stockholders could be hurt

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<sup>98</sup> Armand Budington DuBois, The English Business Company after the Bubble Act, 1720-1800 (New York: Octagon Books, 1971), 372, 429.

in several ways: loan payments or dividend payments to Girard would cut into their dividend payments, and if the project failed Girard would be the beneficiary of their total investment. The ability to lend a large sum at a particularly vulnerable moment for the company gave Girard the chance to dictate favorable terms and considerable say in company affairs because he also retained the option of calling in his loan. Through his use of capital, one man owned the Schuylkill River.

For the internal navigation companies in coal-producing regions and for the corporation of Philadelphia, the late 1820s brought spectacular increases in business and profitability. In 1823, the completion of the water-powered waterworks at Fairmount drastically reduced operating costs compared to the old steam-powered system just as the city corporation completed a campaign to double the extent of the distribution system through the introduction of large iron water mains. The expansion of system capacity and the elimination of fuel costs finally put the annual waterworks budget into the black for the first time. From then on, the waterworks' annual surplus contributed to the sinking fund rather than the other way around. In the fall of 1824, Josiah White convinced the Lehigh Coal and Navigation Company to bring more than two thousand tons to market, several times the amount sold there the previous year.<sup>100</sup> The resulting abundance of anthracite in the city led consumers to the conclusion that Philadelphia's supply would be reliable enough for them to install the proper grates to burn stone coal in their furnaces rather than wood, charcoal, or

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<sup>99</sup>Schuylkill Navigation Company Board of Managers to Stephen Girard, February 5, 1823, Letter Books, Box 1, June 5, 1816-Nov 25, 1824, MG-110, Schuylkill Navigation Company, Pennsylvania State Archives.

<sup>100</sup>Josiah White's History Given by Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909), 53.

bituminous coal. City bonds had sold well for some time, and in the late 1820s Schuylkill Navigation Company and Lehigh Coal and Navigation Company stock prices came into demand too, beginning to sell above par. The hopes for steady, long-term profits had been realized for both city investors and for investors in the two coal navigations.

The move into the black allowed corporations such as banks, insurance companies, the City of Philadelphia, and finally the inland navigation companies to act as a medium for an exchange of financial power over the course of the early decades of the nineteenth century. On the one hand, the investment benefits of these corporations were distributed widely, at least among the wealthiest quarter of the population. By the late 1820s, thousands of Philadelphia residents owned stock in one or more companies, city bonds, or both. By buying these financial instruments, they were investing in their own futures as well as in the future of the city. The average taxpayer, too, got something: a better regional transportation network and city-wide fresh water supply system with little cost in terms of increased state taxes. The state had contributed little of the funds for the construction of the coal canals and none of the expenses for the waterworks: stock and bond investors had put in the lion's share of the principal. In terms of city taxes, as long as Philadelphia continued to grow, the increased taxpayer base and those who used the new technologies most intensively—either by transporting goods along the navigations or by getting water piped directly to their homes or businesses—would pay off the interest and eventually much of principal for building the waterworks and the

internal navigations. Meanwhile, once the coal trade took off, tolls covered the maintenance, upkeep, and interest on the inland navigations.

Despite such benefits, the users, taxpayers, and smaller investors did not get something for nothing. Rather, the use of private corporations and the floating of public debt amounted to a shell game that merely hid the unpleasantly high costs of infrastructure projects necessary to the economic and urban development nearly unanimously desired in the early republic. The cost of heating fuel decreased in Philadelphia in the late 1820s because of the availability of cheap anthracite coal that traveled down the Schuylkill and Lehigh navigations at no cost to the taxpayer. So far so good. But those prices, low as they were, still included large profits to investors in the companies administering those navigations, especially the big investors who had gotten their shares on such fabulous terms. The waterworks, too, provided the city a necessary service for its continued success but disproportionately rewarded those who had the wherewithal to buy municipal bonds. Meanwhile, everyone's taxes paid for the interest support and the maintenance of the sinking fund that paid off bond-owners. The waterworks not only redistributed water; they redistributed wealth as well. The individuals in control of capital had devised institutions and methods that guaranteed their ability to skim off the cream of economic development.

The general public also ceded control of these technologies and the institutions that administered them to a small group of men who would direct much of Philadelphia's economic growth. These men, on the City Councils or on the boards of various corporations year after year, determined the routes and

capacities of the navigations and the city water mains and what to charge consumers. They made decisions involving hundreds of thousands of dollars—huge sums at the time—with little or no input from the electorate or, in the case of business corporations, any public authority. So for the public, the price of cheap access to water, transportation, and credit was the loss of control over the corporations responsible for those technologies and services. The following chapter will examine how corporation insiders, especially those in internal navigation companies, explained and justified the distribution of the benefits of these technologies along with the concentrated control of the institutions they used to run them.



## The Evolution of Corporate Ideology

From the early 1790s until 1830, inland navigations boosters found myriad terms to promote their projects to different groups in different places. Their arguments partly reflected their own motives, but even more, a perceptive estimation of the desires of potential investors and various groups in the communities through which proposed projects might run. Throughout the period, they pushed canals and river navigations as wonderful vehicles of economic growth, but as the economy of the Delaware valley expanded and changed, so did the economic vision offered by promoters, from one primarily of land speculation and development to one in which manufacturing and mineral extraction played a significant, even leading, role. Once growth intensified, company directors shifted their rhetoric to stockholders from an appeal to community interest to one of direct profit. Inland navigation boosters composed their appeals to match the rhythm of the changing economy, and learned to alter their ideological tune as the Revolutionary generation's fears for the success of the republican experiment became overwhelmed by their children's enthusiasm for getting ahead and staying there. Thus, Philadelphia-area promotional literature before the turn of the nineteenth century emphasized the ways that canals and river navigations could help keep the union together, but later appeals increasingly highlighted the potential economic benefits to particular communities and groups. By the late 1820s, inland navigation proponents touted the beginnings of industrialization, the prospect of profitable investment, and the pursuit of ever more narrowly defined interests to create a new ideology

that both invoked a need for their projects and provided a credo for the most aggressive actors in the Philadelphia region's growing economy.

Only a few years after the Grand Procession celebrated the birth of the federal union in Philadelphia, a group of prominent Philadelphians embarked on a trio of related projects intended to help provide structure and direction to the infant nation. They also hoped to make a good deal of money. Mainly merchants, mainly wealthy, and mainly Federalists, they included among their number Ebenezer Hazard, erstwhile postmaster of the United States; John Nicholson, future treasurer of the Commonwealth of Pennsylvania; Robert Morris, revolutionary financier; Samuel Wetherill Sr., an oil and dye merchant; David Rittenhouse, a scientist and instrument-maker; and William Smith, the president of the University of Pennsylvania. They also had something else in common: they all owned great tracts of uninhabited real estate in central and western Pennsylvania that they had acquired cheaply in the previous decade in the expectation of great profits as settlers moved west. However, these speculators quickly realized that no one would pay for land unless able to afford to transport their produce to market. Land transportation remained too expensive. So, these wealthy Philadelphians set out to erect the transportation infrastructure that would make their main investments profitable.

Many of these men had entered into various syndicates to buy large parcels of land; they also associated in three organizations to bring those properties into Philadelphia's economic orbit. The first was the Society for Improvement of Roads and Inland Navigation, founded in a meeting at Carpenters Hall in 1791. The Society advocated state funding for the other two

schemes, both established to accomplish more concrete tasks: the Susquehanna and Schuylkill Canal Company and the Delaware and Schuylkill Canal Company, both routed to connect the rivers after which they were named. Combined, the two canals would allow water transportation from the entire Susquehanna valley in central and western Pennsylvania all the way to Philadelphia's wharves on the Delaware River.

The appeals of the Society and the two canal companies emphasized one great goal: according to Robert Morris, "to combine the interests of all the parts of the state, and to cement them in a perpetual commercial and political union, by the improvement of [Pennsylvania's] natural advantages."<sup>1</sup> Apparently, the Pennsylvania legislature agreed, for the preamble to the charter granted the Susquehanna and Schuylkill Canal Company asserted that "the opening of a communication by water... will greatly tend to strengthen the bands of union between citizens inhabiting distant parts" of the state.<sup>2</sup> The theme of uniting disparate economic and geographical interests was one inland navigation boosters returned to constantly. In 1795, William Smith optimistically predicted that the two canals would bind Pennsylvania "together in one flourishing and civilized whole, sensible of a common interest, and rejoicing in the common prosperity."<sup>3</sup> Proponents recycled this argument whenever they applied for charters, asked the legislature for funding, solicited investment, or addressed

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<sup>1</sup>William Smith, An Historical Account of the Rise, Progress and Present State of the Canal Navigation in Pennsylvania. With an Appendix, Containing, Abstracts of the Acts of the Legislature Since the Year 1790, and the grants of Money for Improving Roads and Navigable Waters throughout the State; to Which is Annexed, "An Explanatory Map" (Philadelphia: Zachariah Poulson, Jr., 1795), 3.

<sup>2</sup>"An Act to enable the Governor of this commonwealth to incorporate a company, for opening a canal and lock-navigation between the rivers Schuylkill and Susquehanna, by the waters of the Tulpehoccon, Quittapahilla and Swatara, in the counties of Berks and Dauphin." Smith, 23.

<sup>3</sup>Smith, iii.

their stockholders. Governor Simon Snyder claimed in his annual address of 1811 that a state-funded canal system could “form an indissoluble bond of union...forever banish the idea of a severation of the States...create new and strong ties and dependencies...and excite new sympathies and affections among the children of the same American family.”<sup>4</sup> The very next year, the Union Canal Company’s petition for state aid reminded the legislature that “the strength of the individual members of the union demands imperiously a proportionally powerful cement to bind them together.”<sup>5</sup> Clearly, they hoped for the canal to serve as that adhesive. As late as 1825, a subcommittee of the Philadelphia city councils endorsed a plan to cut a canal across the city connecting the Schuylkill and Delaware rivers by claiming that it would “give a stimulus and activity to those parts now stationary—will make a unity of interest between the east and west [city wards]...and make the city united in all its great interests of trade and commerce.”<sup>6</sup> That canal was never built, but the sentiment that inland navigations could unite disparate interests remained. Canal boosters suggested that internal navigation had nearly magical, inherent qualities guaranteeing prosperity and union, with the alternative being an undeveloped, fragmented economy eventually leading to social and political chaos.

The purported ability of institutions or technologies to shape the polity and the society formed rather typical threads in the cloth of political economy in the

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<sup>4</sup>Address of Governor Simon Snyder to the Legislature, December 5, 1811, in George Edward Reed, ed. Pennsylvania Archives, Series IV, (Harrisburg: State of Pennsylvania, 1900), 752.

<sup>5</sup>Report and Memorial of the President and Managers, of the Union Canal Company, of Pennsylvania. Made and Presented to the Legislature of the State of Pennsylvania, at Their Session 1812-13 (Philadelphia: John Binns, 1812), 9.

<sup>6</sup>Report of the Watering Committee, on the Disposal of the Surplus Water Power of the River Schuylkill, and the Construction of a Canal Between the Schuylkill and Delaware (Philadelphia: Councils of the Corporation of Philadelphia, 1825), 12.

early republic.<sup>7</sup> Whether one had an optimistic view of the abilities and merits of the commonfolk or a darker opinion, nearly everybody believed that the creation of a proper framework of laws and institutions could contribute greatly to the survival of the new nation.<sup>8</sup> For Republicans, confidence usually lay in strictures limiting government, such as the federal Bill of Rights and state guarantees of religious freedom. For Federalists, society's salvation lay in strong political and financial institutions that could in turn restrain social entropy. During the Federalist era, the intensity of debate over the federal and state constitutions as well as over policy showed that Americans of all political persuasions took controversies over political and economic structure extremely seriously, both because they understood their actions to be perhaps irreversible precedents and because they saw those issues as being inextricably connected to social concerns such as economic opportunity.<sup>9</sup> This intuition for the interconnection of political, economic, and social problems—and the quest to solve those problems—had evolved from the Enlightenment tradition of political economy, a tradition permeating eighteenth-century American thought through sources as

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<sup>7</sup>For a discussion of the relation between republican ideology and manufacturing technology, see John F. Kasson, Civilizing the Machine: Technology and Republican Values in America, 1776-1900 (New York: Grossman Publishers, 1976).

<sup>8</sup>For the intellectual background of the belief in the efficacy of political and legal structures to influence social structure in the Constitutional period, see Gordon S. Wood, The Creation of the American Republic, 1776-1787 (Chapel Hill: University of North Carolina Press, 1969) and Forrest McDonald, Novus Ordo Seclorum: The Intellectual Origins of the Constitution (Lawrence: University Press of Kansas, 1985). For an analysis of the continuing confidence of the American people in such institutions in the following decades, see Daniel Feller, The Jacksonian Promise: America, 1815-1840 (Baltimore: The Johns Hopkins University Press, 1995).

<sup>9</sup>For the best account of the ideological zeal of the 1790s and the political and personal bitterness that such fervor engendered see Stanley Elkins and Eric McKittrick, The Age of Federalism (New York: Oxford University Press, 1993).

diverse as Tom Paine's Common Sense, Cato's Letters, the Federalist Papers, and countless newspaper entries.<sup>10</sup>

Canals and river navigations offered a possible solution to one of the most vexing philosophical and political problems facing the new nation. The conundrum of conflicting interests had played a central role in political economy for centuries; the notion that a republic could survive only through at least some modicum of public virtue and the occasional placing of the common weal above private interest formed a cornerstone of American political economy.<sup>11</sup> In the minds of many, the divergence of American interests with Britain's had precipitated the American Revolution. A number of the men involved in the Susquehanna and Schuylkill Canal and the Delaware and Schuylkill Canal had served in the Continental Congress or under Washington in the Continental Army and thus had first-hand knowledge of the numerous ways that sectional, class, state, and occupational interests could threaten the young republic's very survival. In Federalist #10, James Madison assuaged some anxieties over the disparate interests of a far-flung population by turning plurality into a virtue, arguing that no single interest would be able to dominate the federal government. Nonetheless, the revolutionary generation, perhaps mindful of the national government's dysfunction under the Articles of Confederation and the

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<sup>10</sup>The literature concerning republican ideology is vast. The seminal works include Bernard Bailyn, The Ideological Origins of the American Revolution (Cambridge: Harvard University Press, 1967); J.G.A. Pocock, The Machiavellian Moment: Florentine Republican Thought and the Atlantic Republican Tradition (Princeton: Princeton University Press, 1975); Drew McCoy, The Elusive Republic: Political Economy in Jeffersonian America (Chapel Hill: University of North Carolina Press, 1980); and Gordon S. Wood, The Creation of the American Republic, 1776-1787 (Chapel Hill: University of North Carolina Press, 1969); for a summary, see Robert E. Shalhope, "Republicanism and Early American Historiography," *William and Mary Quarterly* 3d Ser. 39 (April 1982), 334-356.

<sup>11</sup>For an extensive discussion of the origins of arguments relating to the role interest in eighteenth-century political economy, see Albert O. Hirschman, The Passions and the Interests: Political Arguments for Capitalism before Its Triumph (Princeton: Princeton University Press, 1977); Cathy D. Matson and Peter S.

raucous free-for-all that routinely characterized state legislatures, remained apprehensive that if the population's concerns diverged enough, the fractious states and the federal union would be endangered.

Many Americans thus deemed any projects that could join people from different areas as especially felicitous to the republican experiment. In Federalist #11, Alexander Hamilton lauded the merits of "a unity of commercial, as well as political, interests" that would result in "one great American system."<sup>12</sup> Canals and river navigations seemed to fit the bill perfectly, even according to Madison: in Federalist #14, he pointed out that the fragility of the large republic would be mitigated by "an interior navigation...throughout...the thirteen states. The communication between the Western and Atlantic districts, and between different parts of each, will be rendered more and more easy by those numerous canals."<sup>13</sup> He pointed out that "intercourse throughout the Union... [would] be facilitated by new improvements," and help to keep Americans forever "knit together as they are by so many cords of affection."<sup>14</sup> The man who had the greatest single influence on the Constitution spoke for many when he argued that internal navigation would contribute greatly to the success of the federal union.

Meanwhile, Philadelphians who put a high premium on social and economic stability, including men such as Ebenezer Hazard, George Clymer, and John Nicholson, had immediate proof that intra-state unity was as fragile as

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Onuf provide a more specific analysis of American political economy in A Union of Interests: Political and Economic Thought in Revolutionary America (Lawrence: University Press of Kansas, 1990).

<sup>12</sup>Alexander Hamilton, "Federalist #11," in Clinton Rossiter, ed., The Federalist Papers (New York: Penguin, 1961), 90-91.

<sup>13</sup>James Madison, "Federalist #14," 102.

<sup>14</sup>Madison, Federalist Papers, 102-3.

the national compact. In the early 1790s western Pennsylvanians protested, sometimes violently, the federal excise tax on whiskey, leading to the federal march to put down the “whiskey rebellion” in late 1794.<sup>15</sup> At the same time, settlers and two groups of speculators—one from Pennsylvania, the other representing Connecticut claimants to the same territory—continued wrangling over disputed land titles in central and western Pennsylvania. Neither of these types of extended conflict, moreover, was limited to the Keystone state. Maine settlers and speculators would fight over land claims for at least another decade.<sup>16</sup> The Green Mountain Boys managed to carve themselves a new state by exploiting the conflicts between New York and New Hampshire claimants, perhaps flirting with joining Canada in the process.<sup>17</sup> A group of Appalachian settlers seceded from North Carolina in the late 1780s to found the short-lived state of Franklin and made overtures to Spain before the area came under federal control. These fears took years to dissipate; even Aaron Burr’s bizarre 1807 schemes—though completely unrealistic—were widely perceived to be serious threats to federal cohesion. To many Philadelphia Federalists, the message must have been clear: that Pennsylvanians in the mountains and beyond perceived their interests as being at odds with those of east-coast speculators and governments. Something was needed to establish the loyalty of

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<sup>15</sup>Thomas Slaughter, in *The Whiskey Rebellion: Frontier Epilogue to the American Revolution* (New York: Oxford University Press, 1987) argued that Western Pennsylvanians, at least partly because they sent their goods west down the Ohio River to the Mississippi and on to New Orleans, had different economic interests than did Philadelphians.

<sup>16</sup>While Alan Taylor, in *Liberty Men and Great Proprietors: The Revolutionary Settlement on the Main Frontier, 1760-1820* (Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1990) argued that settlers and speculators had differing views of the nature of property—based on labor and law, respectively—at bottom, their conflict was over who owned particular plots of land and often pitted local settlers against Boston-based speculators, and thus boiled down to a direct conflict of interest.

<sup>17</sup>See Michael A. Bellesiles, *Revolutionary Outlaws: Ethan Allen and the Struggle for Independence on the Early American Frontier* (Charlottesville: University Press of Virginia, 1993).



westerners, and the integration of western areas into the economic fabric of the Atlantic ports seemed to be the best solution. In their desire to bring unity to their state and to the union, Pennsylvanians did not stand alone in their positive view of the beneficial effects of canals.

Both in other states and at the national level, Americans of nearly all political persuasions held lofty opinions of the potential influence of internal navigation upon the economy and the polity. In response to an 1807 congressional request for a comprehensive review on internal navigation, Secretary of the Treasury Albert Gallatin, in his well-received and much-praised report on roads and canals, predicted that better inland transportation “will shorten distances, facilitate commercial and personal intercourse, and unite by a still more intimate community of interests, the most remote quarters of the United States.”<sup>18</sup> In Gallatin’s opinion, “no other single operation... can more effectually tend to strengthen and perpetuate that union, which secures external independence, domestic peace, and internal liberty.”<sup>19</sup> An open letter from Robert Fulton, added as an appendix to Gallatin’s report, put the Cabinet member’s sentiments in more practical terms: “what stronger bonds of union can be invented,” the steam-boat entrepreneur rhetorically asked, “than those which enable each individual to transport the produce of his industry [1,200] miles for 60 cents the hundred weight?” He answered that “there then is a certain method of securing the union of the states, and of rendering it as lasting as the continent

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<sup>18</sup>[Albert Gallatin], Report of the Secretary of the Treasury, on the Subject of Public Roads and Canals; Made in Pursuance of a Resolution of Senate, of March 2, 1807. April 12, 1808 (Washington: R.C. Weightman, 1808), 8.

<sup>19</sup>Gallatin, 8.

we inhabit.”<sup>20</sup> Henry Clay’s American System, too, and the passage of the Bonus Bill in 1817 demonstrated national support for projects that could integrate the interests of west and east. Madison vetoed the measure not out of disapproval for such projects—indeed, he had written and spoken in favor of better transportation as a national cement for three decades—but because of scruples over the constitutionality of federal funding for them. Philadelphia area canal boosters did not exaggerate much when lauding “the wish at this time so universally expressed, in favour of internal improvement.”<sup>21</sup>

While early Pennsylvania project boosters were most likely sincere in their desire to keep the union together, they had another, far more immediate reason for using communitarian arguments: an appeal based upon individual interest had little potential for success. The companies simply could not raise enough money from private investors to complete their canals. Both the Delaware and Schuylkill canal and the Susquehanna and Schuylkill canal did enjoy an initial flurry of subscriptions, but they had trouble collecting further installments, a problem exacerbated by construction costs far exceeding original estimates.

Because they could not raise enough money from individuals, officials of the two companies constantly lobbied the state government for funds, or at least for better circumscribed exclusive lottery rights in the state. However, the areas through which the canals were routed were still sparsely populated, and as yet the western part of the state was not developed to the point that transportation from one end of the state to the other formed a top priority for western residents.

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<sup>20</sup>Robert Fulton to Albert Gallatin, December 8, 1807, as quoted in Gallatin, 123.

Furthermore, a potential rise in taxes of any kind continued to be an especially touchy subject in the very districts that might profit most in the long run from the canals: those that had experienced unrest during the 1780s and 1790s, including the Whiskey Rebellion and the Fries Rebellion.<sup>22</sup> Company boosters shrewdly calculated that fewer citizens would benefit from the canals than were not completely opposed to any use of state tax money; that minority would not net them enough political leverage for the necessary legislative majority. They had to find some wider, more compelling reason for legislators and their constituents to vote for state funding. Therein lay the practical reasons for using the potential union of the state as their rhetorical paradigm: company backers then could portray the canals as projects that would benefit everyone in the state by strengthening the body politic. Throughout the period, inland navigation boosters knew that neither party would oppose projects for ideological reasons; public improvements did not become a partisan issue in Pennsylvania because everyone supported the idea of better transportation, at least in the abstract.<sup>23</sup> If company officials could convince a majority of legislators that the canal would help all districts, rather than a privileged few, then crucial state aid would come their way.

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<sup>21</sup>Report of the President and Managers of the Union Canal Company of Pennsylvania; to the Stockholders. Made in Compliance with the Provisions Contained in Their Act of Incorporation (Philadelphia: John Bioren, 1818), 3.

<sup>22</sup>See Terry Bouton, "A Road Closed: Rural Insurgency in Post-Independence Pennsylvania," *Journal of American History* Dec 2000 <<http://www.historycooperative.org/journals/jah/87.3/bouton.html>> (2 Mar. 2001).

<sup>23</sup>Although partisan bickering in the Pennsylvania legislature was highly contentious at times, internal transportation—like defense or education in later times—was a principle general enough for all to claim support it without necessarily actually funding it. See Douglas E. Bowers, "From Logrolling to Corruption: The Development of Lobbying in Pennsylvania, 1815-1861," *Journal of the Early Republic*, 3 (Winter, 1983), 439-474; Philip Shriver Klein, Pennsylvania Politics 1817-1823: A Game Without Rules (Philadelphia: The Historical Society of Pennsylvania, 1940), 357; and Sanford W. Higginbotham, The Keystone in the Democratic Arch: Pennsylvania Politics 1800-1816 (Harrisburg: Pennsylvania Historical and Museum Commission, 1952), 304.

Before the 1820s, few contradicted the claims that inland navigations brought people of disparate interests together. Just about every community, in fact, did want a canal or river navigation running through its backyards because the alternative, poor transportation, hurt a locality in a variety of ways. Most obviously, it meant being shut out of economic development. Pamphlet after pamphlet touting the benefits of inland navigation projects compared the costs of water transport to overland transport, a difference that could affect a farmer's bottom line significantly. That in turn influenced property values, sending land prices in canal-fed areas skyward and depressing those in land-locked localities. Compounding matters, some of the taxes local residents paid to the state might go to projects that helped other areas connect to Philadelphia. No locality wanted its state tax dollars to pay for farmers living in some other area to be able to undercut their ability to sell their produce profitably. Consequently, the Pennsylvania legislature tended to distribute money to very small projects fairly equally across the state, but was often stingy with major projects that would only benefit one portion of the state.<sup>24</sup> Even the arguments against many projects reinforced the rhetoric of unifying effects: the projects most likely to be defeated were those that funneled Pennsylvania goods to seaports in other states.

The theory that canal and river navigations united interests had special resonance because, as both contemporaries and historians have noted, there was much truth to the general assertion that good canals made good neighbors. Inland navigation companies detailed the goods that traveled up and down their

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<sup>24</sup>That is, until the Pennsylvania Canal, a public project so huge that it promised something to nearly every county, and eventually almost bankrupted the state in the process. See Robert McCulloch, The Pennsylvania Main Line Canal (York, PA: American Canal and Transportation Center, 1976).

projects. In 1829, for example, the Schuylkill Navigation Company bragged that 21,329 tons of goods had been shipped upstream in the previous year, including all sorts of manufactured items under the rubric of “merchandise”; building materials such as plaster, marble, and cement; and a new delicacy for people living inland, fresh saltwater fish, the appearance of which “had such an effect upon the visages of [inland residents] that it would have been a fit subject for the pencil of a Hogarth to imitate.”<sup>25</sup> Philadelphians not only sold finished goods upstream, but also bought tons of commodities from the hinterland coming down the navigation: in the same year, 84,133 tons had descended the river, more than half of it anthracite, but also other extracted products such as iron, lead, and lime; manufactured items including flour, hats, and whiskey; and agricultural products like grain, hogs, and butter.<sup>26</sup> A contemporary pamphlet corroborated the Schuylkill Navigation Company’s boasts, with merchant after merchant testifying to the thousands of barrels of goods they had shipped up and down the river.<sup>27</sup> Like other cities in the same period, Philadelphia’s economy expanded both figuratively and literally as an ever-greater physical area became more closely integrated into the city’s economic fabric.<sup>28</sup> The hinterland benefited at least as much or possibly more than the city; despite the greater bulk of

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<sup>25</sup> Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 5, 1829 (Philadelphia: Lydia R. Bailey, 1829), 10. Pottsville *Miner’s Journal*, October 31, 1829 as quoted in J. Bennett Nolan, The Schuylkill (New Brunswick: Rutgers University Press, 1951), 29.

<sup>26</sup> Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 5, 1829 (Philadelphia: Lydia R. Bailey, 1829), 11. My understanding of flour as a manufactured good comes from Brooke Hunter, “America’s First Industry: Flour Manufacturing in the Lower Delaware River Valley, 1750-1800,” presented at the McNeil Center for Early American Studies, November 3, 1999; cited by permission of author.

<sup>27</sup> Navigation and Advantages of the River Schuylkill for Foreign Trade, Established by Affidavits ([Philadelphia], 1829).

<sup>28</sup> See Diane Lindstrom, Economic Development in the Philadelphia Region, 1810-1850 (New York: Columbia University Press, 1978), 111-112. Lindstrom’s central argument is that improvements in transportation led intraregional specialization, which in turn fueled the economic expansion of the North in the first half of the nineteenth century. Francis X. Blouin, Jr., identified the same phenomena farther

downstream traffic, upstream traffic was actually higher in terms of dollar value.<sup>29</sup> Both Philadelphians and the people living in its growing economic orbit could see the mutual benefits of inland navigation in their pantries and their account books.

By the 1820s the more pompous strains of “uniting the union” tended to be relayed in a shorthand in which Philadelphia-area boosters needed only to mention the connection between two specific geographic areas to imply the commingling of interests that would occur should a given project be completed. Popular familiarity with both the projects and the terms of the debate certainly played a role. For thirty years, beginning with the Delaware and Schuylkill Canal Company and the Schuylkill and Susquehanna Canal Company and continuing with their successor the Union Canal Company, boosters had bombarded the public and the legislature with pamphlets and petitions. The Schuylkill Navigation Company, Lehigh Coal and Navigation Company, the Delaware and Hudson Canal Company, the Delaware and Raritan Canal Company, and a host of others later took up the same refrain. As of 1822, Pennsylvania had chartered eighteen canal companies, some of which had applied to the General Assembly in more than one legislative session and nearly all of which were the subjects of multiple acts of the legislature over several sessions.<sup>30</sup> Perhaps equally important, by the 1820s the men proposing, administering, and legislating such ventures thought Pennsylvania’s polity to be far less fragile than had their fathers in the 1790s. They felt less self-conscious about appealing to the interests of different groups and regions, knowing that their audiences did not fear for the

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northward in The Boston Region, 1810-1850: A Study of Urbanization (Ann Arbor: UMI Research Press, 1980).

<sup>29</sup>Lindstrom, 102-105.

state's fragility.<sup>31</sup> Nonetheless, the repetition of their message and its undertones left no doubt that the great majority of Pennsylvanians considered inland navigation projects to be a uniting influence.

In his study of Virginia and central Pennsylvania internal improvements, economic historian John Majewski suggested that early corporate transportation project boosters engaged in two levels of discourse. Privately, corporate insiders professed their motivations to be those of communitarian values: that is, that they engaged in such activities out of strong patriotism and selfless concern for the community's overall economic wellbeing. Meanwhile, their public pronouncements—petitions and annual reports—also emphasized potential profits, often in the very same documents that actually revealed staggering budget shortfalls, discouraging engineering setbacks, and ponderously slow rates of construction progress. As Majewski pointed out, the internal improvement companies' difficulties in raising funds testified to the fact that few investors took these rosy predictions seriously; Philadelphia-area turnpike and inland navigation companies experienced the same fund-raising travails.<sup>32</sup> Most people who bought stock did so in expectation of the appreciation of real estate values or to get goods to market more cheaply. Perhaps Majewski drew too fine a line between the public and private discourse in that companies' public literature also often testified to how internal improvements could "go far towards

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<sup>30</sup>Report on Roads, Bridges and Canals, Read in the Senate, March 23, 1822 (Harrisburg: C. Mowry, 1822), 18.

<sup>31</sup>Many Americans remained concerned about the strength of the union, as Henry Clay demonstrated with the popularity of his ideas concerning the "American System." However, Pennsylvania was far more stable in the 1820s than in the early 1790s, not long after the Pennamite-Yankee conflicts and during the Whiskey Rebellion.

<sup>32</sup>John D. Majewski, A House Dividing: Economic Development in Pennsylvania and Virginia Before the Civil War (New York: Cambridge University Press, 2000), 54-55.

realising the enlightened views of the patriotick statesman,” as an 1812 petition in favor of granting a charter to the Schuylkill Navigation Company stated.<sup>33</sup> Still, he rightly argued that the constant claims of profitability were attempts to legitimate private and governmental investment in these projects.<sup>34</sup>

Boosters further argued that, even should they not make money directly from their investment in inland navigations, they would still recoup their outlays. An anonymous January 1812 letter to a popular Philadelphia newspaper offered exactly the same reasoning to answer his own question, “Who, then, will invest his money in this stock, when not half the income can be derived from it which he can acquire in any other way?” Touting “the immense importance of public improvements,” a writer identifying himself only as “PENN” urged greater public and private funding of turnpike and navigation companies as the solution to the money problems of inland navigation projects. He considered the answer to his rhetorical question “obvious”: that “years must elapse before an adequate rise in the value of the lands will take place, yet... the improvements will at last so enhance the value of the lands as to yield more than the requisite sum to secure the holders of stock against loss.” He added another reason that Majewski did not identify. For an individual or the state to invest in a project that admitted financial futility was difficult; if the companies at least gave lip service to dividends, investors would be assured that their dollars would be handled wisely once in the companies’ coffers. Perhaps taking their cue from Adam Smith, petitioners to the state government already complained about the inefficiency of

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<sup>33</sup>Josiah White, petition to legislature, December 5, 1812, Miscellaneous Collection, Historical Society of Pennsylvania.

<sup>34</sup>Majewski, 56.



publicly supervised projects, specifically pointing out that they spent taxpayers' dollars foolishly. As "PENN" wrote, "the public never has been...so capable of having work well and expeditiously done as companies of individuals, deeply interested in the issue, and devoting every requisite personal attention."<sup>35</sup>

Navigation company pamphlets argued that because governments gave up on any pretense to profit they might spend taxpayers' money wastefully, but a corporation that at least retained the goal of going into the black reassured potential stockholders that their money would be used constructively.

Boosters worked and reworked the argument that the private interest of investors and company officers would ensure that boards of managers built quickly and efficiently. In a deft flip, company promoters also reversed the logic. If the profit motive inherent in incorporated companies legitimized those corporations, then any profits turned by internal improvement companies, too, were proper gains as long as the pursuit of them did not conflict with the public interest. Petitioners to the Pennsylvania legislature "[did] not hesitate to avow... that views of individual profit had a share in the motives of inducement" to found and invest in internal improvement companies. Nonetheless, they only gained "individual profit connected with public advantage, —the pursuit of a lawful, a necessary, and a laudable end, by fair, lawful, and honourable means— persuaded...that their efforts were in accordance with the views of the Pennsylvania legislature."<sup>36</sup> According to internal improvement company investors, the possibility of profits made internal navigation companies good, and

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<sup>35</sup>*Poulson's American Daily Advertiser*, January 24, 1812.

the lofty goals of internal improvement companies made profits good—too bad, they privately lamented, that the companies rarely made good profits.

Using the corporate profit motive to promote internal improvement corporations met with mixed success, but appeals to individual profit proved better at catching public attention. The changing appeals of the Union Canal Company to potential investors—including individuals, town governments, and the state legislature—before the War of 1812 showed a subtle shift from playing on anxieties over the republic’s fragility to extolling the virtues of economic development through the collected strivings of individuals. That change partly reflected changing economic factors. The Susquehanna and Schuylkill and the Delaware and Schuylkill Canal companies floundered for over a decade because of financial and technical setbacks despite an initial flurry of activity in the early 1790s. In 1807, with Jefferson’s Embargo looming, Philadelphia merchants began to look more carefully for domestic outlets for investment and development. A syndicate comprised of some of the original investors as well as speculators new to the projects decided that the inland navigation idea still held merit. This group sought to combine the two companies and their assets under a new charter from the state legislature, naming the amalgamation the “Union Canal Company.” The company’s public petition for a charter parroted the old lines that “the facility of transportation by water not only encourages agriculture, manufactures, and commerce, but greatly tends to strengthen the bands of union between citizens inhabiting different parts of a country,” a self-conscious

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<sup>36</sup>Citizens of Philadelphia, Petition to Pennsylvania General Assembly, House File, 49th Session-1, 1824-25, Folder 5, Pennsylvania General Assembly, Records of General Assembly, Record Group 7, Pennsylvania State Archives.

paraphrase of the original charters.<sup>37</sup> Furthermore, they blamed the failure of the first two companies at least partly upon “the baleful effects of local interests.”<sup>38</sup> These included the “short sighted individuals, and their neighbours, affected by the same errors, [who] have concurred in exacting unreasonable prices for slips of land, far exceeding the proportional value of the remainder of the farm.”<sup>39</sup> A letter to the Philadelphia *Aurora* exhibited the same logic, tracing canal troubles in general to “various efforts of speculation and the influence of private over public interests... and the infidelity and artifices of persons who sacrificed every principle of public duty to an unjustifiable selfishness.”<sup>40</sup> The canal company and its friends suggested that by asking exorbitant amounts for real estate through which the canal would travel, the property owners put their own interests ahead of the greater good—represented by the canal’s potential to bring better transportation and higher overall real estate prices for everyone. Union Canal Company backers claimed to represent the public against the unseemly pursuit of individual interest.

Those same men were not above manipulating that line of reasoning in creative ways. The Union Canal Company’s 1811 petitions to the legislature for state aid hinted at the justification of private interest while using the old familiar terms. When “the powerful motive of individual interest is combined and united with the more exalted sentiment which Patriotism and Public Spirit inspire to hasten its completion,” company officials argued, their canal would provide great

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<sup>37</sup>Charles G. Paleske, Observations on the Application for a Law to Incorporate “The Union Canal Company” Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania (Philadelphia: Duane, 1808), 2.

<sup>38</sup>Paleske, 3.

<sup>39</sup>Paleske, 3.

<sup>40</sup>January 15, 1812, Philadelphia *Aurora General Advertiser*.

service to the commonwealth.<sup>41</sup> In other words, canal backers were once again asking for state investment to supplement funds raised through the sale of stock to individuals in the building of the canal. The harnessing of “the powerful motive of individual interest” to promote the general good did not represent a new idea, at least to anyone who had read David Hume, Adam Smith, or the many newspaper editors and politicians influenced by their ideas. Also, the Union Canal Company officers still characterized “Patriotism and Public Spirit” as being a “more exalted sentiment” than the desire for private gain. However, unlike in previous lobbying efforts, this time boosters were not warning of the divisive dangers of interest and the subsequent need to unite potentially disruptive private ends. Instead, they portrayed individual economic efforts as potentially valuable when properly directed. Naturally, they considered their own project a proper direction. Private interest, these petitioners implied, was not an inherently disjunctive force, separating individuals from society so as to pull it apart; rather it represented a neutral impulse, one that could be either positive or negative depending upon how it was channeled. The authors of the Union Canal Company petition argued that internal improvement would point private interest in a constructive direction. However, before the project gained momentum, the War of 1812 pushed discussions of private interest and of big construction projects to the bottom of the political agenda.

Wars always disrupt economies, and the United States’ second struggle against the British proved no exception. Especially because Philadelphians put

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<sup>41</sup>Report and Memorial of the President and Managers, of the Union Canal Company, of Pennsylvania. Made and Presented to the Legislature of the State of Pennsylvania, at Their Session 1812-13 (Philadelphia: John Binns, 1812), 8.

much money and energy into building defenses for the city, the War of 1812 interrupted significant canal activity while at the same time indirectly providing the impetus for increased development along different economic and ideological tracks. The steep wartime rise in fuel prices prompted city residents to search for alternate sources of energy, a quest that would eventually result in the push to find ways to use anthracite and to bring it to market. Ideologically, the ultimately successful prosecution of the war—or at least, the United States' ability to survive the British onslaught until peace came in Europe—helped put to rest many Americans' fears about the ability of the Union to stay together in times of crisis.<sup>42</sup> Combined with the Louisiana Purchase, the War of 1812 gave Americans the confidence that their country would not be torn apart either through British conquest from the north and east or through French or Spanish seduction from the south and west. Furthermore, by the time the war was over, a younger generation began to drive national politics. Men such as Henry Clay, John Calhoun, Daniel Webster, John Quincy Adams, and Andrew Jackson held widely differing views about the government's role in the economy, but they all appeared to take for granted the primacy of economic development in civic policy.<sup>43</sup> DeWitt Clinton certainly had practical commerce as much on his mind as political philosophy in his nearly evangelical fervor for New York State's Great Western, or Erie, Canal.<sup>44</sup> The issue of finding institutions or technologies to

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<sup>42</sup>See Steven Watts, *The Republic Reborn: War and the Making of Liberal America, 1790-1820* (Baltimore: The Johns Hopkins University Press, 1987).

<sup>43</sup>The literature on these men and on the role of development in national politics is vast. For a summary, see Daniel Feller, *The Jacksonian Promise: America, 1815-1840* (Baltimore: The Johns Hopkins University Press, 1995), 53-75. The best one-volume work on national politics in this era is Harry L. Watson, *Liberty and Power: The Politics of Jacksonian America* (New York: Hill & Wang, 1990), which places differing concepts of economic development and growth as the central political debate of the time.

<sup>44</sup>See Ronald Shaw, *Erie Water West: A History of the Erie Canal 1792-1854* (Lexington: University of Kentucky Press, 1966).

bind the nation together suddenly seemed much less pressing—indeed, nearly superfluous—compared to the desire for more goods, better markets, and the institutions and technologies that could make them more easily and more widely available.

In and around Philadelphia, too, a younger generation of men became the most energetic actors in local affairs, less anxious about the fate of the republic but with an even keener interest in encouraging Philadelphia's growth than their predecessors. They were men like Samuel Wetherill Jr., the son of a prominent local paint and dye manufacturer, who pioneered the manufacture of white lead and mined much of his ore in the Schuylkill Valley; Josiah White, whose experience owning a wire-pulling manufactory led him to experiment with anthracite; Joshua Gilpin, a Delaware paper mill owner; and Mathew Carey, the political economist who built the United nation's first printing and publishing empire. Their interests often contradicted those of their merchant predecessors (and, for that matter, contemporary merchants, too), in a number of issues ranging from tariffs to credit accessibility. These men wasted little time worrying about the fragility of the nation but gave much thought to Philadelphia's economic prospects and how to push the city in directions that would ensure their own fortunes as well as their community's. They saw that Philadelphia's future lay in economic expansion inland rather than toward the Atlantic, and that manufacturing would form a crucial component of that growth. Furthermore, they thought that the best way for Philadelphia to reach its potential was to unleash the talents and drive of every citizen, and to do so required the ability of

tradesmen and manufacturers to pursue their own interests, adding to the whole city's economy.

In addition, the boosters who launched internal improvement projects in the late 1810s and the 1820s had much more particular goals than the Delaware and Schuylkill and the Susquehanna and Schuylkill partisans, and they articulated those goals in far more specific terms. While pamphlets and petitions for the earlier projects usually included long reveries on the intangible benefits that internal navigation could bestow upon the society and the body politic, later ones were more likely to be filled with concrete calculations estimating savings on transportation costs from locations along the proposed navigation to Philadelphia's warehouses. This shift in emphasis reflected more than a greater accumulated mass of available economic information. It also held two profound implications. First, economic growth—in this case, through lowered transportation costs—could now be advanced as a sufficient condition for economic activity, regardless of any possible hypothetical bonus for the polity. Second, while these pamphlets would often show savings to the whole community in terms of time and money for water travel as opposed to overland transport, they also pointed out the savings to individuals. Canal companies in effect made a subtle but personal sales pitch: support the canal, invest in it, get your representatives to vote for its charter, and you will be rewarded in gold. The men who wrote these company publications would use the same kinds of arguments in favor of the adoption of anthracite coal, or in fact any of their ventures. They were now making an appeal less directed to patriotism or the greater good and more focused on economic expansion and personal interest.

The use of an argument placing the welfare of the community first held serious drawbacks particularly for the Schuylkill and Lehigh navigations and the Delaware and Hudson Canal. While each project had a metropolitan area as its downstream terminus, they all started as near as possible to the coalfields of eastern Pennsylvania. That is to say, they began in regions that were sparsely settled in the 1810s and early 1820s, dotted with occasional villages and with farms that barely generated enough cash to pay taxes. Even in 1832, Josiah White of the Lehigh Coal and Navigation Company frankly admitted that “our canal terminates in a complete barren wilderness.”<sup>45</sup> The area of Pennsylvania bordered by New Jersey on the east, New York on the north, the Susquehanna to the west, and Philadelphia to the south boasted only one town, Reading, larger than 2,500 people. The coal-related projects could not connect the great northwest to the eastern seaboard, the northern cities to the southern cities, or even highly developed hinterland with the nearest city. At least the Schuylkill navigation would pass by Reading and eventually have the Union Canal as a feeder. That was barely enough to convince the state legislature to purchase \$100,000 in Schuylkill Navigation Company stock after the Panic of 1819, a measure intended to create temporary employment rather than a grand commitment to the project’s completion. With that exception, however, direct state investment in Philadelphia-region canals ended. Inland navigation company officials would have to find private sources of investment. The Chesapeake and Delaware Company, in 1823, tried canvassing the various wards of Philadelphia, inducing city residents to invest “for the purpose of

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<sup>45</sup>Josiah White, *Circular* (Harrisburg: Hamilton & Son, 1832), 6.



completing a work of great national importance, without regard to any pecuniary advantage which might possibly accrue to the stockholders."<sup>46</sup> Such efforts yielded little success, so canal backers knew they would need some reason more compelling than the greater good to attract money from individuals.

Another issue, damages, directly belied the assertion that canals were universal instruments of communion and hastened Philadelphia-area residents to consider that canal companies represented one among many competing interests. River navigations and sometimes canals required dams that could flood surrounding fields either permanently or on a semiannual basis. Company officials found themselves continually dragged into county courts to settle claims for inundated property. The vicissitudes of owning land along the route proved to be extremely annoying and contributed to the high costs of canal building. Having extensive experience with English canals, Benjamin Henry Latrobe related that the "proprietor who sells land to a Canal Company, independently of dissevering his property, exposes it to the depredations of boatmen, who at a distance from their homes, are often in want of fruit and poultry, and fence-rails for firing." Consequently, "he therefore demands a price which will cover the land lost, perhaps the destruction of his meadows, the inconvenience, and the nuisance, and also an insurance from depredations."<sup>47</sup> The question of damages pitted the interests of those who used a navigation, represented by the company that owned and operated it, against the interests of the people who

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<sup>46</sup>Charles Biddle to Mathew Carey, April 29, 1823, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Cary Gardiner Papers, Historical Society of Pennsylvania.

<sup>47</sup>B. Henry Latrobe, Remarks on the Address of the Committee of the Delaware and Schuylkill Canal Company to the Committee of the Senate and House of Representatives, as Far as It Notices the "View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water. Printed by order of the Committee of the Councils (Philadelphia: Zachariah Poulson, Jr., 1799), 6.

lived directly along it; in 1822, Southwark residents petitioned against a canal from the Delaware to the Schuylkill cutting through their neighborhood because it would be “destructive to the best interests of your Memorialists.” Pointing out the “inconvenience and destruction to public and private property, in making a Canal through a thickly settled district,” they further wrote that they were “fearful [that] any attempt to recover damages by the tedious and expensive process of law, will not compensate the sufferers for the injuries they will thus sustain.”<sup>48</sup>

Although many people benefited from the extension of inland navigations, those who lived along the routes testified that canals and river navigations were a decidedly mixed blessing.<sup>49</sup>

Ignoring the complaints of local property owners, canal company supporters applied the ideology of community interest to defend themselves against local property owners in the court of public opinion. They employed a tactic of which business leaders became especially fond: identifying the public interest with their own. It was an easy leap for them to make. Having already posited that economic growth inherently contributed to the greater good, they argued that they, as the agents of that growth, therefore represented and indeed even guarded the public interest. Under this rhetorical twist, “damages...to be assessed by men, either locally interested or biased by other causes” could then be denounced as the obstacles that greedy individuals put in the way of the whole society’s goals. Company officials eventually used such language in

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<sup>48</sup>Petition to General Assembly, House File, 46th Session-1, 1821-22 (Canal and Navigation Companies, Roads, Turnpikes), Pennsylvania General Assembly, Records of General Assembly, Record Group 7, Pennsylvania State Archives.

<sup>49</sup>For an examination of the ambivalence toward internal improvements and the changes they brought, see Carol Sheriff, *The Artificial River: The Erie Canal and the Paradox of Progress, 1817-1862* (New York: Hill and Wang, 1996).

nearly any instance of opposition to the wishes of internal improvement company boards. George Paleske, one of the men behind the merger that resulted in the Union Canal Company, went so far as to argue that the state should exempt canal companies from property taxes, “which would of course oblige them to raise the tolls, evidently to the disadvantage of the public, for the benefit of perhaps one county.”<sup>50</sup> Paleske’s bold suggestion—that county property taxes enacted by publicly elected officials operated against public interest—never made its way into any navigation company charters, because every locality wanted to reserve the right to tax whomever it wanted. Besides, counties clamoring for better transportation had no desire to alienate internal improvement companies and certainly would not raise local taxes simply to gouge only one of its taxpayers. Still, Paleske’s attitude and rhetoric typified much internal improvement company posturing.

The Schuylkill Navigation Company in particular did not hesitate to claim that any threat to the company inherently jeopardized the public interest. In March 1826, the Pennsylvania legislature passed an act with sixteen clauses listing possible infractions against internal improvement companies along with the legal remedies.<sup>51</sup> For the most part, these measures reflected practical concerns; for example, the prohibition against boatmen’s use of iron-tipped poles protected canal beds from repairs that could both be costly and potentially shut down the waterway during the busy season. The law also authorized internal improvement companies to build and maintain towpaths. That July, Richard

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<sup>50</sup>Paleske, 14.

<sup>51</sup> Acts of the Legislature of Pennsylvania, Relating to the Schuylkill Navigation Company (Philadelphia: Joseph & William Kite, 1838), 28.

Peters, Jr., the bridge-builder's son, wrote to the company protesting their construction a towpath on his property, and disputed the company's rights under the law. Schuylkill Navigation Company president Joseph S. Lewis curtly replied that the "provisions are such as are indispensable to the security of the works, and to the public enjoyment of their benefits." Lewis had inserted "public enjoyment" for what clearly was the company's bottom line. He further asserted that Peters had nothing to complain about because "before the navigation was made, the advantages you suppose to be lost... were enjoyed by the mere permission of the commonwealth. If they exist at present, they have been created by the Company."<sup>52</sup> In other words, Peters once may have been able to use the river because it was a public, but once the Schuylkill Navigation Company began building, it could only be used through the company's good graces. According to Lewis's reasoning, what belonged to the public belonged to the company, and what belonged to the company also belonged to the company. Internal improvement company boards did not hesitate to claim that their interests *ipso facto* not only coincided with the public interest, but also actually were the public interest.

Beginning in the 1820s, inland navigation boosters began to shift from the rhetoric of projects' potential uniting influence to appeals to more locally defined interests. Yes, canals could still unite people, companies' pamphlets acknowledged, but promoters began to argue that the issue at hand had become exactly whose interests would be united. Although they had voiced such concerns in the 1790s, by the third decade of the nineteenth century

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<sup>52</sup> Joseph S. Lewis to Richard Peters, Jr., July 29, 1826. Richard Peters Correspondence, 1821-1839,

Philadelphia investors became increasingly adamant that state-chartered projects should unite parts of the state to each other rather than linking Pennsylvania hinterlands to the markets in Baltimore or New York. In doing so, canal promoters recognized that groups in different regions of Pennsylvania would lobby for projects that would reflect local interests, rather than some ever-more-elusive general good.

Internal improvement boosters had learned that their unifying rhetoric was a double-edged sword, and they found a way to use the second blade constructively: they warned Pennsylvania investors and legislators that if canals did not link Philadelphia with the rest of the state, aggressive Baltimore and New York City would eventually have more in common with rural Pennsylvania than the state's own metropolis. The Susquehanna River flowed southeast from north of Harrisburg to the top of the Chesapeake; counting the river's eastern and western branches and major tributaries such as the Juniata River, it was the highway to the ocean for a broad swath of central Pennsylvania and even western New York. That highway's terminus was Baltimore, and in the closing years of the century, Baltimore's foreign trade exceeded that of Philadelphia's. Contemporaries attributed much of Baltimore's growth to its acting as an entrepôt for the increasingly profitable trade of the Susquehanna Valley. Philadelphians thought that because Baltimore's Susquehanna traffic originated in Pennsylvania, the profits rightly belonged to Philadelphia and therefore was

gained at the Quaker City's expense.<sup>53</sup> After the War of 1812, Philadelphia canal boosters became ever more shrill in their pronouncements "that the future existence of Philadelphia, as a commercial town, depends upon her opening a water-route to the Susquehanna."<sup>54</sup> One pamphleteer warned that the city "will cease to flourish; that she will deteriorate and fall to ruin" without a path to the Susquehanna: "without that remedy the trade of the interior will flow into other channels, and leave her in a few years neither produce for her exports, nor buyer of her imports."<sup>55</sup> In 1799, Philadelphians even managed to get a state measure passed prohibiting anyone from removing impediments to navigation along the lower Susquehanna, and they continued to stymie any legislation on that front for decades.<sup>56</sup> Meanwhile, what Baltimore had by the grace of nature, New York eventually gained through the vision and ambition of DeWitt Clinton: a waterway flowing westward, the Erie Canal. Thus, Both Baltimore and New York threatened to beat Philadelphia in the grand race to capture the future markets of the Great Lakes region, a competition that many observers thought would end in fabulous riches for the winner and stagnation and decline for the loser.

That sense of competition for the western trade at first had little basis in reality: the trade of the old northwest would not be profitable for decades, both because of a sparse population and because of the technological and

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<sup>53</sup>See James Weston Livingood, The Philadelphia-Baltimore Trade Rivalry 1780-1860 (Harrisburg: Pennsylvania Historical and Museum Commission, 1947), and Hartz, 42-51; for Baltimore in particular, see Gary Browne, Baltimore in the Nation, 1780-1861 (Chapel Hill: University of North Carolina Press, 1980).

<sup>54</sup>Samuel Breck, Sketch of the Internal Improvements Already Made by Pennsylvania; with Observations Upon Her Physical and Fiscal Means for Their Extension; Particularly As They have Reference to the Future Growth and Prosperity of Philadelphia, 2d edition (Philadelphia: M. Thomas, 1818), 43.

<sup>55</sup>Breck, 43.

<sup>56</sup>Livingood, 33.

geographic limits to canal building.<sup>57</sup> Nonetheless, Philadelphians clamored for waterways to the west. “The spirit for Inland Navigation is so general throughout our country,” a desperate petitioner pointed out, “that if advantage is not taken by our own State or its Citizens,” Philadelphia would “become in a greater or lesser degree insulated or locked up from a market by more enterprising neighbours.”<sup>58</sup> According to one pamphleteer, “two thirds of the trade of the western [states] must pass through the middle eastern states and it of course becomes an object of the greatest interest on the part of Maryland, Pennsylvania, and New-York, to secure this valuable commerce to their respective capitals.”<sup>59</sup> Whichever of the three cities “which should by its improvements first fix the trade in its own channel would naturally for a long time retain it, notwithstanding the exertions of its neighbours to interfere with it.”<sup>60</sup> The contest with Baltimore and New York lent extreme urgency to debates about how Philadelphia should improve itself and its fortunes: the question never became whether to go ahead but in which direction and how quickly. Merchants still dominated Philadelphia, and their experience with international trade had shown them that successful trade was based upon building up personal relationships with merchants, agents, and suppliers in other markets. They thought that if they did not make contacts with western farmers first, merchants in New York and Baltimore would gain and forever keep those customers in their orbit. So they pressed for projects that

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<sup>57</sup> See Diane Lindstrom, “American Economic Growth before 1840: New Evidence and New Directions” *Journal of Economic History* 39 (March 1979), 289-301.

<sup>58</sup> Petition to Pennsylvania House of Representatives, March 24, 1825, House File, 49th Session-1, 1824-25, Pennsylvania Canal Folder, Pennsylvania State Archives.

<sup>59</sup> [Samuel Mifflin], Observations on the Importance of Improving the Navigation of the River Schuylkill, for the Purpose of Connecting it with the Susquehanna, and Through that River Extending Our Communication to the Genesee Lakes and the Ohio ([Philadelphia?], 1818), 13.

<sup>60</sup> Mifflin, 13.

could facilitate their efforts to entrench the hinterland trade for Philadelphia before their rivals could, enabling their city to continue growing. The men who proposed canal and river navigations were only too happy to oblige.

Not only did inland navigation promoters increasingly play on city boosterism, but also they began to emphasize mining and new kinds of industrial production rather than simply farming, flour milling, and commerce as keys to the success of their projects and economic growth in the Philadelphia area. Leaders of earlier efforts, for example the Susquehanna and Schuylkill Canal Company, had emphasized the usefulness of their project for “a Commercial and Agricultural people,” noting “the immense quantity of Produce raised from the Farms bordering on the Susquehanna and the Schuylkill Rivers.”<sup>61</sup> Not surprisingly, the newer, explicitly coal-related projects—the Schuylkill and Lehigh navigations and the Delaware and Hudson Canal—made the promotion of anthracite their top priority. First, of course, they had to promote the product: Pennsylvania anthracite burned differently from “British” or “Virginia” coal—the contemporary terms for the bituminous coal shipped into Philadelphia—and so required a consumer education campaign. Time after time, companies reprinted pamphlets touting all the advantages of anthracite coal as opposed to bituminous coal, charcoal, and wood—in cost, in the amount of heat generated, in the level of care required to tend fires, and in the quality and quantity of soot created. These publications usually included testimonials from various users, demonstrating “the importance and value of this Coal to the manufacturer as well as for domestic purposes.” The pamphlets also reprinted statements chosen



from a range of tradesmen showing the black stone's versatility in the workplace "for nailing, for the rolling and slitting of iron, malting, distilling, evaporation of salts, [and] for steam engines," and included instructions for constructing grates for household and trade use as well as for lighting and tending anthracite.<sup>62</sup>

Sometimes these publications suggested that one Pennsylvania region's coal possessed better qualities than others; Lehigh-area coal, for example, purportedly made for "the most durable fire, creating an intense, but regular and steady heat, without disagreeable smoke or unpleasant smell, and producing no soot."<sup>63</sup> Canal investors promoted the use of anthracite coal with a nearly evangelical fervor.

Furthermore, boosters connected the use of anthracite to Philadelphia's continued economic expansion, growth that depended upon manufacturing growth; the black stone would be "the inexhaustible sources of its future prosperity."<sup>64</sup> They stressed "the importance of opening a communication with these mines, rendered the more necessary by the rapid disappearance of wood from all the streams connected with Philadelphia."<sup>65</sup> The iron industry, especially, would benefit from the availability of this new heat source that one Union Canal Company pamphlet cheerfully prophesied "will render this state the most productive in the Union." The writer further predicted that the Philadelphia region's mineral bounty and hard work would propel the United States to

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<sup>61</sup>Broadside of Delaware and Schuylkill Canal Navigation ([Philadelphia, 1796]), Historical Society of Pennsylvania.

<sup>62</sup>Charles Miner, ed. Lehigh Coal. Certificates from a Number of Persons, Shewing the use and Value of the Lehigh Stone Coal, with Some Prefatory Remarks (Wilkes-Barre, PA: Charles Miner, 1815), 1.

<sup>63</sup>Facts Illustrative of the Character of the Anthracite, or Lehigh Coal, Found in the Great Mines at Mauch Chunk, in Possession of the Lehigh Coal and Navigation Company, with Certificates from Various Manufacturers, and Others, Proving its Decided Superiority over Every Other Kind of Fuel (Philadelphia: S. W. Conrad, 1827), 3.

<sup>64</sup>Breck, 17.

“become one of the greatest iron countries on the globe.”<sup>66</sup> Because they would “decrease the expense of fuel” and thereby “encourage all manufactories,” canals to coal country could “increase our inland and foreign trade, restoring us in all probability, to the rank which our capital and resources entitle us to hold.”<sup>67</sup> What would help the city grow would also redound to the benefit of investors, as well; after all, “experience has shown that all canals, which supply large communities with so essential an article as fuel, have invariably yielded large profits to the stockholders.”<sup>68</sup> Boosters were quick to make the connection between the consumption of coal, the success of their projects, and the city’s continued economic development.

At the same time that they promoted coal, inland navigation partisans also offered another source of energy for manufacturing: water power. Among the companies in the Philadelphia region, the Schuylkill Navigation Company had the largest stake in the promotion of water power both because of its proximity to the city and because, of all the projects, in the Schuylkill River it had by far the most reliable source of constant flow pressure.<sup>69</sup> Even before the founding of the company, mills dotted the river’s banks in such places as Norristown, Reading, and Mill Creek, and the first petitioners for incorporation to improve the

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<sup>65</sup>Mifflin, 17.

<sup>66</sup>Annual Report of the President and Managers of the Union Canal Company of Pennsylvania, to the Stockholders. November 15, 1825 (Philadelphia: Lydia R. Bailey, 1825), 12.

<sup>67</sup>Mifflin, 20-21.

<sup>68</sup>Mifflin, 21.

<sup>69</sup>One of the greatest technical problems facing canal-builders was ensuring an adequate flow and water supply merely for navigation. That eliminated the possibility of selling waterpower for the Chesapeake and Delaware Canal Company, the Delaware and Hudson Canal Company, and especially the Union Canal Company; for the last, water supply proved continually acute, limiting the use and profitability of the Union. The Lehigh River proved difficult to control because of the ferocity of its spring freshets, one of the reasons that the Lehigh Coal and Navigation Company had to adapt a special kind of lock, a “bear trap,” merely to ensure the safety of the barges. By the mid 1830s, however, the company’s land development efforts began to pay off, and it was selling waterpower to millers in the company-owned towns of South Easton,

river for navigation asked for the right to rent or sell the river's power, a right that the General Assembly granted to the Schuylkill Navigation Company in its charter.<sup>70</sup> The City of Philadelphia soon became the company's largest single customer. In agreements signed from 1819 through 1824, the company leased to the city corporation enough water to supply the city waterworks along with the power necessary to raise it to a reservoir in exchange for a payment of \$26,000 and an arrangement by which the city would maintain the company's installations through city property.<sup>71</sup> The city government, in turn, quickly set out to sublet the excess power from the river once the waterworks were properly supplied. The Philadelphia Councils put "disposal of water power for manufactories" as a primary reason for purchasing the waterpower, because of the "facilities thereby afforded to a branch of industry deserving of encouragement, as a means of employing a vast number of our people, and of increasing the wealth" of Philadelphia.<sup>72</sup> The city government and the company had thus become partners in their efforts to foster industrial growth.

Meanwhile, in August of 1816, company officials optimistically estimated the waterpower above Manayunk—about seven miles north of the city, but still in Philadelphia County—sufficient to "turn day and night, about one hundred and

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Mauch Chunk, White Haven, and Nesquehoning. See History of the Lehigh Coal and Navigation Company (Philadelphia: William S. Young, 1840), 47.

<sup>70</sup> "Original Draft Bill for Improving the River Schuylkill Presented in 1812-1813 by Josiah White & others," Schuylkill Navigation Company Folder, Society Miscellaneous Collection, Historical Society of Pennsylvania. Acts of the Legislature of Pennsylvania, Relating to the Schuylkill Navigation Company (Philadelphia: Joseph & William Kite, 1838), 3.

<sup>71</sup> See Agreements of June 3, 1819, July 20, 1820, and June 14, 1824, Between the Mayor, Aldermen & Citizens of Philadelphia, and the Schuylkill Navigation Company, Relative to the Water Power, &c., at Fairmount (Philadelphia: F. C. Markley & Son, 1869).

<sup>72</sup> Report of the Watering Committee, on the Disposal of the Surplus Water Power of the River Schuylkill, and the Construction of a Canal Between the Schuylkill and Delaware (Philadelphia: Councils of the Corporation of Philadelphia, 1825), 5.

forty overshot mill wheels, grinding wheat.”<sup>73</sup> Although that extravagant goal was never quite realized, the Schuylkill Navigation Company did nurture the development of Manayunk, to the point that, in 1827, one local characterized it as “one of the greatest manufacturing establishments in the vicinity of Philadelphia.” Indeed, by the 1830s it had become one of the nation’s foremost textile manufacturing districts.<sup>74</sup> Company boosters and investors could see that such growth in the Philadelphia area provided revenue for the canal in a variety of ways: the renting of water power, the renting of property, the transportation of goods to and from the factories, and the transport of goods to and from the growing town surrounding the mills. The exploitation of waterpower, they realized, would be good for the company and for the Philadelphia region, and they continued to promote “Valuable Water Powers, Mills, Furnace[s], Wood Land &c. On and near the River Schuylkill” along the length of the navigation.<sup>75</sup>

Reinforcing the rhetorical themes of uniting interests and industrial development, Inland navigation companies also generated a large portion of their revenue from the transportation of both manufactured goods from Philadelphia to the hinterland and of raw materials to the city. As “valuable as [the coal trade] is, there is yet another source for the augmentation of the business,” the Schuylkill Navigation Company’s Board of Managers told its stockholders.<sup>76</sup> Although more coal traveled downstream than any other product—indeed, it

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<sup>73</sup>Breck, 17.

<sup>74</sup>*Democratic Press*, September 24, 1827, as quoted in Cynthia J. Shelton, *The Mills of Manayunk: Industrialization and Social Conflict in the Philadelphia Region, 1787-1837* (Baltimore: The Johns Hopkins University Press, 1986), 88. Shelton puts the Manayunk district just below Lowell in terms of textile manufacturing output during this period.

<sup>75</sup>Broadside, Schuylkill Navigation Company, “Valuable Water Power, Mills, Furnace, Woodlands, &c.” (Philadelphia: J.P. Justice, 1831).

<sup>76</sup>*Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1828* (Philadelphia: Lydia R. Bailey, 1828), 5

remained the *raison d'être* for several of the projects long after their initial construction—a host of other commodities floated down to Philadelphia for use in the city's workshops and building trades. Canal companies boasted about “*iron, coal, lead, zinc, marble of great beauty...many sorts of lime stone including that with which hydraulic or Roman cement is made, soap stone, sand stone, for ornamental buildings, granite for flag pavements and curb-stones.*”<sup>77</sup> Some annual reports to stockholders enumerated the commodities transported by type and by quantity, thus giving a manifest of local production. Coal, of course, topped these lists, but lumber, stone, limestone, iron, iron blooms, iron ore, nails, and sawed marble also went down to Philadelphia in significant quantities.<sup>78</sup> The cheap availability of these commodities in large quantities contributed significantly to the ability of Philadelphia craftsmen and manufacturers to step up production, especially in the crucial iron-working trades that produced the tools and engines necessary to so many of the city's and region's manufacturing enterprises.<sup>79</sup>

Just as boosters promised, the growing population of the city and the region formed an ever-greater market for local tradesmen and manufacturers. “The increase in the return [ascending] trade has exceeded that of the descending navigation, and forms a source of revenue not much calculated upon at an early stage of our work,” the Schuylkill Canal Company board cheerfully

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<sup>77</sup> Annual Report of the President and Managers of the Union Canal Company of Pennsylvania, to the Stockholders, November 15, 1825 (Philadelphia: Lydia R. Bailey, 1825), 5.

<sup>78</sup> See for example Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1828 (Philadelphia: Lydia R. Bailey, 1828), 11. Lumber, wood to be used in crafts and construction is listed here to distinguish it from cordwood, which was used as fuel.

<sup>79</sup> See Philip Scranton, Proprietary Capitalism: The Textile Manufacture at Philadelphia, 1800-1885 (New York: Cambridge University Press, 1983) and Paul E. Paskoff, Industrial Evolution: Organization, Structure, and Growth of the Pennsylvania Iron Industry, 1750-1860 (Baltimore: The John Hopkins University Press, 1983).

reported to stockholders in 1827. What was more, the navigation promised "to be of great importance; for as the population of the country bordering on the Navigation increases, their demand of supplies must also increase."<sup>80</sup> Though downstream traffic on all the inland navigations in the Philadelphia region exceeded upstream traffic by weight, the return traffic of finished goods was of greater value.<sup>81</sup> Tradesmen and manufacturers in Philadelphia gained at least as much from the canals and rivers navigations as did the people who lived along their banks.

Accordingly, inland navigation supporters increasingly espoused the cause of industry, and vice versa. As early as 1812, Josiah White's first proposal to improve the Schuylkill River promised that the waterway would "be made subservient to the most valuable purposes of manufacture and inland navigation."<sup>82</sup> Mathew Carey wrote and rewrote scores of pamphlets supporting protective tariffs for native manufacturing; he also promoted the value of internal navigation in creating a domestic market for the city's manufactured goods and the countryside's agricultural output.<sup>83</sup> Canal company pamphlets constantly predicted that internal navigation would provide a great boon for Philadelphia because, as a Delaware and Raritan Canal publication read, "from her will be drawn the supplies for the western world, of merchandise and manufactures, which the capital of our citizens, and the skill and industry of our artists and

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<sup>80</sup>Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 1, 1827 (Philadelphia: Lydia R. Bailey, 1827), 6.

<sup>81</sup>Lindstrom, Economic Development, 106.

<sup>82</sup>Josiah White, petition, December 5, 1812, Society Miscellaneous Collection, Historical Society of Pennsylvania.

<sup>83</sup>See Kenneth Rowe, Mathew Carey: A Study in American Economic Development (Baltimore: The Johns Hopkins University Press, 1933).

mechanics, can always furnish.”<sup>84</sup> Inland navigation supporters argued that by giving Philadelphia workshops the opportunity to fulfill the demand of a growing hinterland, canals would ensure the city's continued growth and wealth.

The emphasis on mining and manufacturing proved to be ideologically profound in that it implied a different view both of American development and of the role of the individual within that growth.<sup>85</sup> Early canal boosters had formulated their appeals in terms of America's past economic development. They did not claim that their canals would change either the overall economy or the way that people behaved in it. Rather, they argued that inland navigations would allow the republic to expand spatially while still remaining predominantly rural: an early Delaware and Schuylkill Canal Company called internal transportation “one of the first objects to a Commercial and Agricultural People.”<sup>86</sup> The vision they offered was essentially conservative, one based upon replicating prevailing rural community structures ever further west by allowing new settlements to become economically viable by virtue of their ties to coastal cities and thus to the market at large through the availability of cheap transportation. Those boosters held rather static assumptions about the city as well: that it would continue to act merely as an entrepôt for exporting hinterland

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<sup>84</sup>Considerations on the Proposed Canal to Connect the Rivers Delaware and Raritan (Philadelphia: Joseph R. A. Skerrett, 1825), 5.

<sup>85</sup>For a discussion of the ideology of manufacturing, see Larry Peskin, “To ‘Protect and Encourage’ American Manufactures: The Intellectual Origins of Industrialization, 1763-1830,” (Ph.D. diss., University of Maryland, 1998).

<sup>86</sup>Broadside of Delaware and Schuylkill Canal Navigation, 1796, Society miscellaneous Collection, Historical Society of Pennsylvania.

Drew McCoy, in The Elusive Republic: Political Economy in Jeffersonian America (Chapel Hill: University of North Carolina Press, 1980), argued that Jeffersonian Republicans envisioned the republic expanding through space but not time; in other words, that territorial growth would forestall industrial development. However, in Liberty and Property: Political Economy and Policymaking in the New Nation, 1789-1812 (Baltimore: The Johns Hopkins University Press, 1987), John Nelson, Jr. more convincingly demonstrated that Federalist merchants were as much or even more dedicated to traditional, agriculturally- and

produce and importing finished goods. The biggest early canal boosters were merchants, and they had made their fortunes in exactly that sort of city. For them, an ever-expanding, primarily agricultural republic was a most wonderful fantasy: it meant more profitable land speculation, more grain and flour to sell overseas, and greater demand for the products they shipped in from foreign ports.

The second generation of Philadelphia-area canal boosters, however, dreamed different dreams for the future of America. Perhaps the different outlook should have been expected: the previous generations had grown up as subjects in the provincial outpost of a worldwide empire, while those of the new generation came of age as citizens under an American flag. True, some of these younger men, too, had first made their money in mercantile pursuits spanning the Atlantic world. Most of them, however, had invested time and money in various manufacturing ventures as well and many had done so exclusively. While the younger men certainly supported better access to a wider agricultural hinterland, they also espoused production of American manufactured goods rather than importation from Europe. Furthermore, because manufacturers and mine owners had greater difficulty getting access to bank loans than did merchants, they were much more likely to demand wider access to credit and a larger money supply than the older men.<sup>87</sup> Thus, the new generation of canal promoters imagined Philadelphia's future quite differently than the men who had founded the Delaware and Schuylkill and the Susquehanna and Schuylkill canal

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commercially-driven economic growth while many urban Republicans actually supported a more diversified economy with domestic manufacturing as a central component.

<sup>87</sup>See Chapter 4 for discussion of credit.



companies. These younger men's hopes for the city dovetailed perfectly with Clay's, Calhoun's, Webster's, and John Quincy Adams's hopes for the nation in the years after the War of 1812: a republic connected by a network of interior waterways that fostered the creation of a self-sufficient national market fueled by equal economic opportunity—read: access to credit—for all (white) men. Thus, not only did they picture Philadelphia proper as a center for trade, but also they began to see the greater Philadelphia region, including manufacturing districts such as the Northern Liberties, Manayunk, and the Brandywine Valley, as part of a varied, integrated economic machine with a vital manufacturing sector. Agricultural land speculation in eastern Pennsylvania, with its agricultural emphasis, had become *passé*: coal now fueled Philadelphia's economic engine.<sup>88</sup>

The young entrepreneurs had a new blueprint for the city's economic growth, and they emphasized the importance of the profit motive in that process. Coal, credit, and corporations formed the cutting edge of economic activity in 1820s Philadelphia. The men who engaged in these avenues of endeavor placed themselves at the forefront of the creative destruction of old traditions governing economic and legal relations in the marketplace.<sup>89</sup> Accordingly, they espoused an idea that implicitly supported more aggressive behavior in the marketplace: that the pursuit of individual interest was a positive good unto itself,

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<sup>88</sup> This is not to say that all land speculation in the area was over: the possibility of big coal-mining profits led to a frenzy of speculation in potential anthracite-bearing lands in the 1820s and 1830s.

<sup>89</sup> Joseph Schumpeter, the first economist to concentrate on the effects of entrepreneurship upon economic growth, argued that new economic activities created paths of economic development while destroying older economic structures. See Joseph Alois Schumpeter, *The Theory of Economic Development; An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Revers Opie, trans. (Cambridge: Harvard University Press, 1934).

leading not only to personal wealth but also to regional and national wealth, and that public economic policy should reflect the sum of individual interests.

While men such as Josiah White and Joseph S. Lewis introduced significant economic innovations, their unabashed espousal of individual interest did not represent a similar philosophical innovation; rather, it reflected the maturation of an ideology that had its American roots in the colonial era.<sup>90</sup> Just as some colonists had pointed to what they (accurately) perceived as the self-serving aspects of the British Navigation Acts, others had suggested that enlightened self-interest formed the best argument for independence. Adam Smith's Wealth of Nations was first published in 1776, but it was a brilliant summation of ideas that had already circulated widely, hinted at by both *philosophes* and Scottish political economists whose works had made their way across the Atlantic. Because their livelihoods depended upon the overseas markets, after the Revolution merchants and farmers alike took up the banner of free trade to keep tariff barriers low. But, whether or not its proponents were willing to admit as much, championing free trade implicitly justified the enlightened pursuit of self-interest: the doctrine of free trade was based upon the assumption that the aggregate of all individuals, making their own decisions in the marketplace, will create a strong national economy more efficiently than any appointed or elected body. Ironically, from the late 1810s on, many of the same men who campaigned for high protective tariffs for industry--the very negation of

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<sup>90</sup>See Cathy Matson and Peter Onuf, A Union of Interests: Political and Economic Thought in Revolutionary America (Lawrence: University Press of Kansas, 1990), and Joyce Appleby, Capitalism and a New Social Order: The Republican Vision of the 1790s (New York: New York University Press, 1984).

laissez-faire--also used appeals to the genius of self-interest to sell an agenda of internal improvement.

In a typical example, Chesapeake and Delaware Canal Company supporters shifted their emphasis from one of union and agriculture to one of manufactures and interest by the 1820s. In the 1790s, or perhaps before, many people in southern New Jersey, southeastern Pennsylvania, northern Delaware, and northern Maryland had recognized the potential utility of a navigable waterway connecting the Delaware River and Chesapeake Bay across a thin isthmus between the two bodies of water. However, the project faced even more obstacles than the Union Canal in that any route would have to travel through Delaware and Maryland, an especially sensitive point in the latter state because the proposed canal threatened to divert Susquehanna River traffic from Baltimore to Philadelphia. Nonetheless, particularly dogged lobbying in both state legislatures resulted in a Maryland charter in 1799 and a Delaware charter three years later. Company pamphlets and petitions extolled the same advantages as did other contemporary inland navigation efforts: that the canal would form “the great link of an inland navigation of six or seven hundred miles, and thereby establish a perfect, safe, easy and rapid transportation...which would ever tend to operate as a cement to the Union between the States.”<sup>91</sup> They also suggested that “the prosperity and the agricultural interest” of Maryland, Pennsylvania, and Delaware depended upon connecting the two

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<sup>91</sup>“A Supplement to an Act to Incorporate a Company for the purpose of cutting and making a canal between the river Delaware and the Chesapeake Bay,” March 25, 1813, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Chesapeake & Delaware Canal Company, No. 5, Pennsylvania Department of State, Record Group 26, Pennsylvania State Archives.

major waterways.<sup>92</sup> Such appeals pushed all the usual buttons: linking great expanses of territory, uniting the states, and promoting agricultural production.

Like other projects in the area, the Chesapeake and Delaware canal remained only partially completed because of both technological and financial problems after its first few years.<sup>93</sup> However, in the early 1820s a group of Philadelphia and northern Delaware entrepreneurs revived the company. These men typified the shift in Philadelphia's economic leadership. In the first decade of the nineteenth century, merchant princes such as Andrew Bayard, James C. Fisher, James Vanuxem, and Thomas Willing had been the company's most active stockholders. Former shot manufacturer Paul Beck Jr., who helped found the Franklin Institute, and Mathew Carey, the printer, pamphleteer, and patron saint of American manufacturers and internal improvement, led efforts to resuscitate the company beginning in 1821. They allied themselves with Joshua Gilpin, a northern Delaware paper miller whose father had been associated with the project since its inception. This time, Chesapeake and Delaware Canal promoters emphasized the importance of manufacturing to the canal as well as the centrality of manufacturing to Philadelphia's continued growth. As Gilpin explained to Beck about choosing the best route for the canal, of primary importance was "the supply of the manufacturing district of Christiana with raw materials such as wheat, tobacco, cotton and above all coal, [which] offered a

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<sup>92</sup>"A Supplement to an Act to Incorporate a Company for the purpose of cutting and making a canal between the river Delaware and the Chesapeake Bay," March 25, 1813, Secretary of the Commonwealth, Internal Improvements File, Canal & Navigation Companies, Chesapeake & Delaware Canal Company, No. 5, Pennsylvania Department of State, Record Group 26, Pennsylvania State Archives.

<sup>93</sup>Progress on the Chesapeake and Delaware Canal as well as others in the Philadelphia region followed closely the chronological pattern identified for canal investment by Harvey H. Segal in "Cycles of Canal Construction," in Carter Goodrich, ed., *Canals and American Economic Development* (New York: Columbia University Press, 1961), 169-207.

source of revenue to the canal more effective than any other.”<sup>94</sup> Just as importantly, Gilpin pointed out, “there is produced in [Wilmington and] this district annually in flour, paper, gunpowder, cotton and woollen articles, barley, iron, and agricultural products, between one & two millions value, every particle of which centers in Philadelphia.”<sup>95</sup> Consequently, “if the city attends to the sources of its own prosperity, there is no one which more demands its attention” than the Christiana valley.<sup>96</sup> Gilpin later emphasized that the relationship between Philadelphia and the manufacturing districts was reciprocal. “Except for the manufacturing people & the mercantile men in this part of [Delaware], whose interests centre in the city, there is a very little knowledge or attachment either to the city or canal itself,” the paper miller explained.<sup>97</sup> “Below Christiana they are all farmers, every one of whom would make a noise about the canal to suit their own interests, tho none of them would give it any aid.”<sup>98</sup> Gilpin, Beck, and Carey agreed that integrating industrial districts would be Philadelphia’s path for growth, internal transportation was necessary for that consolidation, and interests—in this case those of manufacturers and merchants—were legitimate economic pursuits.

The earliest efforts of the Lehigh Navigation and Coal Company (later to become, confusingly enough, the Lehigh Coal and Navigation Company) also reflected the shift from an emphasis on union and agriculture to one of

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<sup>94</sup> Joshua Gilpin to Paul Beck, September 10, 1821, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Carey Gardiner Papers, Historical Society of Pennsylvania.

<sup>95</sup> Joshua Gilpin to Paul Beck, September 10, 1821, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Carey Gardiner Papers, Historical Society of Pennsylvania.

<sup>96</sup> Joshua Gilpin to Paul Beck, September 10, 1821, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Carey Gardiner Papers, Historical Society of Pennsylvania.

<sup>97</sup> Joshua Gilpin to Mathew Carey, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Carey Gardiner Papers, Historical Society of Pennsylvania.

manufactures, markets, and interests. The charter, passed on March 20, 1818, moved straight to Section 1, giving Josiah White, George Hauto, and Erskine Hazard permission to work on the river, foregoing any preamble with flowery paeans to the inherent glories of internal navigation.<sup>99</sup> Thus, even from the start, the mere improvement of the river allowing coal and lumber to travel down the Lehigh clearly was justification enough for the legislature without the possibility of the commingling of interest. Apparently, in White's words, the possibility of "a more active enterprise" proved sufficient.<sup>100</sup> The company's first pamphlet more forcefully set forth the same change in agenda. After a brief review of the terms of the charter and its benefits for the company, the pamphlet listed "the advantages to be derived from the navigation of the Lehigh, improved on this plan."<sup>101</sup> First, the company promised that "Philadelphia can be supplied with coal... 20 per cent. purer than any... which has come to this market from any other source, and at a less price."<sup>102</sup> The company also predicted that "a market will be opened for an immense body of timber on the Lehigh, which is now so completely locked up as not to be considered worth *stealing*, owing to the expense that would [currently] attend getting it to market."<sup>103</sup> Finally, the company touted the Lehigh's proximity to the Susquehanna; it claimed that the navigation would benefit from traffic that would be diverted from New York's

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<sup>98</sup> Joshua Gilpin to Mathew Carey, Mathew Carey Section, Miscellaneous Correspondence on Internal Improvement, Edward Carey Gardiner Papers, Historical Society of Pennsylvania.

<sup>99</sup> "An Act to Improve the Navigation of the River Lehigh," March 20, 1818, Acts of the General Assembly of Pennsylvania Concerning the Lehigh Coal and Navigation Company: Together with the Bye-Laws, Etc. (Philadelphia: James Kay, Jun. and Brother, 1837), 3.

<sup>100</sup> Eleanor Morton, Josiah White: Prince of Pioneers (New York: Stephen Daye Press, 1946), 133.

<sup>101</sup> Statement of the Lehigh Navigation and Coal Mine Company, with the Terms of Subscription for Stock (Philadelphia: William Brown, 1818), 3.

<sup>102</sup> Statement of the Lehigh Navigation and Coal Mine Company, with the Terms of Subscription for Stock (Philadelphia: William Brown, 1818), 6.

Grand (Erie) Canal at its intersection with the Seneca, go down the Susquehanna, and be carried ten miles overland to the Lehigh at Berwick—a pipe dream, but then so were many other canal claims. Tellingly, the only mention of interest was in conjunction with the quick dismissal of the charter’s potentially most expensive stipulation, that the legislature could require the company to make the river navigable upstream as well as downstream. Because the construction of an upstream navigation would allow the company to charge high tolls to recoup the cost of building the locks, “the interest of the whole community would be opposed to the change.”<sup>104</sup> In other words, even should members of the General Assembly decide that an upstream navigation would be in the interest of the Commonwealth of Pennsylvania—that is, the public good—local interests would be able to stymie any such proposal. For Lehigh Navigation and Coal Company boosters, coal, access to markets, and pursuit of interest formed a worthy trinity.

Justifying, encouraging, and indeed even celebrating the pursuit of individual interest proved to be a necessary ideological ingredient to the success of internal navigations in the Philadelphia area. Most obviously, the need for the Schuylkill Navigation Company, the Union Canal Company, the Lehigh Coal and Navigation Company, and the Delaware and Hudson Canal Company to raise money from individual investors rather than gain state funding clearly indicated that the general public, at least as constituted by the Pennsylvania General Assembly, did not consider these projects to represent the greater good of the

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<sup>103</sup>Statement of the Lehigh Navigation and Coal Mine Company, with the Terms of Subscription for Stock (Philadelphia: William Brown, 1818), 6.

commonwealth. Therefore, the potential for return on private investment in internal navigations, finally a possibility with the new market for anthracite, could now become the selling point for new sources of funding. Even more significantly, these projects represented the means to create new directions of commerce and manufacture, ones that bypassed and thus weakened the old economic structure.

The examples of the careers of two sets of men closely associated with efforts to improve inland navigation in the Philadelphia area—Richard Peters and Robert Morris, and Josiah White and the Wurts brothers—put the transition from modest strivings to the unbridled pursuit of self-interest in sharp relief.<sup>105</sup> Morris and Peters demonstrated the ambivalence of the Revolutionary generation. Born in 1744, Richard Peters in his long career served as a military officer during the American Revolution, as speaker of the Pennsylvania Senate, as the federal judge who presided over many of the Whiskey Rebellion trials, and as a boardmember of various Philadelphia social, charitable, and civil organizations, including his presidency of the Philadelphia Society for Promoting Agriculture. When the Peters died in 1828 at the ripe age of 83, his friends remembered him as a wise, patient man with a quick tongue and a sharp sense of humor.<sup>106</sup> But Philadelphia residents best recognized him as having nearly single-handedly built the first durable bridge to span the Schuylkill River, thus better connecting

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<sup>104</sup>Statement of the Lehigh Navigation and Coal Mine Company, with the Terms of Subscription for Stock (Philadelphia: William Brown, 1818), 4.

<sup>105</sup>For an extended discussion of the ideological gap between those who came of age before the American Revolution and those after, see Joyce Appleby, Inheriting the Revolution: The First Generation of Americans (Cambridge: Harvard University Press, 2000).

<sup>106</sup>Samuel Breck, Witty Sayings of the late Richard Peters, District Judge of the United States for Eastern Penna. Died in August 1828, aged 83. Collected, set down and arranged by Saml. Breck, who was his friend and neighbour in Blockley township, Belmont District for Thirty Years, ms., Breck Papers, Case 25, Historical Society of Pennsylvania.



Philadelphia with its western hinterland and with Lancaster. They remembered him because he helped to found the Schuylkill Permanent Bridge Company, became its first president, designed the bridge, and closely supervised its construction. Peters's financial involvement with the bridge company was limited to \$100, an investment that in no way justified the time and effort he spent on the project.<sup>107</sup> He did have land near the bridge that surely appreciated, and the improved transportation across the river may have marginally raised the value of other real estate investments farther afield, too. Nonetheless, he put into the project a tremendous amount of energy that certainly could have been spent in far more remunerative ways.

Peters's interest in transportation remained strong after completion of the bridge in 1803. In 1825, he and the tireless Mathew Carey founded the Pennsylvania Society to Promote Internal Improvement in order to lobby for the construction of a canal or railroad traversing the length of the state. He generally did not promote internal improvements in conjunction with particular investments. In fact, both the construction of the Schuylkill Navigation, in which he owned stock, and the consequent flooding damaged some of Peters's property. He had considerable trouble collecting; the building of the navigation had actually hurt Peters's property value more than helped it.<sup>108</sup> However, the Schuylkill navigation was part of the project that he had started as a Revolutionary soldier and continued as a federal judge, especially after his involvement putting down the Whiskey Rebellion: the making of the American nation. Furthermore, the

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<sup>107</sup>Schuylkill Permanent Bridge Company, List of Subscribers, Historical Society of Pennsylvania.

<sup>108</sup> John C. Lowber, Report of the Case of Alexander and Others Against the President, Managers and Company of the Schuylkill Navigation Company. Instituted to Recover Damages for the Loss of the Bridge

nation Peters envisioned was one in which men of proper standing—that is, men like himself—would run legal, political, and economic affairs in the name of all the people. For Peters, activities such as writing letters to the legislature in favor of canals and bridges even for the Schuylkill Navigation Company, whom he sued several times, represented the subordination of personal interest to the service of the common good.

Richards' contemporary Robert Morris held a more nuanced position on the conflict between private and public service, or perhaps more accurately, often saw the two as being mutually reinforcing. Born in England in 1734, Robert Morris immigrated to Philadelphia with his tobacco-agent father in 1747. When the elder Morris died three years later, young Robert was left with a considerable sum. After an apprenticeship with prominent Philadelphia merchant Charles Willing, he began a merchant career that by outbreak of the Revolution would make him perhaps the richest man in America. As a Pennsylvania representative in the Continental Congress, superintendent of finance under the Articles of Confederation, delegate to the Constitutional Convention, and senator in the first Congress, Morris knew better than anyone the disarray of the Continental Congress and its finances during the Revolution and after. He acutely understood the various ways that all sorts of interest—private, regional, state, and class—could paralyze the new nation. Morris's efforts during the Revolution and after to save the nation's finances can quite accurately be termed heroic: in the late 1770s and early 1780s, the continental government

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at the Falls of the Schuylkill, During the Fresh of the 21st of February, 1822 (Philadelphia: Lydia R. Bailey, 1825),

sometimes operated on his solid credit rather than its own shaky reputation.<sup>109</sup>

Nonetheless, he never hesitated to seize the main chance even when in the service of the government, often even using his government-agent status to secure juicy contracts and commissions. In the 1780s and early 1790s when he helped found institutions such as the Bank of North America, the Susquehanna and Schuylkill Navigation Company, and the Delaware and Schuylkill Canal Company, he emphasized their role “to combine the interests of all the parts of the state, and to cement them in a perpetual commercial and political union.”<sup>110</sup>

At the same time, Morris was usually quick to defend his own enterprises: describing his actions in 1785 when a group of Philadelphia men lobbied to incorporate a rival bank, Morris frankly admitted on the floor of the Pennsylvania General Assembly that “if any set of men were to apply to the legislature for a charter, which I thought injurious to my private interest, I should, if I had arguments of sufficient weight to offer against it, make an appeal to the representative body.”<sup>111</sup> Morris promoted canals both because they were good for the nation and because they would increase the value of his lands. For Morris, the pursuit of interest formed a necessary and laudable human impulse; the trick was to keep the great number of possibly competing or differing interests in harmony.

Unlike Peters and Morris, the generation that grew up after the Revolutionary War appeared to have few doubts about the strength of the

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<sup>109</sup>See Clarence L. Ver Steeg, Robert Morris: Revolutionary Financier. With an Analysis of His Early Career (Philadelphia: University of Pennsylvania Press, 1954).

<sup>110</sup>Smith, 1.

<sup>111</sup>Matthew Carey, ed., Debates and Proceedings of the General Assembly of Pennsylvania, on the Memorials Praying a Repeal or Suspension of the Law Annuling the Charter of the Bank (Philadelphia: Carey and Co., 1786), 40.

federal union, even fewer hesitations about making a buck when they could, but many new ideas about how that money could be made. Josiah White was born of Quaker stock in Mount Laurel, New Jersey, in 1781. He worked hard, lived frugally, tried to set a positive example, and always considered the public interest as much as his own. After an apprenticeship with a Philadelphia ironmonger, he went into the hardware business for himself and managed to beat by two years his boyhood goal of comfortable retirement at age thirty. Soon bored, he decided to get into the wirepulling business, buying land at the Falls of the Schuylkill. There, he built an ironworks, managed to dam the river—a feat which many had thought to be impossible—and even constructed a wire bridge across the broad waterway, but had trouble making money. The War of 1812 proved to be a mixed blessing: suddenly there was great domestic demand for his iron products, but British coal and Virginia coal became scarce and lumber costs skyrocketed. Like many others in the Philadelphia area, White began looking for alternative sources of fuel. White settled upon Philadelphia anthracite and realized that the best way to get it to market would be to invest in a company to render the Schuylkill River navigable. Such a venture would be both in the common interest and his own; he reasoned that “while I was carrying out so much good for the public, I would not impair my Estate, or that it would increase as fast as if I done no business and allowed the interest to accumulate.”<sup>112</sup> Just as with his earlier projects, he encountered opposition, or at least a lack of support, among a great many men with more conservative ideas concerning the direction of Philadelphia’s growth. At the same time, he knew on what terms to

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<sup>112</sup>Josiah White, Josiah White’s History Given by Himself (Philadelphia: Lehigh Coal and Navigation

sell the idea to the general public, painting in huge letters on the outside wall of his wire manufactory on the Schuylkill the message that the navigation “means Ten Dollars in the Pocket of Every Citizen of Pennsylvania,” ostensibly what each person would save as a result of cheaper fuel and lower transportation costs.<sup>113</sup> White’s choice of words was significant; after all, he did not propose, for example, that the navigation would bring people together or enrich the commonwealth at large. That he chose to point out the potential benefits of the project in terms of its ability to fatten each individual’s wallet demonstrated White’s understanding that the public would be swayed by appeals to personal interest. White saw industry as Philadelphia’s future, and believed the best way to build that future would be to encourage individual interest in the marketplace.

While Josiah White held an harmonious view of the union of public and private interest, the Wurts brothers never bothered to take the public good into consideration in their projects. Maurice (1783-1854), William (1788-1858), and John (1792-1861) Wurts were born in Flanders, New Jersey. As a teenager, Maurice apprenticed to a dry-goods merchant in Philadelphia, and in 1810 William came to the big city to join his older brother as a partner in their own dry-goods business; John arrived two years later to clerk in a law firm. During the War of 1812, the Wurtses realized that whoever could bring an inexpensive, local source of energy to the market would make a pretty penny indeed. In 1814, William found anthracite in the far northeastern corner of the state, near the Lackawanna River in what would eventually become Carbondale, Pennsylvania. After several false starts, in 1822 they began mining in earnest, extracting over a

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Company, 1909), 13.

ton of the black stones, which they sledded to the Lackawaxen River and then rafted down the Lackawaxen and the Delaware to Philadelphia. Meanwhile, their careers progressed in lock step: John got elected to the Pennsylvania General Assembly, Maurice moved to New York, where he made valuable contacts in the financial community including banker Philip Hone, and William's dry-goods business flourished in Philadelphia.

Together, the Wurts brothers masterminded the organization, chartering, and financing of the Delaware and Hudson Canal, designed to bring coal from the northern anthracite field to the Delaware River and from there downriver to Philadelphia and by canal to the Hudson River and thence New York City. If the public interest entered their minds during the chartering process in the Pennsylvania legislature, they made no mention of it in their letters to each other during the 1823 and 1824 legislative sessions. Because the Delaware and Hudson Canal Company would own mines in addition to the navigation, John successfully campaigned in the legislature for a rate of toll that the brothers calculated would be low enough to be acceptable to potential competitors but actually high enough for the Company to acquire a virtual lock on anthracite shipped along its route to the lucrative New York City market. In addition, the company's charter, unlike otherwise similar ones, would never have to be renewed. "Tho' apparently for 20 years," John gloated in a letter to Maurice, "it is in fact a perpetual grant, at such a rate of toll as makes it a complete monopoly."<sup>114</sup> The Wurts brothers considered the legislature in particular and

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<sup>113</sup>Morton, 96.

<sup>114</sup>John Wurts to Maurice Wurts, March 10, 1823. Vanuxem Collection, Series 2, Maurice Wurts Papers, Hagley Museum and Library.

the public in general as entities to be negotiated with at best and fooled if necessary. They showed no reluctance to use underhanded tactics on fellow investors, either. If Richard Peters represented the vestiges of an eighteenth-century sense of noble service to the cause and the nation, then the Wurtses, in their frank and ruthless pursuit of their own interests, best presaged the nineteenth-century phenomenon of the robber baron.

In 1828, already near the end of canal construction era in the Philadelphia region, the Schuylkill Navigation Company Board of Managers happily reported a surge in anthracite use, noting that “the great increase in the consumption of this valuable fuel is very important to the interest of the company.”<sup>115</sup> In doing so, they had taken another step in their mission to control the direction of Philadelphia’s development: they asserted that, just like individuals, the company had interests to be nurtured and defended. In the same period, the City Councils began seeing areas in which the City Corporation’s interests needed to be watched. In the winter of 1832, the City Councils and the Schuylkill Navigation Company fought over rights to the river’s water: their interests, in this case, had diverged. Chapter Six will investigate how the men who ran private corporations established institutional independence from civil authorities and coordinated their efforts across corporations to create a corporate sphere beyond the reach of the state government, while Chapter Seven will show the result when the city’s corporate interests and the navigation company’s interests clashed.

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<sup>115</sup>Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1828 (Philadelphia: Lydia R. Bailey, 1828), 4.

## The Philadelphia Associates

In the opening decades of the nineteenth century, the particularly anti-tax, anti-elite, and anti-Philadelphia bent of the Pennsylvania legislature rankled wealthy Philadelphians in their efforts to pursue business goals and to guide economic growth in the Delaware and Schuylkill river valleys. Pennsylvania had perhaps the most radical state constitution—even after its conservative makeover in 1790—ushering in universal white male suffrage and the accompanying political theater decades before Jacksonian politics demonstrated such democratic fervor in the rest of the nation.<sup>1</sup> Finding their views, interests, and personal political influence increasingly pushed aside from the rough and tumble of Pennsylvania politics, corporate officers and their friends endeavored to carve out an economic realm beyond the reach of grasping politicians and hidden from the eyes of a suspicious electorate. To do that, they developed an administrative and legal framework within which to control and to run their various projects. In that vein, corporate leaders pursued two inter-related goals. First, boardmembers and other insiders worked to make corporations independent from the Pennsylvania state government. Second, corporate boards created structures to administer their tasks within the corporation and to coordinate policies between corporations. Their success in doing so allowed a small corporate oligarchy of several hundred men to have great influence over economic development in the Philadelphia area, to put themselves in position to reap disproportionately the rewards of that growth, and to use their leverage to



further their greater political-economic agenda. They carved out a separate, corporate sphere of activity.

Corporate boosters did not try to avoid the government altogether: they needed the legislature for authorization to build their internal improvements, for limited liability, and for banking privileges, and they used their leverage in the statehouse to pass laws that furthered or protected corporate activities. Company officials did their best to manipulate the legislature to their own ends; previously chartered banks often allied with anti-charter factions to forestall competition and with internal improvement companies looking for emergency funds. Company officials sent letters and lobbyists to the state capital to negotiate terms, to make offers, and to cajole concessions from representatives whose interests, by electoral necessity, differed radically from those of wealthy Philadelphia company boosters. Elected officials did not necessarily or categorically oppose such entreaties, but they had motives beyond the mere encouragement of enterprise when they discussed and voted upon legislation. Accordingly, the men who ran big corporate businesses had an ambivalent relationship with the Pennsylvania General Assembly, one in which they considered the legislature far from a pro-active or even necessarily sympathetic partner. Most of the time, though, the men who ran corporations did their utmost to keep civil authorities at arm's length whenever they could, preferring to deal with the state as a separate entity rather than a controlling one.

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<sup>1</sup>Although the Constitution of 1790 repealed the radical structure of the 1776 document, including the latter's single legislative house and impotent executive branch, voting rights for all free men who paid taxes and were resident in the state for at least one year and their sons who were of age remained.

Corporations soon grew deep roots in Pennsylvania, but the seeds had come from Britain. In eighteenth-century Anglo-American legal theory, the corporation served to harness the energy and resources of private citizens for the interests of the state.<sup>2</sup> As its name suggests, a corporation was a body politic. The members of the corporation, generally defined by shareholding, composed their own by-laws and set up an administration—usually a board of directors or board of managers—whose decisions were to be legally binding upon all the shareholders. A corporate charter represented the granting of a tiny bit of sovereignty: a government-within-a-government endowed with certain privileges usually reserved to the state, such as the exercise of eminent domain or permission to print bank notes that passed for money. In addition, a corporate charter endowed the authority to act as a legal “person” because a corporation could sue and be sued, could own and alienate property, and could hire and fire employees and agents to carry out its mission. The state could then receive the benefits of the corporation such as improved transportation or greater availability of credit without having to spend public money on it. For their part, the owners of the corporation secured the privilege to profit from this arrangement as long as they kept to the bounds of the charter. Furthermore, charters tended to have finite time limits, after which the sovereignty and privileges they entailed would revert to the ultimate sovereignty, the state.

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<sup>2</sup>See Ronald E. Seavoy, The Origins of the American Business Corporation, 1784-1855: Broadening the Concept of Public Service During Industrialization (Westport: Greenwood Press, 1982). The Handlins argued that “the corporation was conceived as an agency of government, endowed with public attributes, exclusive privileges, and political power, and designed to serve a social function for the state. Turnpikes, not trade, banks, not land speculation, were its province because the community, not the enterprising capitalists, marked out its sphere of activity.” While they were right in the former assertion, the latter

Rarely acknowledged at the time, British influence pervaded Pennsylvania's corporate charter-writing in the early nineteenth century. One reason for such broad and conspicuous transatlantic borrowing on the part of Philadelphians lay in the nature of all matters legal, especially in a system based upon common law. Lawyers recognized that the safest way to write any legally binding document was to use tested formulae possessing the power of precedent and successfully withstanding challenge. Furthermore, they had no reason to invent new structures when established forms were serviceable. Those forms had been used and elaborated substantially in eighteenth-century Britain even after the South Sea bubble scandal in 1720, as British businessmen established companies for exploiting new technologies for canals, navigations, and waterworks and new actuarial methods for insurance. Pennsylvania's corporations duplicated the structures established in Britain from the most basic elements, such as having an elected board, annual stockholders' meetings, and the keeping of records to the smallest details, including provisions for dissenting directors to avoid potential liability by noting in the minutes their dissent from the majority, elaborate plans for changing by-laws, and the posting of security bonds by company employees.<sup>3</sup> The powers, limits, and modes of Pennsylvania corporate behavior echoed those of British corporations even down to the titles, such as naming banks after geographic entities—Bank of England, Bank of

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statement is not borne out by the evidence of early republican Pennsylvania. Oscar Handlin and Mary F. Handlin, "Origins of the American Business Corporation," *Journal of Economic History* 5 (May 1945), 22. <sup>3</sup>For surveys of British corporate forms in the late eighteenth century see George Heberton Evans, Jr., British Corporation Finance, 1775-1850: A Study of Preference Shares (Baltimore: The Johns Hopkins University Press, 1936); Joseph Priestley, Historical Account of the Navigable Rivers, Canals and Railways throughout Great Britain (London, 1831); Armand Budington DuBois, The English Business Company after

North America, Bank of Pennsylvania—canals and navigations after the waterways they connected or improved—Mersey and Irwell Navigation, Delaware and Schuylkill Canal Navigation—and sometimes more fanciful names for insurance companies—the London-based Phoenix Fire Office and the Philadelphia-based Phoenix Insurance Company. As long as Philadelphia businessmen were going to adopt British technologies, strategies, and methods, copying of British legal forms to administer such projects seemed obvious.<sup>4</sup>

Whatever their theoretical justifications, British business corporations and their lawyers rarely addressed philosophical issues in the latter half of the eighteenth century.<sup>5</sup> From the very beginning, the men active in founding Pennsylvania corporations also exhibited little concern with thoughts of service to the state when forming associations for which they sought state charters.<sup>6</sup> Rather, they wanted to avail themselves of the services or investment opportunities that internal improvements, banks, and insurance companies could provide. Their motivations for seeking incorporation were so apparent as to rarely require explanation: one could hardly acquire all the land necessary to build a canal without eminent domain or expect a bank to succeed if its notes

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the Bubble Act, 1720-1800 (New York: Octagon Books, 1971); and Bishop Carleton Hunt, The Development of the Business Corporation in England, 1800-1867 (New York: Russell & Russell, 1969), 3-13.

<sup>4</sup>See Richard Nelson and Stephen Winter, An Evolutionary Theory of Economic Change (Cambridge: Harvard University Press, 1982). As the most prominent s of evolutionary economics, they argue that rather than efficiency-maximizing or inherently creative, businesses operate in learned, familiar routines until failure or until market circumstances force experimentation and change.

<sup>5</sup>Dubois, 281-284.

<sup>6</sup>This argument is a consideration only of business-oriented corporations; that is, ones which potentially could issue dividends. Other corporations, such as churches, schools, charitable organizations, and fire companies were treated much differently under law after measures passed in the 1790s standardizing such charters.

were not legally binding upon the endorser.<sup>7</sup> In addition, incorporation provided the legal structure for the easy alienability of shares and limitations of liability that joint-stock companies did not.<sup>8</sup> Before the Revolution, Parliament jealously reserved the right to grant corporate charters both at home and in the colonies, but once peace returned incorporation became the preferred framework for large-scale American projects that neither the states nor the federal government would undertake and that required more capital than only a few people could provide.

Would-be corporate boosters needed governmental authorization to proceed with their plans, but not to draw them up. The chartering process began with a group of private individuals gathering to create an association to pursue a given goal, whether it be bridging a river, building a turnpike, or running a bank. Those men then petitioned the legislature in the form of a bill enumerating the articles of the potential charter. Although the legislators negotiated with each other and with company backers over the language of particular provisions, they dealt with a specific document designed to be

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7In "The Revolutionary Origins of the American Corporation," *William & Mary Quarterly*, 3d Ser., 50 (1993) 51-84, Pauline Maier argues that the proliferation of corporate charters in the early republic was a "mystery," because British corporate law had experienced incidental change since the aftermath of the South Sea Bubble in 1720 and the French revolution quickly did away with corporations because of their association with privilege in that country. Contrary to Maier however, the corporation was the preferred form of organization for banking (the Bank of England) and for internal improvements such as canals, turnpikes, and waterworks in eighteenth-century Britain, had been used and modified extensively during that period, and was the obvious business model for most Anglo-Americans who wanted to enter those lines of business. They did not even consider the French business environment, which, because of its tangle of corporations, entitlements, office-selling, mixed jurisdictions, and vestigial feudal privileges and prohibitions bore very little resemblance to that of either Britain or the United States. See Ted W. Margadant, *Urban Rivalries in the French Revolution* (Princeton: Princeton University Press, 1992).

8Although the ability of a company to levy its shareholders beyond their original subscription remained confused in English law throughout the eighteenth century, the issue of limited liability to company creditors appears to have been well-established by the early eighteenth century.; DuBois, 94-98. In Pennsylvania the same principal applied: although some internal improvement companies raised money from their

accepted as complete upon application. Thus, while the numbers and a few of the words changed, the form of nearly every article of the charters eventually passed had been written into the bill by the applicants, not inserted by representatives. As in Britain, those articles also encompassed clauses seemingly intended to be checks on corporate power and the influence of large stockholders.<sup>9</sup> Regardless of the purpose of the clauses, generally corporate promoters authored them.

Once a charter bill was written, Philadelphia's corporate boosters attempted to secure its passage while preventing the incorporation of potential competitors. The extent to which businesses sought to manipulate the unpredictable Pennsylvania legislature was evident in the bitter opposition to certain charters, including the anticharter movements that had business-backed support in the assembly.<sup>10</sup> The Philadelphia Bank's charter application floundered in Lancaster, the erstwhile state capital, for two years partly because of the general suspicion of banks and moneyed institutions, but largely because the Bank of Pennsylvania lobbied strenuously against it, offering the state \$200,000 in cash not to charter another Philadelphia-based bank.<sup>11</sup> The Schuylkill Navigation Company, too, had problems acquiring a charter because a

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subscribers beyond the original subscription, there is no documented case of creditors attempting to lay claim to the assets of company stockholders for a corporation's debts.

<sup>9</sup>See for example J.R. Ward, *The Finance of Canal Building in Eighteenth-Century England* (New York: Oxford University Press, 1974), and George Heberton Evans, Jr., *British Corporation Finance, 1775-1850: A Study of Preference Shares* (Baltimore: The Johns Hopkins University Press, 1936), 13-14.

<sup>10</sup>For a survey of the rhetorical character of anticharterists, see Maier, 51-84.

<sup>11</sup>Stephen N. Winslow, *Biographies of Successful Philadelphia Merchants* (Philadelphia: James K Simon, 1864), 167; according to one legislator in 1803, "the memorial from the Bank of Pennsylvania has had considerable effect upon the members, and in my opinion will prevent a charter to the Bank of Philadelphia [in this session]." Joseph Reed to Paul Beck, December 30, 1803, McAllister Collection, Historical Society of Pennsylvania.

boardmember of the Union Canal Company held a General Assembly seat for Philadelphia County. The Union Canal Company, a successor to the assets of several failed canal efforts, had gotten a charter in 1811 to build a canal connecting the Susquehanna to the Schuylkill around Reading. Led by William Duane, the state representative from Philadelphia, Union Canal Company investors considered the Schuylkill Navigation a potential competitor, and opposed White's efforts to get a charter. Only in the next session, when Schuylkill Navigation Company backer Cadwalader Evans, Jr. replaced Duane did the charter pass.<sup>12</sup> Although anti-charterists took to the opposition when individual bank charters came before the General Assembly, they frequently supported omnibus bills funding internal improvement companies, especially ones that covered their districts. Much anticharter posturing in the legislature sought either to put a principled face on attempts to wring more cash out of banks or to represent already-chartered corporations trying to forestall competition.

The Farmers and Mechanics Bank's struggle for its charter involved exactly the sort of haggling that led corporate leaders to think of the chartering process as a bothersome legislative hurdle and the legislature as an erratic and unreliable entity. Toward the end of the 1807-1808 session signs increasingly suggested that the bank's friends would not be able to muster a majority in favor of incorporation. Fortunately for bank partisans, the state senate's committee on banking had given the institution a good report. The bank's man in Lancaster

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<sup>12</sup>Edward S. Gibbons, "The Building of the Schuylkill Navigation System, 1815-1828," Pennsylvania History 57 (January 1990), 17.

that year, James Sharswood, wrote to Joseph Tagert, the bank's president in Philadelphia, to tell him that they would be better off delaying a move to bring the charter to the floor for a vote until the following session. This way, "the public may be led to suppose that...the lateness of the session alone prevented [the charter's] adoption," while the positive committee report and the absence of a measure preventing the bank from pursuing its operations would imply the legislature's approval. Between sessions, the bank would "be in full operation and there cannot be a doubt but that the prudence of the Directors will conciliate in the public mind, gain many friends and convince even our opponents that we may be safely trusted with the privileges we asked for." However, should the bank's friends push for a charter and lose during the current session, "our opponents may take the advantage of this defeat to urge a law immediately to prevent our progress"; at the very least, their re-application in the ensuing session would be severely jeopardized. Sharswood warned direly that "the victory to our opponents would be so far complete and it is but fair to presume they would not stop until they had accomplished our final ruin."<sup>13</sup> Those opponents included both anti-bank factions and the partisans of existing banks. Over the long term, the legislature had no categorical opposition to banking.

The politics surrounding the omnibus bank bill of 1814 demonstrated the ways that various corporate interests intertwined with anti-bank sentiments. By 1812, Pennsylvania had chartered only four banks, all based in Philadelphia. Partly influenced by the de-chartering of the first Bank of the United States, over

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<sup>13</sup>James Sharswood to Joseph Tagert, March 13, 1807, Historical Records, Box 1, 1807-1820, Accession 1658, Farmers and Mechanics National Bank Collection, Hagley Museum and Library.



the following three sessions the partisans of various associations wanting to incorporate country banks swarmed the new state capital at Harrisburg, importuning representatives to expand the banking privilege quantitatively and geographically. The majority opposed these bills individually, citing what many argued would be the inevitably ruinous expansion of paper money. That majority, though, was a shifting one: the friends of the banks already chartered opposed the new banks as much out of fear of competition as fear of inflation, and few representatives were willing to vote for a bank in someone else's district without getting anything in return. Finally, in the 1814 session, these various applicants got together to put all their banks in one bill, one that passed by so large a margin that it overrode the threat of a gubernatorial veto.

Representatives did not oppose banks in general, merely other men's banks. After that act, the state legislature would not charter another bank for decades. Certainly the Panic of 1819, which many blamed upon banks, was one reason for the end of bank proliferation, but just as important, virtually every legislative district had a strong group with a vested interest in limiting banking to those companies already chartered. While the public interest presumably formed part of the equation, corporate interests represented the crucial variable.

The negotiation necessary to obtain charters amounted to a tollbooth on the turnpike of success for Pennsylvania corporations. Corporate leaders considered the acquisition of a charter as one of the tasks required for setting up a capital-intensive business, just as the election of a board, the raising of capital, and the hiring of employees were all necessary to the successful administration of their projects. The chartering process is most accurately described as one of

authorization: permission from civil authorities for company officials to proceed with the activities they had proposed, organized, and initiated.

Although as a result of the chartering process the state often held stock in many corporations, that practice did not indicate a willingness on the part of corporate boards to include the government as a meaningful partner.

Pennsylvania did own shares in many banks and internal improvement companies, but a close look at the timing and circumstances of state acquisition of corporate shares suggests that this action did not constitute a true partnership. Depending upon the kind of corporation, the legislature's reasons for owning company stock belied any deep sense of common mission between corporate boosters and the state government.

Neither a boon for banks and their private investors nor a sign of government-business partnership, the state's ownership of bank stock was designed to tax bank profits. As a requirement of the Bank of Pennsylvania's first charter in 1793, the state government retained the option of investing up to an impressive \$1 million in bank stock. The legislature intended to use United States bonds that the state treasury had on hand to pay for a portion of the stock. The deal allowed the state to receive more than market value for its bonds while paying only par—the original issuing price—for bank stock, which was far less than market value. Thus, the bank performed the valuable service of taking on the state's poorly performing assets and replacing them with an investment that was expected to pay better dividends and to appreciate quickly. The state's immediate market-value gain in the transaction, \$54,187, amounted

to a one-time bonus from the bank in exchange for receiving the charter.<sup>14</sup> Meanwhile, the state bought the rest of its bank stock, \$250,000 worth, through a loan from the bank at an annual rate of six percent. In what would become standard practice for the purchase of bank stock, the stock itself would be the collateral for the loan. Legislators held the expectation that the Bank of Pennsylvania's dividends would be similar to those of the previously chartered Bank of North America: ranging from eight to twelve percent a year. The practical effect of the bonus and the stock purchase was that the state would receive 15.7% of all the bank's dividends up to 6%, and a total of 25.7% of all dividends above 6%.<sup>15</sup> No cash had changed hands, but the state received dividends on a large portion of the bank's capital.

Other banks would face the same sort of taxation. In legislative haggling over the Farmers and Mechanics Bank charter in the 1808-1809 session, the opponents of the bank clearly were the ones who wanted the state to have a higher stake in the institution's stock. At one point the bank's lobbyist reported to cashier Joseph Tagert that "an amendment passed the Committee which will prevent our accepting a charter; this amendment is that the Bank shall allow the legislature to subscribe on the part of the State \$100,000 in the stock of the bank at par."<sup>16</sup> In the end, the Farmers and Mechanics Bank compromised, issuing

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<sup>14</sup>To the Senate and House of Representatives of the Commonwealth of Pennsylvania, the Memorial of the President and Directors of the Bank of Pennsylvania (Philadelphia, 1805), 6.

<sup>15</sup>The state received 942 shares in exchange for its United States bonds and 625 shares through its loan from the bank. Private subscriptions brought the total shares sold to 6,250, each worth \$400.

<sup>16</sup>Joseph Clay to Joseph Tagert, February 17, 1809, Historical Records, Box 1, 1807-1820, Accession 1658. Farmers and Mechanics National Bank Collection, Hagley Museum and Library.

the state \$75,000 in shares in exchange for incorporation.<sup>17</sup> The Commonwealth eventually owned stock in a number of banks, but from the bankers' point of view state shareholding represented a regrettable cost to be paid for the opportunity to make handsome profits.

In 1814, the legislature began to forego stock purchases and instead required new banks to pay the state a certain percentage of their dividends, depending upon the individual charter. This change certainly did not help the new banks. First, they were giving up a higher percentage of their dividends to the state than previously chartered ones. Second, they no longer received United States bonds that they could use to back their note issues, and as a result gross profits were lower.<sup>18</sup> Thus, the legislature had streamlined the chartering process—the stock “purchases” had become increasingly convoluted—negotiating with new charter applicants an appropriate cash bonus and demanding a certain percentage of the institution's dividends for the coffers in Harrisburg. The state had not acquired bank stock out of a magnanimous effort to help bankers and bank investors or because of any general desire to promote commerce: it did so strictly as a form of revenue generation, that is, as a way of taxing those institutions. By 1814 it had simply found an easier way to do so.

A major ingredient in the passage of bank charters, then, was the negotiation of the terms of taxation, an important matter for the legislature

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<sup>17</sup>An Act to Incorporate the Farmers and Mechanics Bank (Philadelphia: Jane Aitken, 1809).

<sup>18</sup>The state generally took 8% of the dividends from the banks chartered in 1814. Thus, the percentage of their dividends paid in taxes was lower than the Bank of Pennsylvania's, but the total dividends were lower in proportion to private investment because the banks received no United States bonds from the state, even

considering that a large portion of the state's revenue came from bank dividends. From 1796 to 1825, banks provided the state of Pennsylvania with at least 36% and as much as 50% of its annual income.<sup>19</sup> From many politicians' point of view, that income represented a comparatively painless opportunity to raise revenue while holding down constituents' property taxes. From the bankers' point of view, the state's taxing of banks in exchange for incorporation amounted to a profit-draining annoyance, and did not endear the legislature to dividend-conscious boardmembers. On the contrary: the bankers' lesson from the chartering experience was that though the legislature could be influenced on occasion, the price was steep, the bargaining treacherous, and the outcome uncertain. Better to stay clear of the state legislature whenever possible rather than open bank business to public debate and risk humiliating defeat besides.

Other kinds of corporations such as insurance companies and coal mining companies generally did not face the same kind of legislative gauntlet, nor did the General Assembly ever invest in insurance or coal-mining company stock. The question often was one of profitability: if the applicant institution seemed certain to make a profit, then the legislature tried to find a way to tax it; if not, then the legislature did not bother. In between, firms involved in riskier activities such as coal mining, manufacturing, and insurance found themselves in a nebulous area where they hoped to avoid taxation.

Insurance companies in particular often walked a careful line, claiming in the statehouse that they would have difficulty eking out profits while courting

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at below market value as had the Bank of Pennsylvania. From the new banks' point of view, the change was a wash at best.

investors in Philadelphia by emphasizing the likelihood of steady returns. Negotiations for incorporating the Phoenix Insurance Company in December 1803 pivoted on exactly this tension. Representative Joseph Reed wrote to Paul Beck, Jr., a founding director of the Phoenix Insurance Company, that “the idea...of raising a revenue from the Insurance companies is not altogether abandoned, and in this point of view the [company’s] offer to lend money has had, as I expected, an injurious effect” on the company’s chances for incorporation.<sup>20</sup> The company was arguing against the necessity of paying a bonus, offering a loan to the state instead. Hostile legislators pointed out that the ability to lend a large amount of money demonstrated that the company could, in fact, yield handsome returns: as Reed observed to Beck, “it will be difficult to convince the Members that the business is not profitable when the company can afford to lend \$60,000.”<sup>21</sup> For their part, coal company promoters cheerfully predicted that they would develop coal regions while lowering the price of fuel in more densely populated areas, but claimed that the necessity of limited liability and access to large pools of investment required incorporation for them to succeed in such beneficial endeavors.<sup>22</sup> The state legislature did not tax these kinds of companies, partly because such institutions contributed to

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<sup>19</sup>See Richard Sylla, John B. Legler, and John J. Wallis, “Banks and State Public Finance in the New Republic: The United States, 1790-1860” *Journal of Economic History* 47 (June 1987), 401.

<sup>20</sup>Joseph Reed to Paul Beck, December 30, 1803, McAllister Collection, Historical Society of Pennsylvania.

<sup>21</sup>Joseph Reed to Paul Beck, December 30, 1803, McAllister Collection, Historical Society of Pennsylvania.

<sup>22</sup>The argument among business historians over the development of limited liability is considerably overblown: from the beginning, investors assumed that stock ownership in a chartered corporation did limit liability to level of subscription. Especially telling in this regard are the clauses in bank charters holding directors directly financially responsible for a range of potentially risky practices, clearly suggesting that stockholders would be in the clear should the bank fail. Furthermore, given the problems with debt collection and bankruptcy law in the early republic, any attempt to collect debts from hundreds of investors would prove insuperable, especially given the dilemma of who to charge when stocks changed hands. For

economic growth but mainly because they performed poorly compared to banks as far as investor returns until at least the late 1820s.<sup>23</sup>

None of these corporations—banks, insurance companies, or coal mining companies—ever asked the legislature to buy stock or requested loans from the state. Company directors balked at yielding stock to the state because doing so cut into their profits. Furthermore, they knew that state stockholding opened corporate decision-making to the scrutiny of the legislature, especially if lawmakers demanded the right to appoint some of the boardmembers. Banks and insurance companies often found themselves oversubscribed rather than lacking investor interest. From the point of view of many bankers and insurers, government shareholding seemed akin to having an unwanted cousin not only stay with the family and eat its food, but also demand a say in what was served for dinner.

For some corporations, though, the Pennsylvania government appeared more like an occasionally overbearing, but nonetheless rich, uncle. Turnpike, canal, and river navigation companies, unlike banks and insurance companies, often solicited state aid and investment and received it in the form of loans, stock purchases, and direct grants. However, legislators never attempted to carve a pound of flesh from these fledgling companies, nor did project boosters try to wheedle money from a freewheeling General Assembly when applying for charters. Internal improvement company directors hesitated to include the state as a stockholder for the same reasons that bank officials tried to avoid having

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the best discussion of the topic, see "Appendix: Stockholders' Liability" in Edwin J. Perkins, American Public Finance and Financial Services, 1700-1815 (Columbus, OH, 1994), 373-376.

the government as an investment partner: such relationships lowered potential returns to investors while making the management subject to the prying eyes, open hands, and loud mouth of every Pennsylvania politician. Banks did their best to minimize state investment; insurance, coal, and manufacturing companies avoided it at all costs; and internal improvement companies considered it the option of last resort.

Still, the state had an abundance of one crucial resource that inland navigation companies often lacked: money. After the initial high hopes of quick construction and grand profits were dashed, inland navigation company officials often appealed to the legislature for money, in the words of one supplicant, “to recover the affairs of the Canal Companies from the disorder and embarrassment into which they had fallen,” emphasizing how much these enterprises could contribute to the common weal.<sup>24</sup> Taken individually, these appeals rarely succeeded. Because internal improvements were inherently local, even the most zealously enthusiastic of promoters faced great difficulties getting company subsidies past politicians who faced annual reelection in the counties where taxpayers would pay the brunt of such largesse, but not reap the rewards. Meanwhile, legislators knew that internal improvement companies were risky enough. To require companies to give the state stock—as the assembly did with banks—might discourage the few investors those ventures could attract in the first place. Moreover, the intense negotiations over exact

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<sup>23</sup>Louis Hartz, *Economic Policy and Democratic Thought: Pennsylvania, 1776-1860* (Cambridge, 1948), 90-92.

<sup>24</sup>“Memorial to Senate and House of Representatives of the Commonwealth of Pennsylvania, from the President, Managers and Company, of the Schuylkill and Susquehanna Navigation, and of the Delaware



terms would not have been worth the General Assembly's time. Given internal improvement companies' minuscule rate of success, for the state legislature to have devised tax schemes would have been pointless.

Supporters of internal improvement companies, however, had one weapon that bank directors lacked, a nearly unanimous support for the general principle behind their project, better transportation.<sup>25</sup> Projects whose legislative sponsors managed to befriend representatives from different districts but with similar causes found the state legislature a good place to look for capital.<sup>26</sup> State aid to internal improvement companies was considerable and generally came bundled in sprawling omnibus bills providing infusions of cash to projects through almost every part of the state, sometimes every county.<sup>27</sup> From 1791 through 1817, the state allocated over \$2.4 million for loans and stock purchases in various projects; by 1822, the state owned \$2.4 million in internal improvement company stock alone.<sup>28</sup> In the aggregate, the Pennsylvania legislature expended considerable financial support to internal improvement companies.

The General Assembly voted to aid navigation and turnpike corporations for a variety of reasons, but the desire for these companies to make a profit, that is, to encourage corporate enterprise, was at the bottom of that list. While the

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and Schuylkill Canal Navigation," December 13, 1810, Society Miscellaneous Collection, Historical Society of Pennsylvania.

<sup>25</sup>See Chapter 4 for ways that internal improvement boosters fostered that unanimity and put it to rhetorical and political use.

<sup>26</sup>Hartz, 44-45.

<sup>27</sup>For a comparison of Pennsylvania's and Virginia's spending on internal improvements, see John D. Majewski, *A House Dividing: Economic Development in Pennsylvania and Virginia Before the Civil War* (New York: Cambridge University Press, 2000).

<sup>28</sup>Samuel Breck, *Sketch of the Internal Improvements Already Made by Pennsylvania; with Observations Upon Her Physical and Fiscal Means for Their Extension; Particularly As They have Reference to the*

legislature granted money to many internal improvement corporations, it allowed an even larger number of turnpike and navigation companies to fail because they did not generate enough initial subscriptions for the charter to be patented by the state.<sup>29</sup> More than anything else, the opportunity to provide for transportation to market, thus contributing greatly to the overall economic development of their districts, remained the paramount objective for legislators in securing help for struggling local projects. Bringing state funds back home did not hurt, either: providing employment, especially during difficult economic times, gave representatives another way to please their constituents. At the height of the depression following the Panic of 1819, a committee of the Pennsylvania Senate proposed “liberal appropriations for internal improvements.” By doing so, the committee suggested, the state could “assist its citizens with the means of employment at a period of difficulty,” all the better to do “when labor can be commanded at half its customary rate,” and Pennsylvania could build roads costing half what they did in other years. The committee declared that “this is the moment then for extraordinary exertion,” that could “carry relief to the doors of thousands, and at the same time, increase the fixed wealth of the state to a greater extent than can ever again be done by the expenditure of a similar

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Future Growth and Prosperity of Philadelphia, 2d edition (Philadelphia: M. Thomas, 1818), 5; Report on

Roads, Bridges and Canals, Read in the Senate, March 23, 1822 (Harrisburg: C. Mowry, 1822), 3, 5.

<sup>29</sup>As part of almost all charters, the state required that the company present a list of a minimum number of subscribers and subscriptions for the governor to authorize the letters patent to put the charter in force. As of 1822, of the 146 turnpike companies chartered by the state, 84 had acquired letters patent, 30 of 49 bridge companies had acquired them, and 9 of the 18 inland navigation companies had gotten theirs;

Report on Roads, Bridges and Canals, Read in the Senate, March 23, 1822 (Harrisburg: C. Mowry, 1822), 3, 5.

sum.”<sup>30</sup> As a consequence of the panic, the state accelerated its distribution of large sums, especially to turnpikes, in the early 1820s, and finally in 1825 the legislature approved the huge state-administered and -financed Main Line project. Any encouragement of corporations in the funding of canal and turnpike companies was incidental; rather, the state supported internal improvement companies to foster the success of non-corporate enterprise, much of which depended upon a better transportation network. Perhaps more to the point, legislators supported internal improvements as the most effective and prominent method of bringing home state money to their respective districts, a motive with that internal improvement company supporters were quite willing to identify.

Furthermore, although cash-strapped internal improvement companies showed a willingness to ask the legislature for money, the state usually provided only a small fraction of those ventures’ overall capital. Rather, it provided a boost, a financial stopgap while companies scrambled to attract more private investment and to finish construction so that they could generate their own cash flow from tolls. State investment in Pennsylvania paled next to private investment in turnpikes, bridges, and internal navigations. Even when the legislature granted companies large sums, they were only a fraction of the total cost of construction.<sup>31</sup> According to a Pennsylvania Senate report, as of 1822 the state had invested \$1,861,542 in turnpike stock, compared to \$4,158,347 in private investment; \$382,000 in bridges, compared to \$1,629,200 in private

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<sup>30</sup>Report of the Senate, Appointed to Enquire Into the Extent and Causes of the Present General Distress (Lancaster: Pennsylvania Senate, 1820), 15. William G. Shade declared Louis Hartz’s characterization of much internal-improvement spending as pump-priming “anachronistic,” but one would be hard-pressed to find any policy that embodies that principle more fully at any time before Maynard Keynes methodically delineated it in the twentieth century. Shade, 259.

investment; and \$130,000 in internal navigation companies, compared to \$1,416,510 in private investment.<sup>32</sup> Overall, then, the state provided 31% of turnpike funding, 19% of bridge funding, and a mere 8% of internal navigation funding. The corporate figures for private investment may well have been inflated: in some cases, they may have represented reported subscriptions, rather than money paid in. Nonetheless, the state was not involved in every corporate enterprise. It was only bailing out the ones that had the political wherewithal to cobble together an omnibus bill for public aid. Pennsylvania generally did not put up the bulk of the money for internal improvements, especially for those most likely to succeed. Private investors supplied all \$465,00 for the Philadelphia and Lancaster Turnpike, all \$285,000 for the Germantown and Perkiomen Turnpike, all \$300,000 for the Schuylkill Permanent Bridge, and all but \$100,000 of the nearly \$2,000,000 for the Schuylkill Navigation Company, each among the period's most expensive and the Philadelphia area's most used improvements.<sup>33</sup> The larger the corporation, the less it asked of the Pennsylvania legislature and the more fiercely it guarded its financial independence from public authorities.

Whether or not they received money from the legislature, companies resisted the state's attempts to set conditions on board elections, chafing under rules that limited boardmember tenure or dictated boardmember eligibility. For example, the original charter of the Farmers and Mechanics Bank stipulated that

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<sup>31</sup>Hartz, 84-85.

<sup>32</sup>Report on Roads, Bridges and Canals, Read in the Senate, March 23, 1822 (Harrisburg: C. Mowry, 1822), Tables 4, 5, and 6.

<sup>33</sup>Ibid., Table 4, 5; Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders. January 2, 1826. (Philadelphia: Lydia R. Bailey, 1826), 10.

a majority of the boardmembers had to be either farmers or mechanics, which, given the fluid meaning of “mechanic” in the early republic, was especially vague and proved impossible to enforce.<sup>34</sup> In 1817, Joseph Tagert, lifelong merchant and longtime bank president, suddenly became a “farmer,” an occupation he somehow managed to follow despite his bank duties in Philadelphia. Tagert had appealed to farmers’ aspirations to get his charter through the legislature, and now he played fast and loose with the very definition of the term. When the bank received its new charter in 1824, part of the bargain included new clauses stipulating that only three quarters of the incumbents could be reelected to the board in any given year and that no boardmember except the president could serve more than three years in any four-year period. Nonetheless, only in 1826 and 1827 did the stockholders replace the minimum four incumbents required by law. The board eventually sent a petition to protest these limits, weakly arguing that they had “been productive of great inconvenience to the Bank and of no sort of benefit.”<sup>35</sup> Corporate officers knew the letter of the law, but found ways to subvert it or to get it changed.

Banks in particular tried to minimize public influence in the boardroom. In the first negotiations for chartering the Farmers and Mechanics Bank during the 1808-1809 legislative session, its Philadelphia promoters explicitly instructed their lobbyist in Lancaster to make sure that any clauses allowing the state to appoint members to the board be stricken from the bill. In the end, their efforts

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<sup>34</sup>See Larry Peskin, “To ‘Encourage and Protect’ American Manufactures: The Intellectual Origins of Industrialization, 1763-1830,” (Ph.D. diss., University of Maryland, 1998).

<sup>35</sup>“Petition to Pennsylvania Legislature, “February 9, 1827, Historical Records, Box 2, 1821-1863, Farmers and Mechanics National Bank records, Accession 1658, Hagley Museum and Library.

were rewarded.<sup>36</sup> The Bank of Pennsylvania had not gotten off so easily, ending up with a charter that allowed the state legislature to appoint six of the twenty-five boardmembers, three by the Senate and three by the House of Representatives. Nonetheless, the stockholders' representatives held a clear majority and excluded state appointees from membership on the all-important discount committee, the body that evaluated loan applications. In 1829, the legislature-appointed directors publicly disputed the shareholder-elected majority's contention that the bank could not lend more money to the state, to no avail. In its rechartering the following session the bank managed to have the number of seats reserved for the state reduced to four. Regardless of the number, the state's block of seats remained a distinct minority, and therefore could not restrict the board or shape bank policy as long as the shareholder-elected boardmembers kept their ranks closed. In an 1829 incident revealing the impotence of state directors, the Bank of Pennsylvania's shareholder-elected boardmembers rejected a proposal to lend the state a significant amount of money over the loud and public protests of the publicly appointed directors.<sup>37</sup> The public representatives were allowed into the boardroom, but only as spectators.

Boardmembers and associated large stockholders did their best to limit oversight from within as well as from outside the company. Despite their apparent design to put large and small shareholders on an equal footing,

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<sup>36</sup>February, 1809 (?), *Historical Records*, Box 1, 1807-1820, *Farmers and Mechanics National Bank records*, Accession 1658, Hagley Museum and Library.

<sup>37</sup>For both sides of the tangled issue, see *An Address to the Stockholders of the Bank of Pennsylvania. December 22, 1829* (Philadelphia: Clark & Raser, 1829) and *Report of the Committee of State Directors, of*

corporate structures minimized the influence of all but the most vocal stockholders. Almost every charter included a system of graduated stockholder voting for both director elections and changes in company by-laws—that is, the internal rules for the company’s operations as written by the stockholders and the board—a practice directly derived from British precedent. For example, the 1804 Phoenix Insurance Company charter allowed one vote for every three shares owned, with a maximum of 15 votes.<sup>38</sup> The Lehigh Coal and Navigation Company’s 1822 charter granted one vote for any number of shares owned up to ten; another for each ten if holding between ten and 100 shares; one more vote for each twenty shares up to 500; and three more votes for every 100 shares above that.<sup>39</sup> Banks tended to have the most circumscribed voting rules: the 1809 Farmers and Mechanics Bank charter allowed each stockholder one vote for each of the first two shares owned, another vote for every pair of shares up to ten owned, a vote for every four shares between ten and 30 owned, a vote for every six shares between 30 and 60 owned, a vote for every eight shares up to 100 owned, and a vote for every ten shares owned over 100. No stockholder was allowed to have more than thirty votes.<sup>40</sup> Corporate rules also discouraged or prohibited the use of proxies and forbade shareholders from voting unless they held their shares for at least three months.

The inclusion of such clauses in many company by-laws as well as corporate charters suggests that they reflected the intentions of corporate

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the Bank of Pennsylvania, Appointed November 14, 1829, Upon the Loans of 1828 and 1829 (Philadelphia, 1829).

<sup>38</sup>An Act to Incorporate the Phoenix Insurance Company of Philadelphia ([Philadelphia?], 1804), 13.

founders and of the board of directors as much as those of cautious or perhaps hostile legislators. In addition to being welcomed by legislators as apparent attempts to limit the influence of large capital, these measures had the collateral effect of securing control of the corporation for the founding group. Small shareholders rarely worried over who ran the company or how, desiring rather what they had invested for: the building of the internal improvement or the issuing of dividends.<sup>41</sup> For their part, corporate boardmembers and their associates cared greatly that their command of the company remain unthreatened. Because stockholding in most corporations was broad, low turnout at annual and even emergency stockholders' meetings ensured that boardmembers and their friends could muster enough votes to quell any potential investor rebellion.<sup>42</sup> Thus, the rules against proxy voting and the exchange of stock for voting purposes immediately before stockholder meetings functioned to prevent outsiders buying stock in the short term or acquiring proxies in order to change the company's management or direction. In short, they kept the affairs of the company in the same hands that had first shaped it.

Some company boards even enacted rules that, whatever their design or motivation, clearly limited the participation and influence of the body of stockholders. In 1823, the Schuylkill Navigation Company amended its by-laws to allow the board of directors to call a stockholders' meeting at only five days'

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<sup>39</sup>Act of the General Assembly of Pennsylvania Concerning the Lehigh Coal and Navigation Company; Together with the Bye-Laws, Etc. (Philadelphia: James Kay, Jun. and Brother, 1837), 25-26.

<sup>40</sup>An Act to Incorporate the Farmers and Mechanics Bank (Philadelphia: Jane Aitken, 1809), 7.

<sup>41</sup>Robert E. Wright, "Bank Ownership and Lending Patterns in New York and Pennsylvania, 1781-1831," *Business History Review* 73 (Spring 1999), 47-48.

<sup>42</sup>See Chapter 5 for discussion of investor motives.



notice.<sup>43</sup> The intent may have been to allow the board to consult with the stockholders on a timelier basis, rather than the thirty days previously required. However, for an enterprise administering an unfinished internal improvement project stretching through 108 miles of occasionally rugged country, five days was not enough for people far up the river to receive notice, make arrangements, and travel down river to Philadelphia. If travel were that easy, no navigation would have been needed in the first place. Thus, the change essentially limited stockholder participation in potentially important emergency meetings to Philadelphia-area investors. Those Philadelphia stockholders would be more likely to sympathize with the Philadelphia-dominated board in potentially controversial votes over the allocation of resources to the upper or lower section of the navigation. Through a seemingly innocuous by-law change, the Schuylkill Navigation Company board consolidated its control over the company.

Establishing administrative and financial independence from the state—and, in some cases, from their own stockholders—was no easy task, but having done so, corporate leaders also had to figure out how to run the organizations and technologies they had brought into being. At first, corporate boards did their best to administer their projects on their own, often depending upon one or a small number of their members to do most of work. Internal improvement companies in particular usually relied upon their presidents to do much of the necessary work to keep the business going through the construction phase and beyond. The Schuylkill Permanent Bridge Company succeeded almost solely

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<sup>43</sup>October 17, 1823, Schuylkill Navigation Company Minute Books, Oct. 5, 1815-Nov. 26, 1849, Box 1, Pennsylvania State Archives.

through the efforts of Judge Richard Peters, who helped to organize the company in 1798. He came up with the idea of covering the bridge, thus greatly increasing its building costs—totaling about \$235,000—but also reducing future repair expenses and contributing to the structure's longevity.<sup>44</sup> Attracting capital as well as acquiring plots of land on either side of the river for the entrances and tollbooths, Peters closely supervised the construction from the laying of the cornerstone in October 1800 through the bridge's official opening on January 1, 1805. Stretching across the wide river, the bridge was 552 feet long and 42 feet wide, and became a source of civic pride and traveler compliments in addition to steady toll revenue well into the 1830s.<sup>45</sup> Although the company had a full board of managers, administration remained primarily Peters's responsibility until his death in 1828. Eventually such concentration of tasks in one person became the exception rather than the rule. In the case of the Schuylkill Permanent Bridge Company, Peters had the political acumen, the financial connections, the energy, the time, and the facility with mechanics and design to be able to hand the varied tasks required. No other project would be so fortunate to have a leader with such varied competencies.

The deciding factor in who would hold ultimate power over a given internal improvement usually hinged upon that most basic of business principles: capital. Erskine Hazard, the son of Schuylkill Permanent Bridge Company boardmember Ebenezer Hazard, teamed with Josiah White to supervise the construction and

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<sup>44</sup>John Melish, Travels in the United States of America, in the years 1806 & 1807, and 1809, 1810, & 1811; Including an Account of Passages Betwixt America and Britain, and Travels Through Various Parts of Great Britain, Ireland, and Upper Canada (Philadelphia: Thomas & George Palmer, 1812), 165.

much of the early administration and financing of the Lehigh Coal and Navigation Company. White had mechanical talent and drive in abundance and Hazard great meticulousness, but neither had the political sensibilities or financial touch Richard Peters did. Compounding their problems—or perhaps symbolizing them—neither White nor Hazard had been elected to the board of the company they had founded. Peters's corporation, the Schuylkill Permanent Bridge Company, had attracted a large body of small investors who wanted as little involvement as possible in the actual management of the project. White and Hazard's company started as a three man undertaking—the third, George Hauto, was a confidence man who, upon being discovered, was subsequently bought out by the other two. Eventually it attracted a large infusion of capital from big investors. Having great sums invested, these later entrants demanded control over the management of their funds. They did not worry over precise technical details: they could pay White and Hazard to oversee construction while keeping the overall direction of the company in their own hands.

Other company boards were more explicit about choosing men with expertise in account books rather than engineering diagrams. The Schuylkill Navigation Company's board of managers chose a new president in 1825, and the explanation of their decision process included an explicit admission that the need to pursue class interest rather than guarantee technical competence informed their decision. With Cadwalader Evans, Jr.'s resignation from the presidency, the company' board of managers looked for a replacement. Evans

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<sup>45</sup>For the years 1830-1835, the bridge averaged \$20,832 in toll revenue. Calculated from data in Memorial of Richard A. Gilpin, Relative to the Construction of a Tunnel Under the River Schuylkill: Presented to the Select and Common Councils of the City of Philadelphia ([Philadelphia], 1836), 3.

had divided his time among many pursuits and projects, but now that the project was substantially operational the board wanted someone who would work full-time for the company. They first considered hiring an engineering expert, but competent engineers were in short supply, and furthermore the navigation's impending completion somewhat obviated their need for a full-time engineer. They also thought about employing a superintendent for the works, and admitted that "it is possible that such an officer may be found necessary, as well as inferior superintendents, limited to portions of the line over which they should maintain a continual personal inspection." Their main concern, though, was not with minor technical matters or everyday operations. Rather, "the capital invested is large, the navigation is of great and increasing importance," reasoned the managers, "and the public have in various ways an interest in preserving its activity and usefulness, which, no less than the interest of the Stockholders, calls for continued & even increased watchfulness and care." In other words, they feared that improper management of the navigation might give "occasion to great public complaint" with concomitant political consequences along with raising their own ire. Besides the assumption that an engineer might not be politically adept, the objection to hiring an engineer to run the company would be that "his inferiority of station... would prevent him from having the needful freedom in communicating with the Board, and from having the requisite weight and authority in his intercourse with others."<sup>46</sup> Boardmembers wanted someone who could deal with public pressures, but even more, someone who would be

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<sup>46</sup>October 26, 1825 Minute Books, Oct. 5, 1815-Nov. 26, 1849, Box 1, Schuylkill Navigation Company Papers, Pennsylvania State Archives.

their own equal, who would defend the board's interests as if they were his own. So they picked one of their own, to the unanimous affirmation of stockholders: Joseph S. Lewis, who had helped negotiate the company's \$230,000 loan from Stephen Girard, served on the boards of various insurance companies, and had been president of Philadelphia's Watering Committee. The selection of Lewis signified the board's desire that the company put their economic and political goals ahead of its desire to provide efficient transportation along the Schuylkill River.

Banks and insurance companies, too, kept important leadership positions in familiar and trusted hands. While internal improvement companies often required the services of an engineer, financial corporations had their own technical specialists: for insurance companies, an actuary, and for banks, a cashier. The actuary consulted and constructed mortality statistics, lists of ship casualties, reports of fires, property values, and any other relevant information needed to decide upon premiums for whatever kind of insurance his company issued. The cashier oversaw account keeping—a major task for banks with hundreds of active customers—and the issuing of notes. Both supervised the clerks, other employees, and routine bookkeeping and were responsible for day-to-day management decisions. A close circle of men dominated these positions, both by necessity and by board preference. Nobody in Philadelphia had run a full-fledged corporate bank or insurance company before, and the cities most accomplished businessmen were the best at keeping track of complicated projects. Jacob Shoemaker, related to city council member Abraham Shoemaker and prominent merchant James Vanuxem, was a merchant and a

founding member of the Delaware Insurance Company of Pennsylvania in 1804. In 1809, he became an original director of the Pennsylvania Company for Insuring Lives and Granting Annuities, and upon its chartering in 1812 was appointed its first actuary.<sup>47</sup> Even those who worked their way up the ranks did so through family and professional connections, joining the corporate oligarchy as they climbed the corporate ladder. Quintin Campbell, a Scottish orphan who immigrated to America as a cabin boy, served as a clerk in for Levi Hollingsworth and became a virtual member of the powerful Hollingsworth flour merchant clan. His master got him a job as a clerk with the Bank of Pennsylvania, in 1804 he became the first teller for the Philadelphia Bank, and, when cashier Joseph Todd died, replaced him and kept the position well into the 1830s.<sup>48</sup> Once ensconced as cashier or actuary, men tended to stay for a long time, lending stability to the institution while ensuring that the interests of the board remained primary.

The composition of corporate boards also embodied stability, with most of the incumbents getting returned to their seats year after year. From 1810 through 1830, the Pennsylvania Company for Insuring Lives and Granting Annuities averaged an 85% retention rate for boardmembers, meaning that in a typical year only two of the fourteen incumbents did not return. The most that ever left the board was six, in 1823, but of the fourteen directors from 1822 six still sat on the board in 1824, ensuring continuity amid the comparatively high turnover. Banks tended to be even more static. From the Farmers and

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<sup>47</sup>Petition from Delaware Insurance Company to Pennsylvania Legislature, February 13, 1804, McAllister Collection, Historical Society of Pennsylvania; Stock Subscription Book, 1809, Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476, Hagley Museum and Library.

<sup>48</sup>Winslow, 55.

Mechanics Bank's 1807 inception until 1830, its board had a annual 90% retention rate, most often losing only one incumbent and never more than four of the thirteen members from the previous year. Even this low rate of change exaggerated turnover because some boardmembers left only to return a year or two later. Internal improvement company board turnover could be high in the first few years of operation but generally settled into the same pattern as did financial corporations. Beginning in 1815, the Schuylkill Navigation Company returned twelve or more of its fourteen boardmembers in every election but one during its first fifteen years of operation. The other year, 1817, nine of the fourteen incumbents retained their seats, keeping a strong majority. With rare exceptions, boardmembers held their seats until they retired from all business pursuits or until they died.

Incumbent boardmembers even outlasted the direst company crises and general economic downturns. In 1815, the board of the Pennsylvania Company for Insuring Lives and Granting Annuities lost five of its thirteen members. However, several took up seats on other boards the same year, suggesting voluntary departures rather than a purge of upper management, especially given that the company was on the verge of issuing its first dividends. Most telling, the company never failed to reelect a majority of the sitting board, a clear indication that the dominant group stayed firmly in control of company policy and administration. The Farmers and Mechanics Bank returned most of its directors every year, despite the normal vicissitudes of banking and the upheavals of the Panic of 1819. Notwithstanding chronic money problems before the late 1820s, the Schuylkill Navigation Company did the same. Regardless of companies'

fortunes on the unpredictable economic seas of the early republic, they kept the same hands at the tiller year-in and year-out.

Boards' continuity of composition, combined with the longevity of many seaholders, demonstrated the degree to which a small group of men could dominate Philadelphia-based corporations. To some extent, board membership was self-selected: the vast majority of stockholders invested in corporations precisely to be able to reap steady profits while minimizing their own active involvement in business affairs, and perhaps few were willing and able to spend the time to sit on a company board.<sup>49</sup> Even annual stockholders' meetings generally did not attract a majority of the investors. Widespread stockholder lethargy contributed to the ability of men with energy and connections to get on the board, and once there, to stay in as long as they wanted. Stockholders threw out few boardmembers, but a number of board minute entries declared feelings of sympathy for the families of members who died in office. By then, of course, even unrelated boardmembers may have felt like family to each other, having gathered together so many times over a period of years or even decades. And like family, they were quick to defend their common interests and fight for common goals.

If an individual corporation could be considered as a family, then they all belonged to the same exclusive and cohesive Philadelphia clan. The interlocking of corporate boards resulted in a small community of men dominating Philadelphia-area companies. Although most banks had articles in their charter that forbade the holding of seats on other bank boards, insurance



and public improvement company charters had no such strictures prohibiting the holding of seats on the boards of potential competitors, and none of the charters addressed the question of holding seats on the boards of businesses that would not compete directly with the company in question. As a result, the same men got on the boards of multiple corporations, allowing inter-corporation communication and cooperation.

The level of coordination among the Philadelphia corporate business associates resembled that of previous elite commercial groups in other Atlantic port cities. Through his analysis of a community of eighteenth-century London merchants, David Hancock demonstrated the extent to which those businessmen held common views, followed a common economic program, and even entered into many short- and long-term mercantile partnerships and joint ventures.<sup>50</sup> Although they did not articulate it as such, these men conceived of their commercial activities as leading to and aided by the integration of the British Atlantic world; they pursued that goal together through both business and political activities. They were typical in this regard: other scholars have shown that similar groups in other Atlantic cities, including Philadelphia and New York, did much the same.<sup>51</sup> Such informal organization and activity was not limited to English speakers, as John Garretson Clark's work on both New Orleans and La

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<sup>49</sup>See Chapter 3 for an extended discussion of the motivations of investors.

<sup>50</sup>David Hancock, Citizens of the World: London Merchants and the Integration of the British Atlantic Community, 1735-1785 (New York: Cambridge University Press, 1995).

<sup>51</sup>See Thomas M. Doerflinger, A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia (Chapel Hill: University of North Carolina Press, 1986) and Cathy Matson, Merchants & Empire: Trading in Colonial New York (Baltimore: The Johns Hopkins University Press, 1998).

Rochelle during the same period has demonstrated.<sup>52</sup> In all of these cities, among all of these communities, men pooled their energies and sometimes their resources to pad their own profits in conjunction with political and legal efforts to further and guide economic growth.

The same would be true of the Quaker City corporate entrepreneurs. Indeed, from the very beginning of Philadelphia corporations the men who sat on the boards of the canal companies were often bank or insurance boardmembers as well. Robert Morris and his associates not only founded Pennsylvania's first bank, the Bank of North America, in 1781 but also its first internal improvement companies, the Schuylkill and Susquehanna Navigation Company in 1791 and the Delaware and Schuylkill Canal Navigation Company in 1792. At any given time from 1800 to 1830, about a quarter of the men sitting on the boards of Philadelphia-based corporations held seats for multiple corporations.<sup>53</sup> Some

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<sup>52</sup>John Garretson Clark, New Orleans, 1718-1812: An Economic History (Baton Rouge: Louisiana State University Press, 1970), and La Rochelle and the Atlantic Economy During the Eighteenth Century (Baltimore: The Johns Hopkins University Press, 1981).

<sup>53</sup>These and the ensuing statistics and analysis of board memberships derives from a database compiled from the following directories: James Hardie, The Philadelphia Directory and Register...1793 (Philadelphia: T. Dobson, 1793); Thomas Stephens, Stephens's Philadelphia Directory, for 1796 (Philadelphia: Thomas Stephens, 1796); Cornelius William Stafford, The Philadelphia Directory for 1797 (Philadelphia: William W. Woodward, 1797); Cornelius William Stafford, Philadelphia Directory, for 1798 (Philadelphia, 1798); Cornelius William Stafford, Philadelphia Directory, for 1799 (Philadelphia: William W. Woodward, 1799); Cornelius William Stafford, Philadelphia Directory for 1801 (Philadelphia: William W. Woodward, 1801); James Robinson, Philadelphia Directory, City and County Register, for 1803 (Philadelphia: William W. Woodward, 1803); James Robinson, Philadelphia Directory for 1804 (Philadelphia: John H. Oswald, 1804); James Robinson, The Philadelphia Directory for 1805 (Philadelphia: James Robinson, 1805); James Robinson, The Philadelphia Directory for 1806 (Philadelphia: James Robinson, 1806); James Robinson, The Philadelphia Directory, for 1807 (Philadelphia: T.S. Manning, 1807); James Robinson, The Philadelphia Directory for 1808 (Philadelphia: W. Woodhouse, 1808); James Robinson, The Philadelphia Directory of 1809 (Philadelphia: James Robinson, 1809); James Robinson, The Philadelphia Directory of 1810 (Philadelphia: James Robinson, 1810); Census Directory for 1811. Containing the Names, Occupations, & Residence of the Inhabitants of the City, Southwark & Northern Liberties (Philadelphia: Jane Aitken, 1811); John A. Paxton, The Philadelphia Directory and Register, for 1813 (Philadelphia: B. & T. Kite, 1813); Kite's Philadelphia Directory for 1814 (Philadelphia: B & T Kite, 1814); James Robinson, The Philadelphia Directory for 1816 (Philadelphia: James Robinson, 1816); James Robinson, Robinson's Original Annual Directory for 1817 (Philadelphia: Whitehall, 1817); John Adams Paxton, The Philadelphia Directory and Register for 1818 (Philadelphia: E. R. Parker, 1818); John Adams Paxton, The Philadelphia Directory and

sat on many at once, men such as Jacob Downing, who in 1814 sat on the boards of the Bank of North America, the Lancaster and Philadelphia Turnpike Company, the Schuylkill Permanent Bridge Company, and the Pennsylvania Contributionship for Insuring Houses from Loss by Fire.

In addition, at least a sixth of the men had relatives sitting on boards of other companies. John Nixon served as president of the Bank of North America from 1793 to 1808 and his son Henry served as a director from 1804 until the 1830s; the younger Nixon also sat on the Insurance Company of Pennsylvania's board from 1804 to at least 1830, the Ridge Turnpike Company's board in the late 1810s and the Lancaster Schuylkill Bridge Company's board in the early 1820s. Brothers Robert and Jesse Waln shared a merchant business.<sup>54</sup> Jesse held seats on the boards of the Insurance Company of Pennsylvania and the Germantown and Perkiomen Turnpike, while Robert held seats at various times on the boards of the American Insurance Company, the Bank of North America, and the Philadelphia Insurance Company. Their cousin Jacob, who eventually took over the business, was also a boardmember of the American Insurance Company, the Bank of North America, and the Insurance Company of North America. Relative William Waln also helped to direct the Bank of North

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Register for 1819 (Philadelphia: John Adems Paxton, 1819); The Philadelphia Directory and Register, for 1821 (Philadelphia: M'Carty & Davis, 1821); The Philadelphia Index, or Directory, for 1823 (Philadelphia: Robert Desilver, 1823); Thomas Wilson, The Philadelphia Directory and Stranger's Guide, for 1825 (Philadelphia: John Bioren, 1825); Robert Desilver, Desilver's Philadelphia Directory and Stranger's Guide, for 1828 (Philadelphia: Robert Desilver, 1828); Robert Desilver, Desilver's Philadelphia Directory and Stranger's Guide, 1829 (Philadelphia: Robert Desilver, 1829); Robert Desilver, Desilver's Philadelphia Directory and Stranger's Guide, 1830 (Philadelphia: Robert Desilver, 1830). Other sources of data include the Farmers and Mechanics Bank Collection, Hagley Museum and Library; Minute Books, Oct. 5, 1815-Nov. 26, 1849, Schuylkill Navigation Company, Pennsylvania State Archives; Minute Books, Pennsylvania Company for Insuring Lives and Granting Annuities, Hagley Museum and Library; and various newspapers. <sup>54</sup>Winslow, 132.

American and the Philadelphia Insurance Company. Whether for inland navigation companies or other corporations, blood was thicker than water.

Many board members had close business associates as officers in various corporations.<sup>55</sup> Henry Drinker, the cashier of the Bank of North America from 1805 to 1821 and an early director of the Susquehanna and Schuylkill Navigation Company speculated in lands together with Samuel W. Fisher, a director of the Germantown and Perkiomen Turnpike Company from 1805 to 1814 and the president of the Insurance Company of North America until 1805, when he became president of the Philadelphia Insurance Company, an office he held for over a decade.<sup>56</sup> Both Manuel Eyre, longtime director of the Delaware Insurance Company of Pennsylvania, the American Fire Insurance Company, the Schuylkill Navigation Company, and second Bank of the United States, and Abraham Kintzing, who at various times sat on the boards of the Pennsylvania Insurance Company, the Schuylkill Permanent Bridge Company, and the Bank of North America through the 1810s, had apprenticed together for merchant Henry Pratt in the late 1790s.<sup>57</sup> Pratt, who took Kintzing into his firm as a partner, later sat on the boards of both the first and second Banks of the United States, the Commercial Bank, the Insurance Company of Pennsylvania, the Insurance Company of North America, the Bustleton and Smithfield Road Company, and the Philadelphia and Lancaster Turnpike Company. Joseph Evans and John

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<sup>55</sup> These are relatives with the same last name, not counting those so common, such as Smith, that were less likely to be related. This number is actually under-representative because of the great number of men related by marriage, who thus had different last names but shared family interests.

<sup>56</sup> Henry Drinker to Samuel W. Fisher, June 8, 1814, Society Miscellaneous Collection, Historical Society of Pennsylvania.

Welsh not only sat together on the boards of the Philadelphia Bank and the Delaware Insurance Company of Pennsylvania: Welsh took Evans into his firm, and Evans married Welsh's wife's younger sister.<sup>58</sup> Whether through birth, brides, or business, the men on Philadelphia boards were bound together in myriad ways.

This interconnection meant that more than a third of the seats of Philadelphia corporations were held by men who individually or through familiar or business connections represented their concerns in multiple companies. In 1821, for example, Schuylkill Navigation Company president Cadwalader Evans, Jr. also sat on the board of the Bank of the United States; he was a former boardmember of the Delaware and Schuylkill Canal Company, his father still held a seat on board of the Pennsylvania Company for Insuring Lives and Granting Annuities, and he had friendly dealings with Henry Drinker, the cashier of the Bank of North America, and Joseph Ball, a former president and current director of the Union Insurance Company. Three other members of the Schuylkill Navigation Company's Board of Managers also sat on the board of at least one insurance company and a fourth had a brother on the boards of two insurance companies and the Bank of Pennsylvania.<sup>59</sup> This core of men who sat on several boards or who had families or associates on various boards formed the nucleus of influence and opinion guiding Philadelphia's growth.

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<sup>57</sup>Abraham Ritter, *Philadelphia and Her Merchants, As Constituted Fifty @ Seventy Years Ago, Illustrated by Diagrams of the River Front, and Portraits of Some of its Prominent Occupants* (Philadelphia: Abraham Ritter, 1860), 57.

<sup>58</sup>Stephen N. Winslow, *Biographies of Successful Philadelphia Merchants* (Philadelphia: James K Simon, 1864), 107-110.

That influence extended to the City Corporation of Philadelphia, as well, and often concentrated in the Watering Committee. For the city's first bond issue to raise funds for the waterworks, the City Councils named commissioners to sell the instruments.<sup>60</sup> Among the twelve-man list were eight men active in business corporate circles, including notables Jacob Shoemaker, Edward Tilghman, and John Inskeep. Many men alternated between sitting on the city councils and sitting on corporate boards. James Vanuxem, for example, who served on the Watering Committee for several years of its first decade and as its president in 1806, sat on the boards of the Union Insurance Company, the American Fire Insurance Company, the Germantown Turnpike and the Delaware and Schuylkill Canal Company. Some families had connections in both the city councils and corporate boards: Jacob Shoemaker's brother Abraham sat on the city councils off and on from 1801 to the early 1820s. Samuel Wetherill would become head of the Watering Committee in 1824 once Joseph S. Lewis left that position to assume the presidency of the Schuylkill Navigation Company. Others extended their influence even further: Cadwalader Evans, alongside his tenure as Schuylkill Navigation Company president, sat for several years in the Pennsylvania legislature. Robert Waln, on the boards at various times of the Bank of North America, the Philadelphia Insurance Company, the American Insurance Company, and the Insurance Company of North America, not only held a seat on Philadelphia's Common Council in the early 1790s and Select

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<sup>59</sup>Compiled from The Philadelphia Directory and Register, for 1821 (Philadelphia: M'Carty & Davis, 1821) and Minutes, Board of Managers, Schuylkill Navigation Company, Roll 1, Oct 7, 1815- January 5, 1846, Pennsylvania State Archives.

<sup>60</sup>An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799 (Philadelphia: Zachariah Poulson, Jr., 1799), 3.

Council in the early 1810s but also was elected to the Pennsylvania House of Representatives for two terms in the 1790s and the United States House of Representatives in 1798; John Sergeant, council for and boardmember of the Schuylkill Navigation Company, the Union Canal Company, the second Bank of the United States, the American Fire Insurance Company, and the Pennsylvania Company for Insuring Lives and Granting Annuities, gained a seat in the Pennsylvania House of Representatives and sat on its Roads and Inland Navigation Committee for the 1807-1808 term before serving four consecutive terms in the United States House of Representatives beginning in 1815 and being Henry Clay's running mate in the 1832 presidential election.<sup>61</sup> The Philadelphia corporate community was both connected well and well connected.

The practice of multiple seatholding by individuals and families created a dense web of relationships among all Philadelphia corporations. The directors of banks, insurance companies, and internal improvement companies formed a tight community in which the general project of orderly regional economic growth along controlled lines could be carefully coordinated. No corporations had direct contacts with every other company, but all had boardmembers or relatives of boardmembers who held seats on the boards of other concerns and so could be kept abreast of general trends and the policies of the others through only one or two degrees of separation. Such interconnections were rampant and consistent throughout the first three decades of the nineteenth century, and, if anything, slightly increased over the period (see Figures 3, 4, and 5). Although

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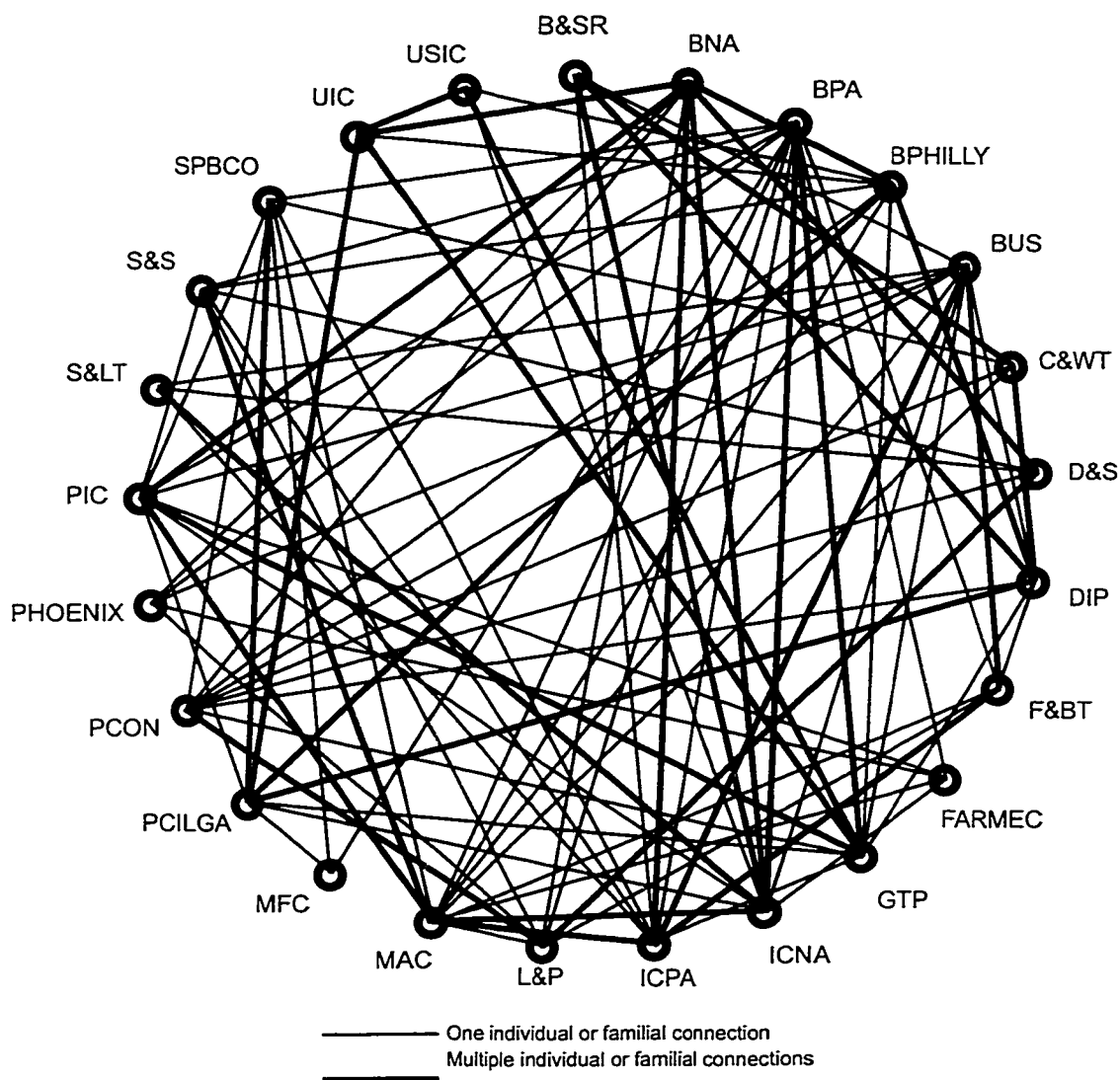
<sup>61</sup>William Meredith, Eulogium of the Character and Services of the Late John Sergeant (Philadelphia: Crissy & Markley, 1858).

corporations may have competed for individual customers, boardmembers were sure to keep informed on issues that affected them and when necessary to take concerted action even without formal institutional ties.



Figure 3

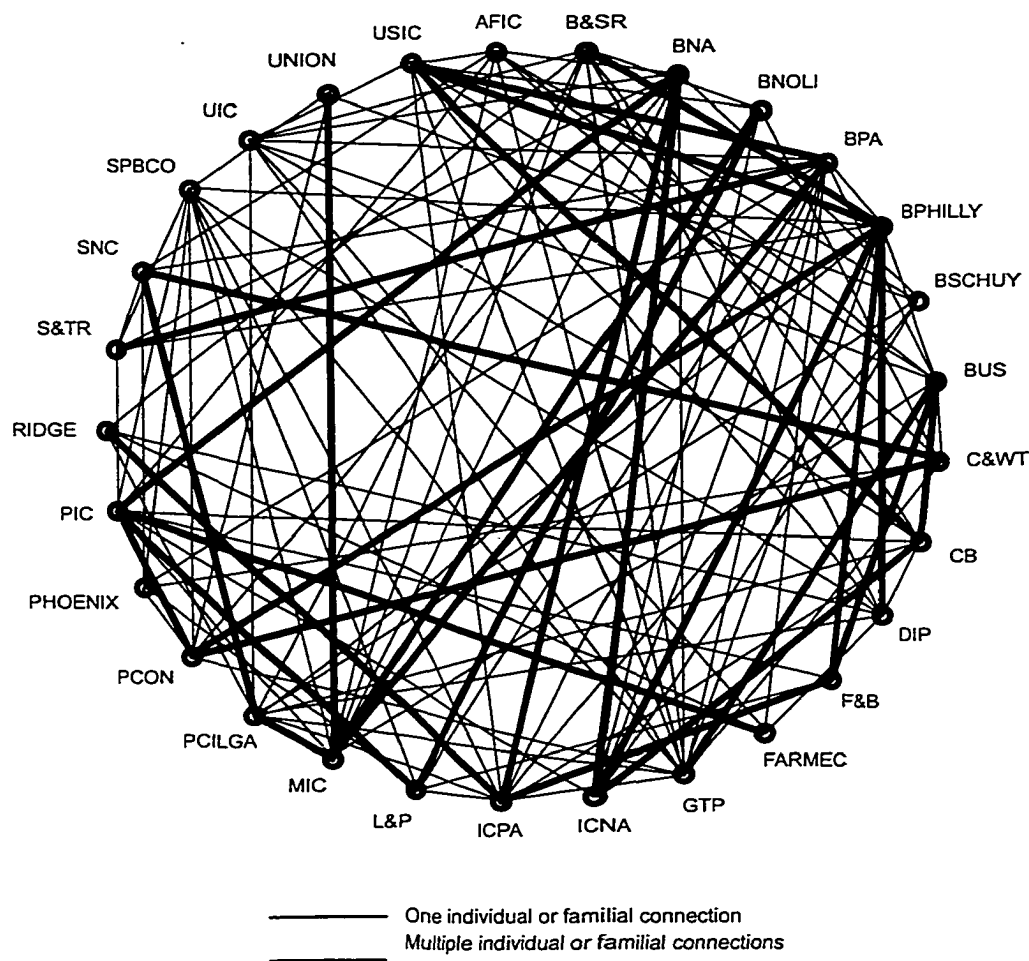
Interconnection of Corporate Boards  
1811



B&SR - Bustleton and Smithfield Road Company; BNA - Bank of North America; BPA - Bank of Pennsylvania; BPHILLY - Philadelphia Bank; BUS - Bank of the United States; C&WT - Cheltenham and Willow Grove Turnpike Company; D&S - Delaware and Schuylkill Canal Navigation Company; DIP - Delaware Insurance Company of Pennsylvania; F&BT - Frankford and Bristol Turnpike Company; FARMEC - Farmers and Mechanics Bank; GTP - Germantown and Perkiomen Turnpike Company; ICNA - Insurance Company of North America; ICPA - Insurance Company of Pennsylvania; L&P - Lancaster and Philadelphia Turnpike Company; MAC - Mutual Assurance Company; MFC - Marine and Fire Insurance Company; PCILGA - Pennsylvania Company for Insuring Lives and Granting Annuities; PCON - Philadelphia Contributionship for Insuring Houses from Loss by Fire; PHOENIX - Phoenix Insurance Company; PIC - Philadelphia Insurance Company; S&LT - Susquehanna and Lehigh Turnpike Company; S&S - Schuylkill and Susquehanna Canal Navigation Company; SPBCO - Schuylkill Permanent Bridge Company; UIC - Union Insurance Company; USIC - United States Insurance Company.

Figure 4

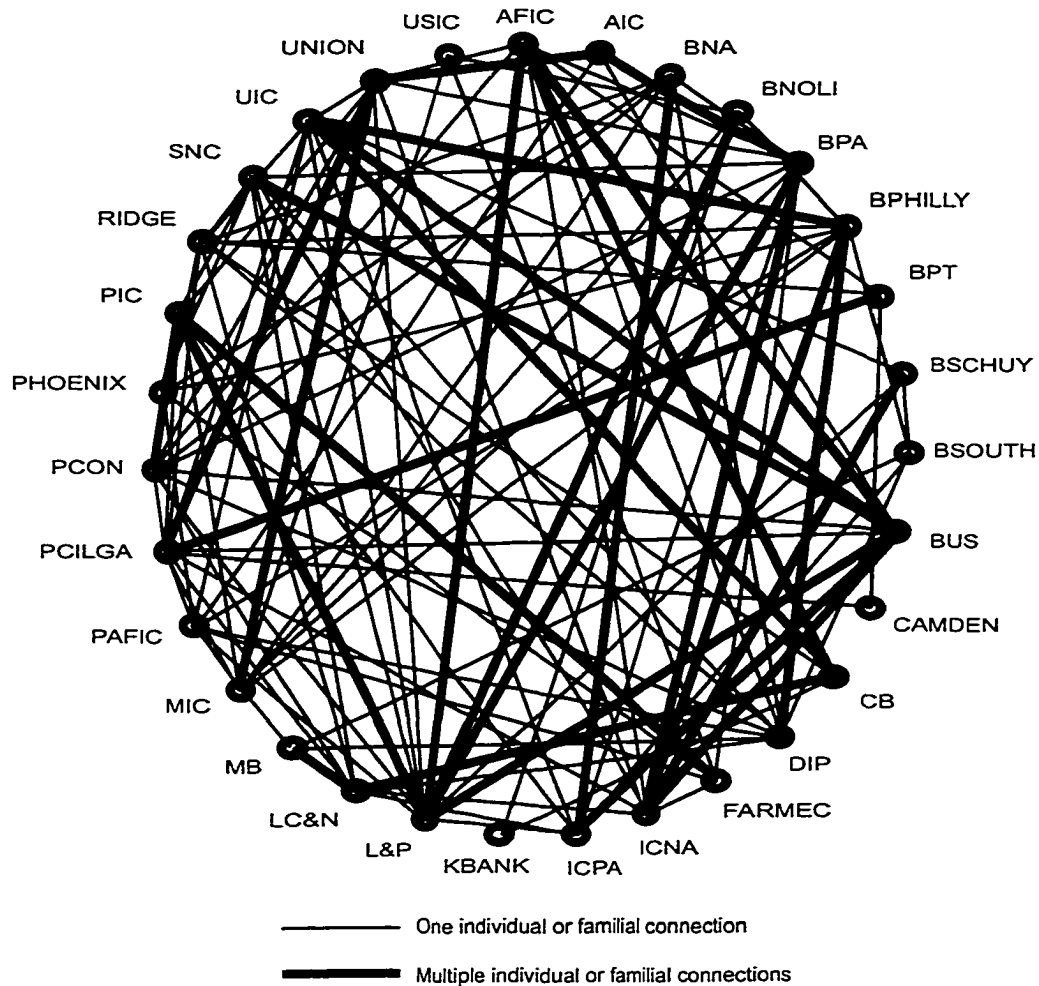
Interconnection of Corporate Boards  
1819



AFIC - American Fire Insurance Company; B&SR - Bustleton and Smithfield Road Company; BNA - Bank of North America; BNOLI - Bank of the Northern Liberties; BPA - Bank of Pennsylvania; BPHILLY - Philadelphia Bank; BSCHUY - Schuylkill Bank; BUS - Bank of the United States; C&WT - Cheltenham and Willow Grove Turnpike Company; CB - Commercial Bank; DIP - Delaware Insurance Company of Pennsylvania; F&BT - Frankford and Bristol Turnpike Company; FARMEC - Farmers and Mechanics Bank; GTP - Germantown and Perkiomen Turnpike Company; ICNA - Insurance Company of North America; ICPA - Insurance Company of Pennsylvania; L&P - Lancaster and Philadelphia Turnpike Company; MIC - Marine Insurance Company; PCILGA - Pennsylvania Company for Insuring Lives and Granting Annuities; PCON - Philadelphia Contributionship for Insuring Houses from Loss by Fire; PHOENIX - Phoenix Insurance Company; PIC - Philadelphia Insurance Company; RIDGE - Ridge Turnpike Company; S&TR - Susquehanna and Tioga Turnpike Company; SNC - Schuylkill Navigation Company; SPBCO - Schuylkill Permanent Bridge Company; UIC - Union Insurance Company; UNION - Union Canal Company; USIC - United States Insurance Company.

Figure 5

Interconnection of Corporate Boards  
1830



AFIC - American Fire Insurance Company; AIC - Atlantic Insurance Company; BNA - Bank of North America; BNOLI - Bank of the Northern Liberties; BPA - Bank of Pennsylvania; BPHILLY - Philadelphia Bank; BPT - Bank of Penn Township; BSCHUY - Schuylkill Bank; BSOUTH - Southwark Bank; BUS - Bank of the United States; CAMDEN - Camden Bank; CB - Commercial Bank; DIP - Delaware Insurance Company of Pennsylvania; FARMEC - Farmers and Mechanics Bank; ICNA - Insurance Company of North America; ICPA - Insurance Company of Pennsylvania; KBANK - Kensington Bank; L&P - Lancaster and Philadelphia Turnpike Company; LC&N - Lehigh Coal and Navigation Company; MB - Mechanics Bank; MIC - Marine Insurance Company; PAFIC - Pennsylvania Fire Insurance Company; PCILGA - Pennsylvania Company for Insuring Lives and Granting Annuities; PCON - Philadelphia Contributionship for Insuring Houses from Loss by Fire; PHOENIX - Phoenix Insurance Company; PIC - Philadelphia Insurance Company; RIDGE - Ridge Turnpike Company; SNC - Schuylkill Navigation Company; UIC - Union Insurance Company; UNION - Union Canal Company; USIC - United States Insurance Company.

The interconnection of boards allowed the corporate community to allocate funds from money-rich companies to cash-poor projects. The Schuylkill Navigation Company in particular benefited from such coordination. In August 1817, Pennsylvania Company for Insuring Lives and Granting Annuities boardmember Cadwalader Evans, Sr. convinced his colleagues to approve purchasing thirty shares in the navigation company, notwithstanding that it was far riskier than the usual insurance-company investment.<sup>62</sup> Evans could at least vouch for the quality of the navigation company's management, because his son and namesake was the president. In 1821, William Boyd suggested that the Pennsylvania Company for Insuring Lives and Granting Annuities invest \$20,000 in the Union Canal Company, a motion that the finance committee later approved.<sup>63</sup> It was no coincidence: Boyd was on the boards of both companies. Three years later, because the Schuylkill Navigation Company was still desperate for cash despite having opened the waterway in July, the navigation's board of managers authorized a \$180,000 loan negotiated from a group of bankers, insurance company officers, and the organizations they represented. The men who eventually took up subscriptions did so on the condition that they would hold a mortgage (subject to the prior claims of Stephen Girard, to whom the company already owed \$230,000) and that they would only be obligated to pay in if the entire subscription were filled. The largest investors included the American Marine Insurance Company subscribing for \$5,000 and the Marine

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<sup>62</sup>August 20, 1817, Minutes, Board of Directors, Vol. 1. Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476, Hagley Museum and Library.

<sup>63</sup> Minutes, Board of Directors, Vol. 1., 4/13/1821. Accession #1476, Pennsylvania Company for Insurance on Lives and Granting Annuities, Hagley Museum and Library.

Assurance Company subscribing for \$10,000.<sup>64</sup> As Josiah White recounted, a circle of men associated with the Pennsylvania Company for Insuring Lives and Granting Annuities was responsible for the funding that got the Lehigh Coal and Navigation Company off the ground: Joseph Shoemaker arranged for White to meet him and his partners “at the Life insurance Co. office on the subject, when for 20 shares of stock he agreed to give us his weight and influence to get our Stock subscribed.”<sup>65</sup> In this way, the corporate community supported local economic development by funding internal improvement projects for which they may not have expected any direct returns.

A confluence of the interconnections of corporate boards and corporate lobbying in the statehouse occurred in the 1823-1824 Pennsylvania legislative session. Eager to renew their charter, Philadelphia Bank partisans considered several offers to the legislature in exchange for re-incorporation. Eventually, they negotiated with the legislature for the bank to make a one-time purchase of Chesapeake and Delaware Canal Company stock amounting to \$100,000 rather than the bank giving its own stock or a cash bonus to the state.<sup>66</sup> Legislators could justify the deal by pointing out that the bank was paying for its new charter by supporting an important internal improvement. Compared to earlier charters, though, the legislature had come away with relatively little: rather than getting either cash to relieve the immediate tax burden or bank shares to relieve the

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<sup>64</sup>Subscription book for loans of 1823 and 1824, Schuylkill Navigation Company, Accession #1215, Hagley Museum and Library

<sup>65</sup>Josiah White's History Given by Himself (Philadelphia: Lehigh Coal and Navigation Company, 1909), 27.  
<sup>66</sup>The bank was to receive any canal company dividends for the following fifteen years, after which it was to transfer the stocks to the state at no cost. The Philadelphia Bank; Containing the Articles of Association, the Original Charter, and All the Acts of Assembly Extending and Relating to it, with the General Banking Law of April 16, 1850 (Philadelphia: Wm. F. Murphy & Sons, 1859), 40.

long-term tax burden, representatives mysteriously settled for a transfer of wealth from one corporation to another. The men on the boards of the bank and the canal company had used the chartering process to get something both wanted: in the bank's case, a low price for the charter, and in the canal company's case, a useful infusion of cash. In essence, these men saved the bank \$100,000 because they might have made the same transaction anyway, even had the state required a cash bonus for the bank charter. George Gillaspay, one of the Philadelphia Bank's founding members, sat on the Chesapeake and Delaware Canal Company's Board of Managers and at least three men currently or formerly on the bank's board were related to men on the canal board. They easily could have gotten the bank to buy the shares.<sup>67</sup> The state's endorsement made the exchange easier, because now the bank's board did not even have to justify its investment in the struggling canal company. By coordinating their lobbying efforts, the two boards had paid less to the state while transferring funds from a company that easily attracted investment, the bank, to one that had more trouble doing so.

Although no corporations were more continually desperate for cash than internal improvement companies in their construction phase, insurance companies sometimes needed liquid capital to tide them over until more premiums came in. Here, too, on occasion the close relations between corporate boards came in handy for businesses down on their luck. Beginning in the spring of 1822, the Pennsylvania Company for Insuring Lives and Granting

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<sup>67</sup>The Philadelphia Bank: Containing the Articles of Association, the Original Charter, and All the Acts of Assembly Extending and Relating to it, with the General Banking Law of April 16, 1850 (Philadelphia: Wm.

Annuities suddenly faltered: after having issued dividends of at least six percent and as high as ten percent for the previous seven years, it failed to issue dividends that July. By the fall the company was running dangerously short of operating capital. The board of directors turned to the Philadelphia Bank for a short-term \$2,000 loan that the bank quickly approved, merely confirming a history of friendly relations between the two boards.<sup>68</sup> The insurance company's longtime actuary, Jacob Shoemaker, had been a director of the bank, and Jacob Sperry and John Bohlen sat on the boards of both companies. Former bank directors John Welsh, Augustine Bousquet, and Lewis Carpentier had all been active in the insurance company's founding, and the Newbold family had at various times had seats on both boards.<sup>69</sup> Corporate boards willingly bailed out the companies of their associates.

Even banks, most of which had strictures in their charters forbidding their directors from holding seats on other banks, managed to keep their lines of communication with each other open. Occasionally they simply flouted their charters. In 1818, Joseph Lisle sat on the boards of both the Bank of the United States and the Commercial Bank, despite the latter's prohibition against its directors holding seats on the boards of other banks. Such blatant disregard for the law was the exception rather than the rule because boards found other, legal lines of communication. Many brothers, fathers and sons, and business

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F. Murphy & Sons, 1859), 15; Thomas Wilson, The Philadelphia Directory and Stranger's Guide, for 1825 (Philadelphia: John Bioren, 1825).

<sup>68</sup>October 3, 1822, Minutes, Board of Directors, Vol. 1. Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476, Hagley Museum and Library.

<sup>69</sup>Stock Subscription Book, 1809, Pennsylvania Company for Insuring Lives and Granting Annuities, Accession 1476, Hagley Museum and Library; The Charter and By-Laws of the Pennsylvania Company for

associates sat on different bank boards and so could discuss the policies of their respective institutions in an informal manner. Some men hopped from board to board. John Barclay, an early president of the Bank of Pennsylvania later served the Bank of the Northern Liberties in the same capacity, and Joshua Lippincott sat on the board of the Schuylkill Bank before joining the board of the second Bank of the United States. Nonetheless, longevity with a single board remained the norm. Several men declined the opportunity to switch while still keeping cordial relations with the directors of other banks. In 1829, Robert Patterson confided to a friend that he had “been solicited by my friends to go into [Bank of North America]. I believe it would give great satisfaction to the Directors if I were appointed, but I would not leave the Philadelphia Bank. I am at home there - with uncontrolled influence.”<sup>70</sup> The prohibition against sitting on more than one bank board did little to stop banking associates from communicating when their common interests were at stake.

In addition to aiding each other’s corporations, members of the Philadelphia corporate business elite benefited personally from cross-corporate lending arrangements. Corporations were not the only backers of the big 1824 Schuylkill Navigation Company loan; Joseph Norris, a Bank of Pennsylvania director, subscribed for \$15,000, Henry Nixon of the Bank of North America subscribed for \$8,000, and Joseph S. Lewis of the Philadelphia Contributionship

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Insurance on Lives, Granting Annuities, and Executing Trusts (Philadelphia: James Kay, Jun. & Brother, 1836), , 3.

<sup>70</sup>Robert B. Patterson to General Barnard December 25, 1829, Robert Patterson Folder, Historical Society of Pennsylvania



subscribed for \$10,000.<sup>71</sup> These men could avail themselves of such a good investment opportunity because of their insider status. Furthermore, they had access to large sums because they knew that through their ties to financial institutions, they could afford to tie up capital for long periods without the fear of insolvency: should one run short of cash, he could always take out a loan from the company on whose board he served. They were also using their corporate links to aid companies in which they owned stock privately or stood to gain in increased property values upon the completion of the various improvements. Thus, through their ties to other financial institutions, an increasingly smaller group of men held an increasingly larger portion of corporate stock and debt and thus an even greater say in how corporations would be run.

Bank officials coordinated their activities and policies through methods other than interlocking their directories. Eventually, the largest Philadelphia-based chartered banks held joint meetings, usually sending their cashiers as representatives. These men gathered at the behest of any one of their number in regard to particular issues that might require the cooperation of banks across the city. One such set of meetings took place in 1814 at the suggestion of Henry Drinker, the Bank of North America's cashier, after the legislature chartered forty-one new banks. He wrote to the boards of the city's three other established chartered banks, the Bank of Pennsylvania, the Philadelphia Bank, and the Farmers and Mechanics Bank, proposing that they adopt a joint policy on the acceptance of these new banks' notes. Eventually, the group decided to accept

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<sup>71</sup>Subscription book for loans of 1823 and 1824, Schuylkill Navigation Company, Accession #1215, Schuylkill Navigation Company Records, Hagley Museum and Library.

the notes only of those banks in Philadelphia city or county and, for the satellite branches of the Bank of Pennsylvania and the Philadelphia Bank, to accept only notes from banks in the same location as the branch.<sup>72</sup> On another occasion, the same group agreed not to issue or accept any note with a face value under five dollars despite the state's vacillation over its restrictions on low-denomination issues.<sup>73</sup> The prohibition on interlocking directories did not inhibit the big Philadelphia banks from acting in concert on issues that affected them collectively.

The coordination of bank policies showed the extent to which Philadelphia corporate associates extra-legally controlled banking and monetary policies for the Philadelphia region and indeed for the entire state. Their decision to accept only the notes of some rather than all of the banks chartered in 1814 revealed that bank directors held far more sway over money policy than did public authorities. For better or worse, the banks whose notes the long-established Philadelphia banks refused to honor had obtained charters every bit as legitimate as the ones granted to the big city institutions. The big-city bank directors were doing their best to keep the money supply at safe levels, thus limiting inflation and the chance of a run—a point they would bring up during the Panic of 1819, which many observers blamed upon the excessive issues of the forty-one banks chartered five years earlier. If the government would not or could not rein in the excessive printing of bank notes with its inherent danger for the entire economy,

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<sup>72</sup>June 17, 1814, Excerpt of Minutes of Board of Directors, Historical Records, Box 1, 1807-1820, Farmers and Mechanics Bank, Accession 1658, Hagley Museum and Library.

<sup>73</sup>The legislature forbade and then allowed the issuing of notes below \$5 at least twice in between 1814 and 1820. An Act to Re-Charter Certain Banks. To Which Are Added the Several Acts of Assembly

at least Philadelphia banks tried their utmost to give Pennsylvania's economy a solid foundation while providing capital for growth. The big city banks also had to deal with the practical problem of redeeming the notes of non-Philadelphia banks. Many of the new banks were quite remote, making redemption of their notes for specie and communication on a regular basis extremely challenging; the communication lag time particularly exacerbated the big banks' chronic difficulties with counterfeiting, a widespread practice damaging banks and the population at large. As for the issuing of notes below five dollars, Philadelphia bankers provided the discipline that elected representatives and shady country banks could not. The big banks were protecting themselves, their customers, and the greater public by getting together and acting in concert on such issues.

Certainly, some kind of financial regulation was necessary and the legislature's sporadic, occasionally strict, but invariably toothless measures proved inadequate. However, no matter how much the banks' collusion may have been motivated by the desire to follow sound financial policy, it also reflected the clout of the Philadelphia banking community and its ability and willingness to use that power without submission to public scrutiny and debate. They did not hold open meetings or publicize their decisions, nor did they petition the legislature for more effective legal changes or governmental oversight accomplishing the same ends. Rather, they held their own private meetings and made their own decisions mostly free of the input or influence of the citizenry or its elected representatives, keeping their own counsel and running the state's

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Relative to Banks, and the By-Laws of the Farmers and Mechanics Bank (Philadelphia: R. Desilver, 1824), 36;

economic policy from cozy bank offices in Philadelphia. Regardless of the wisdom or effectiveness of their efforts to manage banking and the economy, manage it they did.

Furthermore, while none of them were as bold or as foolish to admit as much openly, Philadelphia bank officials had some inkling of the implications of their regulatory efforts for their own political and economic power. By denying country banks the ability to have their notes honored in Philadelphia, the big-city bankers ensured that the metropolis between the Schuylkill and the Delaware would remain the financial capital of the state. They were also protecting their own profits while threatening those of the country banks. Country bank notes, because they were not accepted in Philadelphia, circulated at a heavy discount beyond the vicinity of their respective institutions, meaning that their bearers could not get face value for the notes. Customers who were already paying the legal rate of 6% interest on a country bank loan might receive only 75 cents or 80 cents on the dollar for the notes they tried to spend outside their local area, making their *de facto* interest rate approach 30%. Therefore, anyone in Pennsylvania who had Philadelphia connections would try to get loans with the Philadelphia banks, whose notes were accepted close to par value everywhere in the state. City banks could thus be much more selective about their customers, only accepting the ones that seemed the least likely to default while denying the riskier others, who would have to resort to the country banks. The Philadelphia banks were created a vicious cycle in which the people who were greater credit risks increasingly turned to country banks that would only be able to attract less desirable customers and whose notes became increasingly

suspect. In effect, the Philadelphia banks' non-acceptance of country bank notes because of lack of faith in those institutions became a self-fulfilling prophecy whereby the city banks profited at the expense of their country cousins. Whether or not Philadelphia bank directors expected such results, they certainly did not hesitate to reap the rewards of their policy.

During this era, the number of corporations—and thus the number of men running them—increased only slightly while the population whose economic activities those companies influenced increased dramatically, thus ensuring those few men proportionately ever-greater influence. In 1811, 292 men out of a Philadelphia County population of over 110,000 held the 384 seats available on the various boards of Philadelphia business corporations, so that one individual held a seat for every 380 residents.<sup>74</sup> Nearly twenty years later, influence was even more concentrated: in 1830, when the Philadelphia County population had risen to 188,797, 336 men held the 416 available seats, meaning that there were now 561 residents for each boardmember. The consolidation of power becomes even more stark when the greater geographic area of impact comes into account: Philadelphians' dominance of the boards of the Lancaster and Philadelphia Turnpike, the Union Canal Company, the Schuylkill Navigation Company, and the Lehigh Coal and Navigation Company translated into great economic influence not only in Philadelphia County but also in Berks, Lancaster, Chester, Montgomery, Northampton, Schuylkill, and Lehigh Counties. Counting a population of 571,840 in those areas in 1830, the ratio of outsiders to

boardmembers reached 1,701 to one. Such ratios of constituents to representatives may have been lower than those of the state legislature, but with one crucial difference: Pennsylvania voters elected their legislators, while Philadelphia boardmembers appointed themselves through their capital and their energy.

Just as the Philadelphia corporate community was composed of self-selected men who coordinated economic growth following the practice of mercantile cooperation of men before them, they set examples for their cohorts in other American communities. Historian Robert Dalzell, in his examination of the “Boston Associates”—a term coined by scholars, not the men themselves—examined the extent to which a group of merchants cooperated to foster and to control the development of Massachusetts textile manufacturing from the 1810s on.<sup>75</sup> They borrowed some of the technology from Britain and hired men to design and build the rest, just as Philadelphians did with canals and river navigations. Their use of the corporate structure suggests British or perhaps even Philadelphia’s influence in legal and organizational matters, as did their formation of the Suffolk Bank to help finance their efforts and to stabilize the New England money supply.<sup>76</sup> As other scholars have noted, the same phenomenon occurred on a smaller scale in such manufacturing areas as the textile districts of Rockdale and Manayunk and the papermaking region of the

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<sup>74</sup>The population statistics used are from the Inter-university Consortium for Political and Social Research, Historical, Demographic, Economic, and Social Data: The United States, 1790-1970 [computer file] (Ann Arbor: Inter-university Consortium for Political and Social Research).

<sup>75</sup> Robert Dalzell, Enterprising Elite: The Boston Associates and the World They Made (Cambridge: Harvard University Press, 1987). Dalzell credited Vera Shlakman with first using the term “Boston Associates” in The Economic History of a Factory Town: A Study of Chicopee, Massachusetts (Northampton: Smith College Press, 1935).

Berkshires, where capitalists cooperated to promote common economic objectives.<sup>77</sup> The Philadelphia associates placed themselves at the forefront of the formation of a new corporate class in the industrial cities of America.

At the same time, Philadelphia's corporate leaders were not running a malevolent oligarchy silently trampling the rights and will of the people, all for a small thrill and an extra half-cent on the dollar. On the contrary: they fulfilled a variety of functions that state and local governments were either incapable or unwilling to perform. Corporations provided a framework to mobilize credit for economic development, raise funds for internal improvements, pursue rational money-supply policies, and provide a safety net for struggling projects. In husbanding Philadelphia's economic expansion from the 1790s to 1830, the city's corporate business elite kept the city's economic and population growth on a pace only exceeded by New York and Baltimore, both of which had already been growing faster in the 1780s and had better harbors and easier geographical access to their hinterlands. Still, the Philadelphia associates proceeded largely on their own and preferably with as little public input and comment as possible, and while the whole city grew company partners profited disproportionately from economic expansion and integration. Boardmembers did not duck the responsibilities that came with their influence, but they minimized the burdens

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<sup>76</sup>Dalzell, 94-95.

<sup>77</sup>See Anthony F. C. Wallace, Rockdale: The Growth of an American Village in the Early Industrial Revolution (New York: W.W. Norton & Company, 1978), 73-123; Cynthia J. Shelton, The Mills of Manayunk: Industrialization and Social Conflict in the Philadelphia Region, 1787-1837 (Baltimore: The Johns Hopkins University Press, 1986); and Judith McGaw, Most Wonderful Machine: Mechanization and Social Change in Berkshire Paper Making, 1801-1825 (Princeton: Princeton University Press, 1987), 117-157.

when they could and were not reluctant to grab the rewards when opportunity called.

Therein lay the ultimate irony of the Pennsylvania electorate's overwhelming aversion to centralized authority in general and the caricature of money-grubbing speculators in particular. The great concern with the issues of the moment—keeping taxes low while providing transportation and credit as quickly as possible—came at the expense of considering broader, more sweeping policies such as the ultimate social effects of different kinds of economic development. This myopia played right into the hands of corporate boosters. The general opposition to public projects or even to the oversight of privately financed ones may have lowered the tax burden, but it also resulted in the state's inability to generate consistent or meaningful leadership in economic policy.<sup>78</sup> Philadelphia's corporate leaders were only too willing to step into the policy arena and once there to make it their own, planting their flag, expanding their territory and vigilantly guarding their perimeter. Even if from the windows of Philadelphia company offices, Pennsylvania politics had become alarmingly chaotic, the men who ran Philadelphia-based corporations worked to order the economy to their own liking. While pandering politicians and the tax-averse and anti-elitist voters over-ran the Keystone State's political landscape, the Philadelphia associates removed economic policy from the political realm, separating as best they could the economy from the political economy of early republican Pennsylvania.

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<sup>78</sup>Indeed, even the assertion that the state ultimately saved money by having private investors put up the capital for banks and internal improvements calls for examination: given the profitability of well-run banks



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and the public costs of the failures of others, the state may have saved taxes in the long run by administering its own banks and internal improvement projects.

## Diffusion, Consolidation, and the Corporate Sphere

Used separately, technology, finance, and ideology could be potent weapons. When company officers managed to coordinate all three, they exhibited the extent to which rich, well-run and well-connected corporations could control local economies and local resources. Two generations of Philadelphia associates spent the half-century after independence building their corporate empires. Despite the growing strength of Schuylkill Navigation Company and the Lehigh Coal and Navigation Company, in the early 1830s both still faced challenges to their future ability to grow and to profit. Two particular incidents in which they successfully defended their interests demonstrated more than the power of the individual companies. Those two affairs showed that the Philadelphia associates, with their great sway over local and regional economies, had established their domain over broad issues of resource allocation and economic development. In so doing, they created a corporate sphere with profound consequences for the American polity and for the legacy of the American Revolution.

The Schuylkill Navigation Company flaunted its dominance of local affairs on February 4, 1833, when Philadelphia county constable William Simpson evicted John Gotwalt and his family from the home they had lived in for eight years. Through no fault of Gotwalt's, the house he occupied lay at the epicenter of a dispute between the City of Philadelphia and the Schuylkill Navigation Company, two of Philadelphia's corporate behemoths. Their argument concerned the one resource that both corporations depended upon for the vast majority of their operating revenue: the waters of the Schuylkill River. The nature

of the conflict and the way that the Schuylkill Navigation Company moved to further its interests implied that its board considered the river, which was a crucial regional economic resource, to be under the company's domain.

The first official dealings between the company and the Watering Committee occurred largely because of the efforts of none other than Josiah White. In 1810, he purchased a set of properties at the Falls of the Schuylkill, several miles above Philadelphia.<sup>1</sup> Along with land on both sides of the river, the purchase included an 1807 law from the Pennsylvania legislature authorizing the owner to dam the river and to make a lock navigation around the dam—a right that the Schuylkill Navigation Company's 1815 charter did not supersede. Although the Schuylkill originated in rugged country, closer to Philadelphia the land was more flat, requiring a dam to raise the level of the water enough to ensure enough pressure to turn water wheels. The river was commonly thought to be undamnable at the Falls because in the spring, with the first thaws, great freshets of water careened down the river, carrying with them huge sheets of crushing ice. Either too brave or too foolish to be daunted by such barriers, White bought the site and within two years managed to dam the river. He also built a lock for navigation on the west side of the Schuylkill and a millrace to power a nail and wire mill near the river's eastern banks. White soon realized that the cost of constructing his strong, heavy stone dam far exceeded the returns from the lock and the mill. Finally, in 1819, he found an eager buyer for the property and the water rights: the Watering Committee. Wanting to expand

the reservoir capacity of the waterworks and unsatisfied with “the constant and great expense attending Steam Engines, and the vexation occasioned by repeated accidents,” the Watering Committee and especially waterworks superintendent Frederick Graff saw White’s improvements and the land attached to them as a godsend.<sup>2</sup> The new site gave the city corporation an opportunity to secure a seemingly limitless quantity of water and pay next to nothing in annual energy costs.

Many early corporations chartered to administer inland navigations encountered opposition, and used their power most openly, in conflicts concerning waterpower and eminent domain. The Watering Committee’s purchase of White’s property and the subsequent construction of the Fairmount waterworks and reservoir at the site required the cooperation of the Schuylkill Navigation Company. The city would be diverting large quantities of Schuylkill River water both for the new reservoir and for the new works to pump the water. The navigation company, for its part, wanted to ensure that it would be able to collect tolls and retain enough water for the locks to be operable. Accordingly, the two corporations arranged a complex contract in 1819 to govern their sharing of the river and its banks. In 1820 and again in 1824, they clarified the first agreement. By the terms of the final deal, the city built and maintained a lock navigation around the dam according to Schuylkill Navigation Company specifications. The navigation was on city property—that purchased from

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<sup>1</sup>The Falls of the Schuylkill was several miles above the city limits then, but was incorporated into the city along with its other Philadelphia County suburbs in 1854.

White—and the city was to employ a toll-taker there. All tolls went to the Schuylkill Navigation Company, as did a one-time payment of \$26,000 that helped the cash-strapped concern complete construction elsewhere. In return, the city retained all the rights to the actual water of the Schuylkill not required for the navigation, a big concern for the growing city. The solution gave each side what it wanted: for the navigation company, cash and a proper facility at no cost, and for the city, a guaranteed supply of fresh water.

The agreement turned out to be short-lived because the Schuylkill Navigation Company's spectacular success after 1825 had not been anticipated in the company's original plans. Schuylkill Navigation Company officials had initially constructed locks 80 feet long and 17 feet wide, enough to fit four boats at a time. The daily possible traffic of those locks, given the time to fill and empty the locks, was about 95 boats a day, a more than reasonable capacity given the expected volume of shipping, the cost of construction, and the company's resources. But by the early 1830s, traffic volume exceeded the grandest expectations of the company's Board of Directors, reaching an amazing 327,921 tons in 1832 with no limits in sight (See Figure 7A).<sup>3</sup> Accordingly, in 1832 the company began building a second set of locks at the navigation's busiest points along the lower part of the navigation, putting in eight new locks alongside the original ones in order to double capacity. On October 2, 1832, the company, citing "the very great increase of trade along the Schuylkill," informed

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<sup>2</sup>"Report of the Watering Committee on the subject of obtaining Water power from the River Schuylkill, February 5, 1819," City Council 120.42 Committee on Water, Papers 1804-1854, Box A3118, Philadelphia City Archives.

the Watering Committee that they intended to do the same at Fairmount, the location of the city-built and owned locks. The new lock would be dug right at the location of the current lock-tender's house—John Gotwalt's home as perk of his employment with the city.<sup>4</sup> On December 8, 1832 Joseph S. Lewis, the president of the Schuylkill Navigation Company, wrote to Gotwalt instructing the city employee to vacate the premises so that the navigation company could build the new locks.<sup>5</sup> The company wanted to be ready for even greater profits beginning with the 1833 season.

That the Schuylkill Navigation Company came into conflict with City of Philadelphia over the building of the new locks demonstrated many of the ways that the two corporations had grown in importance to the city and, indeed, to the region's economy. The navigation company's importance to the regional economy was even greater than the huge increase in tonnage indicated. The increase in availability of anthracite did more than benefit coal-mining areas: it contributed directly to the establishment of Philadelphia as a capital of steam-engine production in the 1820s and 1830s. Succeeding early steam pioneer Oliver Evans, men like Matthias Baldwin and William Norris, began making steam engines for locomotives, establishing Philadelphia as perhaps the world's premier city for the manufacture of railroad engines. The building of those steam

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<sup>3</sup>Schuylkill Navigation Company statistics compiled from Minute Books, Box 1, Oct. 5, 1815- Nov. 26, 1849, Schuylkill Navigation Company records, MG-110, Pennsylvania State Archives.

<sup>4</sup>John Gotwalt to Frederick Graff, November 2, 1825. Correspondence of the Watering Committee with the Schuylkill Navigation Company, in Relation to the Fair Mount Water Works: Together with the Reports of the Watering Committee to Councils, Made Dec'r 11, 1832, and Feb'y 11, 1833 (Philadelphia: Lydia R. Bailey, 1833), 4-5.

<sup>5</sup>Joseph S. Lewis to John Gotwalt, December 8, 1832. Correspondence of the Watering Committee with the Schuylkill Navigation Company, in Relation to the Fair Mount Water Works: Together with the Reports

engines required great quantities of steel, metal requiring such high heat to work that anthracite became the fuel of choice for steel mills. In 1830, the city accounted for nearly a quarter of the entire nation's steel production. While the availability of coal allowed the production of heavy machinery sent all over the world, the value of products sent up the navigation actually exceeded the value of those coming downstream. From 1831 to 1835, about \$4,000,000 worth of goods made their way south and east along the Schuylkill toward Philadelphia, but over \$6,000,000 in value traveled north and west into the hinterland, away from the city.<sup>6</sup> Given that Philadelphia County's population in 1830 approached 200,000 people, the Schuylkill Navigation Company alone accounted for approximately \$50 per person in regional trade coming to and from the metropolis.<sup>7</sup> The company's board suggested that "the additional work at Fair Mount has become so essential to the accommodation of the increasing trade on the river, that without it the navigation will be much impeded."<sup>8</sup> According to their terms, the city's commerce could grow only if the navigation could be expanded at high traffic points, especially at Fairmount.

For its part, the Watering Committee had legitimate concerns that the operation of a second set of locks at Fairmount might threaten the city's flow of water, and for that matter, water revenue. The city's growth, the extension of the

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of the Watering Committee to Councils, Made Dec'r 11, 1832, and Feb'y 11, 1833 (Philadelphia: Lydia R. Bailey, 1833), 14.

<sup>6</sup>Diane Lindstrom, Economic Development in the Philadelphia Region, 1810-1850 (New York: Columbia University Press, 1978), 102.

<sup>7</sup>According to the 1810 United States census, the total population of Philadelphia County was 188,797.

<sup>8</sup>Joseph S. Lewis to John Sergeant, Horace Binney, and Charles Chauncey, December 17, 1832. Opinion of Counsel, on the Right of the Schuylkill Navigation Company to Make Another Lock and Canal for the Use of the Navigation at the Fair Mount Dam (Philadelphia: James Kay, Jun. & Co., 1833), 2.

waterworks into the suburbs, and greater per-capita water use had resulted in the expansion of the waterworks and its administration. The first plan for the waterworks had been based on an expected need of one million gallons a day, a figure quickly increased by half during the construction of the engines; the contract for the engines stipulated a total capacity of up to three million gallons daily.<sup>9</sup> By late 1811, the Watering Committee decided to build two new reservoirs, each with a one-million-gallon capacity.<sup>10</sup> By 1817, peak needs approached two million gallons daily, but the narrow wooden mains could only handle half that. Complaints that summer led to the 1818 construction of wider iron water mains capable of delivering five million gallons in a twenty-four hour period.<sup>11</sup> Within a year, the Watering Committee was already planning the Fairmount works with its projected ability to supply up to ten million gallons daily, and by 1825 it was supplying four million gallons on the hottest summer days.<sup>12</sup> By the early 1830s, demand was so high that during dry spells in the summer the level of the Schuylkill dropped far enough that the city could not draw water from it without violating its contract to ensure that the navigation had enough water to operate, and the water used by an additional lock would cut into the volume

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<sup>9</sup>March 2, 1799, Select Council Minutes, October 14, 1796- April 14, 1799. CNL15 (mss.), Philadelphia City Archives; Report to the Select and Common Councils on the Progress and State of the Water Works on the 24th of November, 1799 (Philadelphia: Zachariah Poulson, Jr., 1799).

<sup>10</sup>Report of the Watering Committee Upon the Present State of the Works for Supplying the City with Water, and the Several Other Plans, Proposed for That Purpose, May 5, 1812 (Philadelphia, 1812).

<sup>11</sup>Report of the Watering Committee, Read in Select Council, November 12, 1818 (Philadelphia: William Fry, 1818).

<sup>12</sup>February 5, 1819, City Council 120.42 Committee on Water, Papers 1804-1854, Box A3118, Philadelphia City Archives; Bernhard, Duke of Saxe-Weimar Eisenach, Travels Through North America, During the Years 1825 and 1826 (Philadelphia: Carey, Lea & Carey, 1828), 137.



considerably.<sup>13</sup> That increasing supply of water flowed to all districts within the city limits and to the neighboring suburbs of Spring Garden, the Northern Liberties, and Southwark. It also resulted in a great deal of money for the city coffers. In 1826, for the first time, water rents exceeded direct outlays spent maintaining the waterworks, in 1827 the city gained a \$4,800 surplus, and revenues had continued growing quickly<sup>14</sup>. Furthermore, The Watering Committee controlled water policy not only for the city, but also for the metropolitan area, and its members perceived the building of another set of locks as a short-term threat to the performance of the waterworks and a long-term threat to the city's public health and continued growth. As John P. Wetherill, chairman of the Watering Committee, wrote to Joseph S. Lewis, "granting facilities to the increasing coal trade" should be matched with "corresponding facilities... to meet the increasing demand for water power arising from the rapid growth of the City and the neighbouring districts."<sup>15</sup> The navigation and the waterworks truly were at the nexus of economic activity and urban development.

The way that the Schuylkill Navigation Company officials went about building the new locks demonstrated the company's use of its financial, ideological, and technological leverage. After so many lean years during

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<sup>13</sup>John P. Wetherill to Joseph S. Lewis, February 13 1832, Correspondence of the Watering Committee with the Schuylkill Navigation Company, in Relation to the Fair Mount Water Works: Together with the Reports of the Watering Committee to Councils, Made Dec'r 11, 1832, and Feb'y 11, 1833 (Philadelphia: Lydia R. Bailey, 1833), 36-40.

<sup>14</sup> Accounts of the Corporation of the City of Philadelphia: From April 1, 1823 to January 1, 1828 (Philadelphia: Philadelphia Councils, 1828).

<sup>15</sup>John P. Wetherill to Joseph S. Lewis, November 15, 1832, Correspondence of the Watering Committee with the Schuylkill Navigation Company, in Relation to the Fair Mount Water Works: Together with the Reports of the Watering Committee to Councils, Made Dec'r 11, 1832, and Feb'y 11, 1833 (Philadelphia: Lydia R. Bailey, 1833), 10.

construction, the company had become rich. Issuing its first dividends in 1829, the company could afford to expand in 1832 because it was flush with cash. Beyond having the money to build, they had the paid manpower and the loyalty that came with employment: when Simpson came to evict Gotwalt, the sheriff was accompanied by twenty Schuylkill Navigation Company employees. The company also had the legal authority to build more or less whatever it wanted in connection with the navigation of the river as well as to invoke the power of local law enforcement against anyone who opposed them. Lewis wrote numerous letters to Gotwalt, to waterworks superintendent Frederick Graff, and to the Watering Committee. When those missives did not result in Gotwalt's voluntary removal from the toll-keeper's house, Lewis called William Simpson, a Philadelphia County sheriff, to evict Gotwalt. In order to do so, Lewis invoked the 1826 measure that various canal companies had helped push through the state legislature including a clause that allowed canal companies to call local constables to remove "refractory" toll-keepers from company premises. The title of the law even reflected the ways that business corporations presented their particular interests as those of the community: "An Act to protect the public in the full benefit and enjoyment of the works constructed for the purposes of Inland Navigation."<sup>16</sup> They had been able to get that clause passed because it was only one in a list of infractions that could slow traffic along the navigation—impediments to the technology that the company had built. In financial terms, in legal terms, and in technological terms, the Schuylkill Navigation Company held

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<sup>16</sup>Acts of the Legislature of Pennsylvania, Relating to the Schuylkill Navigation Company (Philadelphia:

a great many cards in its hand, even compared to a city corporation governing over eighty thousand people.

The arguments that Lewis and company lawyers put forth to defend their action to construct another lock further showed their sense that the Schuylkill Navigation Company controlled the river. Responding to a Watering Committee offer to negotiate a solution acceptable to both parties, Lewis denied that “the alterations in the use of [Schuylkill water] at Fair Mount, are such as makes it proper for them to communicate those alterations to the City Councils for their approbation.” Lewis flatly stated that the navigation company “Board do not suppose that the right to use the water and water power of the river for the purposes of navigation to the extent that they may deem necessary, is subject to any question.”<sup>17</sup> Later, company lawyers would argue that even if the company wanted to sell water rights to the city, the original charter did not authorize the alienation of those rights if they would in any way impede the navigation of the river as determined by the company—notwithstanding that the city’s purchase of water rights beyond what the company used at the time was clearly the purpose of the 1824 agreement costing the city \$26,000.<sup>18</sup> Before the incorporation of the company, the Schuylkill River, like all waterways, was legally a public highway. In late 1832 and early 1833, the Schuylkill Navigation Company successfully asserted its ownership of the river and its right to use it in perpetuity,

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Joseph & William Kite, 1838), 28.

<sup>17</sup>Joseph S. Lewis to John P. Wetherill, November 27, 1832, Correspondence of the Watering Committee with the Schuylkill Navigation Company, in Relation to the Fair Mount Water Works: Together with the Reports of the Watering Committee to Councils, Made Dec’r 11, 1832, and Feb’y 11, 1833 (Philadelphia: Lydia R. Bailey, 1833), 10.

and could arrest anyone who interfered with that right. The Schuylkill River had once been a public highway; but by the 1830s it was wholly owned by the Schuylkill Navigation Company.

The intimacy of the corporate community also played a part in the Schuylkill Navigation Company's successful building of its new locks at Fairmount. When Lewis wrote to Watering Committee chairman Wetherill it was at first with a certain degree of familiarity despite the legalistic tone the letters took after a few months' exchange. The two men typified the degree of interconnection between and among Philadelphia corporations. Together they had served on the board of the Schuylkill and Susquehanna Canal Company from 1807 to 1811. Separately, Wetherill had served on the boards of the American Fire Insurance Company, the Bank of Pennsylvania, the Schuylkill Bank, the second Bank of the United States, the Germantown Turnpike, and the Union Insurance Company—and, in 1823, the Schuylkill Navigation Company. Lewis had been even more active as a director of the Bank of North America, the Delaware and Schuylkill Canal Company, the Pennsylvania Insurance Company, and as the sitting president of the Pennsylvania Company for Insuring Lives and Granting Annuities. He, too, had not only served on the city councils, but also he was chairman of the Watering Committee from the late 1810s well into the 1820s, and had negotiated the 1819 and 1824 agreements on behalf of the Watering Committee. If any of the Philadelphia associates understood the combined power of technology, finance, and ideology, it was Joseph S. Lewis.

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<sup>18</sup>See Opinion of Counsel, on the Right of the Schuylkill Navigation Company to Make Another Lock and

Through all the letter-writing, Wetherill did not take the step of filing suit to halt company construction. Despite his letters of protestation about the company's actions, Wetherill and the rest of the Watering Committee never actually did anything that would stop the Schuylkill Navigation Company from completing its expansion. Long after the construction was over, the city corporation sent a petition of protest to the legislature in April—too close to adjournment for legislative action—and finally filed suit in June. The associates had decided that continued economic growth was more important than, in one disgruntled pamphleteer's words, the city's "most cherished improvement, its most important security against pestilence, its only safeguard against conflagration, its best source of revenue, [and] the object of its honest pride."<sup>19</sup> The associates had spoken.

In asserting their control over their river, the Philadelphia associates had shown that they were in charge of Philadelphia's economic development, but Josiah White's defense of the Lehigh Coal and Navigation Company against coal-mining rivals and corroborating descriptions of company operations showed how far the corporate sphere could be extended. At the same time the Schuylkill Navigation Board flexed its muscles in its dispute with the Philadelphia Councils, White's new company faced a challenge from potential competitors. Other internal improvement companies were barred from entering into trade, but the Lehigh Coal and Navigation Company had the right to mine and ship coal as well

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Canal for the Use of the Navigation at the Fair Mount Dam (Philadelphia: James Kay, Jun. & Co., 1833).

<sup>19</sup> The Water Works. The Misconduct of the Present City Councils in Relation to the Fair Mount Water Works, Illustrated and Proved from Official Documents (Philadelphia, 1833), 8.

as to build and operate its waterway. In 1832, several groups of investors in various coal-mining concerns claimed that they were “aggrieved by the oppressive monopoly of the Lehigh Coal and Navigation Company.”<sup>20</sup> These would-be rivals argued that because the company did not charge itself tolls for the anthracite it mined, its lower overall cost to market gave it an unfair advantage. Some critics further campaigned against corporations entering the coal trade at all, noting “that companies have the power to glut and engross the markets, to sell below cost, give long credits, and in a variety of ways encounter sacrifices and losses that would be ruinous to individual dealers.”<sup>21</sup> These groups petitioned to the legislature to force the Lehigh Coal and Navigation Company to lower its tolls beyond its current legal limits, to be on par with those of either the Schuylkill Navigation Company or the state-owned Delaware Branch that ran parallel to the Delaware River. They knew full well that doing so would threaten the company’s ability to turn profits. In short, they aimed to break the Lehigh Coal and Navigation Company.

They would not be successful, because White knew how to use the leverage of the Lehigh Coal and Navigation Company to gather political support. In 1824, he had lobbied the state legislature for permission to run a steamboat navigation along the Delaware. The completion of such a plan would improve transportation along the Delaware from the end of the Lehigh navigation to Philadelphia’s wharves. In conjunction with a projected plan to connect the

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<sup>20</sup>Circular, April 23, 1832, addendum to To the Committee on Corporations of the Senate [in Answer to Charges Against the Lehigh Coal and Navigation Company] (Harrisburg: Hamilton & Son, 1832), 12.

<sup>21</sup>Facts and Observations Relative to the Incorporation of Coal Companies ([Philadelphia], 1833), 1.

Lehigh and the Susquehanna, the new navigation would offer those near the upper Susquehanna the option of sending their goods on a more direct route than possible at the time. White printed up petitions and sent them to friends in the region, asking them “to complete them and send them on to Erskine Hazard in Harrisburg or to your members as you think best.” He suggested pointing out to potential signatories that “every settler on either of the branches of the Susquehanna would have an interest in this improvement to the navigation.”<sup>22</sup> Soon after, a number of petitions covered with signatures arrived in Harrisburg. Because the proposed projects would have cut into their business, Union Canal Company backers managed to quash that bill, but White would be better prepared for his 1832 battle.

Between 1824 and 1832, the Lehigh Coal and Navigation Company had become the most powerful entity in the Lehigh River valley. When challenged by would-be competitors, White fought back in the papers and in the legislature by testifying just how great an influence—in his mind, a positive influence—the Lehigh Coal and Navigation Company had over the economy of Mauch Chunk, its principal depôt on the river, and the areas through which the navigation flowed. He countered his opponents by claiming that when the company began construction, the area was a “wilderness” with fewer than ten families living within a dozen miles of the river landing.<sup>23</sup> Now, though, “10,000 citizens are

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<sup>22</sup> Josiah White to George Hollenback, et. al., December 4, 1824. As quoted in Norris Hansell, Josiah White, Quaker Entrepreneur (Easton, PA: Canal History and Technology Press, 1992), 69.

<sup>23</sup>[Josiah White], To the Committee on Corporations of the Senate [in Answer to Charges Against the Lehigh Coal and Navigation Company] (Harrisburg: Hamilton & Son, 1832), 6.

interested materially” in the continued success of the navigation.<sup>24</sup> Having access to great pools of Philadelphia capital, the company had expended close to \$2.2 million in the area.<sup>25</sup> Everyone in the region, White suggested, owed the company a great deal of thanks, and he was not shy in boasting about the accomplishments of the corporation:

Our Company has supported a population in and near Mauch Chunk, for a number of years, exceeding 1,500 souls. The regular hands exceed 500, whose annual savings exceed \$30,000 per year, which is put out to interest, or invested in lands or in trade... Our stock is fifty dollars per share, which is possessed by a great number of people; a considerable portion by the working class—the widow and the orphan. Our loans are also diffused. I presume 10,000 souls are in this moment supported more or less by the outlays of this concern, or injured by the long suspension of dividends.<sup>26</sup>

Even “pine forest owners,” according to White “should give us much commendation... for raising and keeping up the value of the lumber” that before the navigation’s construction was “not to be considered worth stealing, owing to the expense that would attend getting it to market.”<sup>27</sup> White concluded that “it is this community that is threatened with injury and a large portion with ruin” by those “who have not laid out in *public work*, during the course of their lives,

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<sup>24</sup>[Josiah White], To the Committee on Corporations of the Senate [in Answer to Charges Against the Lehigh Coal and Navigation Company] (Harrisburg: Hamilton & Son, 1832), 8.

<sup>25</sup>Extract Relative to the Importance of the Lehigh Navigation, to the Commonwealth, from the Report of the Committee of the Senate of Pennsylvania, upon the Subject of the Coal Trade (Harrisburg: Hugh Hamilton & Son, 1835), 5.

<sup>26</sup>Josiah White, Circular (Harrisburg: Hamilton & Son, 1832), 1.

<sup>27</sup>[Josiah White], To the Committee on Corporations of the Senate [in Answer to Charges Against the Lehigh Coal and Navigation Company] (Harrisburg: Hamilton & Son, 1832), 5; Statement of the Lehigh



perhaps, as much as this Company, which is threatened with ruin, regularly lays out per month.”<sup>28</sup> White’s arguments were a paean to the company’s diffusion of economic benefits.

Those arguments also worked very effectively to keep the legislature in his corner but out of his hair. In 1835, White published extracts from an 1834 Pennsylvania Senate Committee nominally charged with looking into the operation of coal industry. The committee had been formed at the behest of “a convention of delegates, representing several of the northern counties interested in the navigation of the Lehigh, asking an investigation of the grounds of complaint against the Lehigh coal and navigation company.”<sup>29</sup> Despite its having been called by the navigation company’s opponents, the committee went far to defend the company from its attackers, its final report reading like a draft of company promotional literature. The report was so complimentary to the company that White eventually had some of it printed in pamphlet form. Declaring that the navigation was “admitted to be the best in the United States,” the committee denied any wrongdoing on the part of the company, arguing that “whether they have adopted a wise or erroneous policy, which, by grasping after large tolls, may prevent them from receiving any, is a question between them

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Navigation and Coal Mine Company, with the Terms of Subscription for Stock (Philadelphia: William Brown, 1818), 6.

<sup>28</sup>Josiah White, Circular (Harrisburg: Hamilton & Son, 1832), 1.

<sup>29</sup>Extract Relative to the Importance of the Lehigh Navigation, to the Commonwealth, from the Report of the Committee of the Senate of Pennsylvania, upon the Subject of the Coal Trade (Harrisburg: Hugh Hamilton & Son, 1835), 4.

and the stockholders.”<sup>30</sup> The committee then proceeded to suggest that the legislature take White up on his offer for the company to sell the navigation to the state for its original construction costs plus interest.<sup>31</sup> Doing so would have provided an incredible boon for the company: its early years were plagued by dissension between those wanting to keep the company as one entity and those who wanted to split it in half because they saw only the coal operations as having potential for profit. Even in the early 1830s, the company’s board knew that dividends lay in the coalmines, not in the navigation. Although the full legislature did not approve the state’s purchase of the navigation, that the committee so firmly backed the Lehigh Coal and Navigation Company confirmed the company’s political power.

Despite the impressive leverage the company could bring to bear in the legislature, it was small compared to the company’s power over the town of Mauch Chunk, a community built to become a corporate fiefdom.<sup>32</sup> By 1829, the company had paid for a hotel, a mill, a pair of iron furnaces, a store, a wheelwright’s shop, and a school among the over 120 business and residential buildings its workers had constructed. The town that White built was no less “benevolent” than those constructed at Lowell, Massachusetts in the same period. In keeping with his Quaker heritage, White abolished the sale of hard liquor, kept a close eye on the one tavern—company-owned—and fired

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<sup>30</sup>Extract Relative to the Importance of the Lehigh Navigation, to the Commonwealth, from the Report of the Committee of the Senate of Pennsylvania, upon the Subject of the Coal Trade (Harrisburg: Hugh Hamilton & Son, 1835), 5-6.

<sup>31</sup>Extract Relative to the Importance of the Lehigh Navigation, to the Commonwealth, from the Report of the Committee of the Senate of Pennsylvania, upon the Subject of the Coal Trade (Harrisburg: Hugh Hamilton & Son, 1835), 9-12.

alcoholics and those accused of abuse or neglect either toward their families or to animals. He even set up a medical service for employees at a low annual pay-in cost, perhaps the first company-run health maintenance organization. One sympathetic journalist observed that “stricter obligations are here prescribed and observed than could be enforced by the state.”<sup>33</sup> Although local citizens did send their duly elected representatives to Harrisburg and Washington and they were free to discuss economic, social, and political affairs at the local tavern, the Lehigh Coal and Navigation Company was their true ruler: the corporate sphere dwarfed the public sphere in Mauch Chunk, Pennsylvania.

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During the American Revolution, many Philadelphians reveled in their rebellion, happy to reject the rule of Britain in fact and in symbol. They had witnessed the birth of a new republic on new principles, a conscious rejection of corrupt Britain with its monarch and its domination by financial interests—at least in the eyes of many Americans.

Some Philadelphia merchants had been Whigs, others disaffected, and a few Tories during the Revolution, but once the conflict was settled they all agreed not to throw away the infant national economy with the old imperial bathwater. Perhaps they still took the term “revolution” literally: that the defiance of Britain was a struggle for a return to an earlier, mythical political age in which

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<sup>32</sup>Mauch Chunk was since renamed Jim Thorpe in the twentieth century.

the Crown and Parliament did not trample the political and economic dreams of loyal subjects. Despite its small population, its lack of natural resources compared to France or Spain, and loss of its continental colonies, Britain was still the Atlantic world's economic powerhouse, and continued to be well into the nineteenth century. Philadelphia merchants could not help but look to Britain for business examples.

British models proved especially attractive because they promised the order that any elite group craves, especially during and after periods of great upheaval. The Philadelphia mercantile community was no exception. Philadelphia merchants intuitively grasped that British-style corporations lent constancy on a variety of levels, and proceeded to establish dozens of them from the 1780s through the 1820s. Banks and insurance provided economic stability, thereby allowing individuals to alleviate cash-flow problems and reducing potential popular unrest. Corporations yielded steady, long-term dividends for the merchants and their families. And British corporate financial devices, including bonds, preferred shares, and sinking funds, allowed for the mobilization of domestic capital in the quickly developing nation.

Corporations were at the nexus of the phenomenon that historians of the early republic have increasingly identified as the period's central theme, the market revolution.<sup>34</sup> For the general population, Philadelphia-area corporations

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<sup>33</sup> James Pierce was writing for *Hazard's Register of Pennsylvania*, a periodical published by the brother of White's partner Erskine Hazard. As quoted in Norris Hansell, *Josiah White, Quaker Entrepreneur* (Easton, PA: Canal History and Technology Press, 1992), 72.

<sup>34</sup> See Charles Sellers, *The Market Revolution: Jacksonian America, 1815-1846* (New York: Oxford University Press, 1991), for the first and most comprehensive synthesis; Sean Wilentz provides a good overview and bibliography in "Society, Politics, and the Market Revolution, 1815-1848," in Eric Foner, ed.,

provided services and technologies without greatly increasing taxes. Tens of thousands of people in Philadelphia and its growing economic hinterland took advantage of the water, the cash, and the cheap, efficient transportation that corporations and their access to capital made available. As more people increasingly depended upon corporate-owned technologies to pursue their own economic dreams, company associates learned how to manipulate that dependence for their own business and political ends. By creating interlocking directories, a small group of men were able to control the institutions that dominated the Philadelphia-area economy.

The creation of that corporate dependence entailed two lasting ironies. On one level, just as the Revolution had been a fight for national independence, for many Americans it meant a more personal struggle for individual independence. In the Philadelphia area, many people established independence from their former clients, only to fall under the more enduring and more encompassing sway of corporate boards. The everyday evidence of client-patron relations had been replaced by the illusion of political and economic independence. On another level, the political triumph of the common man at the polls was coupled with the corporate dominance of a financial elite holding far more influence over economic matters than the imaginary cabal of speculators and stockjobbers whom the revolutionaries had accused of dominating Parliament and the Crown. What had happened?

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The New American History, Revised and Expanded Edition (Philadelphia: Temple University Press, 1997), 61-84.

Scholars writing on the early republic have been divided into two camps regarding the spread of egalitarianism—that is, among white men—in the United States from the 1770s to the 1830s, what one might call the long American Revolution.<sup>35</sup> Both sides agree that the old eighteenth-century patterns of deference collapsed over that half-century, but they part in their assessment of the results. Bearing the flag for one camp is Gordon Wood, who, in his The Radicalism of the American Revolution, argued that the availability of cash and the leveling implications of revolutionary rhetoric combined to create a far less patriarchal society, one in which no white man felt obligated to doff his cap to another.<sup>36</sup> Alan Taylor's William Cooper's Town shows in a particular place what Wood had demonstrated more generally: in this case, a community in upstate New York that underwent a transformation in its social and political leadership from "Fathers of the People" to "Friends of the People."<sup>37</sup> These scholars portrayed an America in which every white man acts and feels the equal of any other. The standard for the other historiographic side, Charles Sellers's The Market Revolution, relates capitalists' increased dominance over political, economic, and social affairs during the thirty years following the War of 1812.<sup>38</sup> From a similar vantage point, Alfred Young asserted in The Shoemaker and the Tea Party that the Boston Tea Party only became a "fit" event for official public

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<sup>35</sup>This controversy is limited to the relative positions of white males. None of these authors suggests in the least that legal or social equality extended to other Americans, nor do I.

<sup>36</sup>Gordon Wood, The Radicalism of the American Revolution (New York: Vintage Books, 1992).

<sup>37</sup>Alan Taylor, William Cooper's Town: Power and Persuasion on the Frontier of the Early American Republic (New York: Vintage Books, 1995).

<sup>38</sup>Charles Sellers, The Market Revolution: Jacksonian America, 1815-1846 (New York: Oxford University Press, 1991).

celebration in the 1830s, once elite city leaders could be sure that its radical undertones would be safely muted.<sup>39</sup> This second group of historians pointed to the consolidation of power in ever fewer hands during the early republican period. The two interpretations seem so far apart that one may wonder whether these scholars were looking at the same place and time, or whether either analysis is accurate.

Part of the disagreement involves a difference in the outlook—and choice—of the authors' particular subjects. Taylor's William Cooper bemoaned his former clients' growing insolence and his son James Fenimore Cooper mourned his family's lost stature, while Young's aging George Robert Twelves Hughes reminisced about the exhilarating moments when an ordinary shoemaker rubbed shoulders with elite merchants as revolutionary equals. Even Harry L. Watson, whose Liberty and Power is perhaps the best political history of the period and somewhat bridges the gap between these two positions, nonetheless argued that the era's political controversies precisely revolved around the diffusion of political participation and centralization of economic power.<sup>40</sup> The two phenomena appear to be paradoxical: equality was spreading at the same time that power was becoming consolidated.

The growth of Philadelphia corporations suggests that the two major interpretations of the period are not contradictory, but complementary. True, in the public sphere, in taverns, civic celebrations, political rallies, and religious

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<sup>39</sup>Alfred F. Young, The Shoemaker and the Tea Party: Memory and the American Revolution (Boston: Beacon Press, 1999).

revivals, by the 1830s common men demanded and received their due. To be a leader in the public sphere, one had to be a “friend of the people.” Common men had won that respect by pressing for and taking advantage of the opportunities afforded by the proliferation of cash and availability of goods that corporations helped bring into being. In the public sphere, at least the appearance of and appeal to egalitarianism was what gave Jacksonian America its boisterous, raucous political contests. That public-sphere egalitarianism was only possible because of the widespread economic opportunities created through the use of the new technologies and new financial methods that corporations administered. At the same time, business corporate elites gained disproportionately compared to their contemporaries on two fronts. Most apparently, they made a great deal of money, but more subtly, in dominating the administration of the new financial and technological hubs, they controlled powerful institutions—corporations—without American precedent.

Historians have increasingly used Jurgen Habermas’s characterization of the division of eighteenth-century and subsequent Western European and American social activity into a public sphere and a private sphere.<sup>41</sup> Scholars investigating northern cities in the early republican period have particularly noted the extent to which parades and other popular events in the public sphere expressed an increasingly strident popular will. But the level of corporate influence over new activities in nineteenth-century American society, be they

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<sup>40</sup>Harry L. Watson, Liberty and Power: The Politics of Jacksonian America (New York: Hill and Wang, 1990), 171.



economic, social, or charitable, does not fit Habermas's model. The administration of corporations, essentially taking place behind closed doors, grew in the interstices between the public and private spheres. True, corporations printed pamphlets and lobbied legislatures, but most of their deliberations took place neither in the open spaces of the public sphere nor in the domestic setting of the private sphere.

Corporations formed a third area, fitting neither Habermas's public nor private spheres. On the one hand, they were at least nominally subject to state authority, and the Corporation of Philadelphia was an elected government. Most of their proceedings were technically matters of public record, though corporate officers tended to make little effort to publish internal proceedings unless involved in political disputes in which they thought public opinion might be important. On the other hand, corporations conducted their business in an environment that the close circle of corporate officers and their friends attempted to put beyond the realm of the public. Shareholders elected corporate boardmembers in meetings limited to those owning stock, and even those proceedings represented little more than an affirmation of incumbent boardmembers or their chosen successors. Once chosen, directors made decisions regarding the region's economic future behind closed doors. They directed their many employees, from lawyers and lobbyists to lock-keepers and laborers, to do their bidding. In addition, they had economic leverage over those not in their employ and decided among themselves how to use that leverage. By

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<sup>41</sup>Habermas first set forth this model in [The Structural Transformation of the Public Sphere: An Inquiry into](#)

the second quarter of the nineteenth century, corporate activities formed a sphere of social interaction unto themselves.

The acknowledgment of the creation of a third, corporate sphere in American society dissolves the apparent paradox of diffusion and consolidation. In the public sphere, power was diffused. No longer could a few self-styled grandees dominate local or even state politics, much less expect those of the middling or lesser sorts to step out of the way when their “betters” walked past. If anything, Jacksonian politics demonstrated the great anti-elitist bent of American society, the carnival that so shocked and delighted foreigners like Alexis de Tocqueville. As historians like David Waldstreicher, Matthew Crocker, and Kimberly Smith have demonstrated, the early republic public sphere belonged to the masses.<sup>42</sup> The savviest of the economic elites simply created a new sphere, one they could more easily control and one that would encompass many of the affairs dearest to the heart of the new commercial and industrial princes. The corporate sphere enveloped some of the most crucial issues of economic policy, including money supply, credit, and regional development. In Mauch Chunk, because the town was small and the Lehigh Coal and Navigation Company dominant, the corporation also determined social policy regarding alcohol consumption and family relations. Mauch Chunk was an extreme example, but company social efforts there did not differ in their motivation from

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a Category of Bourgeois Society, trans. Thomas Burger, Frederick Lawrence (Cambridge: MIT Press, 1989).

<sup>42</sup>David Waldstreicher, In the Midst of Perpetual Fetes: The Making of American Nationalism 1776-1820 (Chapel Hill: University of North Carolina Press for the Omohundro Institute of Early American History and Culture, 1997); Matthew H. Crocker, The Magic of the Many: Josiah Quincy and the Rise of Mass Politics in

the many charitable organizations in Philadelphia, New York, or Boston that sought to lift the masses out of their moral morass while at the same time channeling their behavior into modes less threatening to the emerging middle- and upper-class corporate order. Historian Robert Dalzell has argued that the same men who ran the company towns of Lowell and Waltham as paternalistic enterprises pursued similar goals through their philanthropy in Boston, often using the same kind of corporate organization—boards of directors, by-laws and charters—that they did in their business pursuits.<sup>43</sup> In Philadelphia as in Boston, the corporate sphere grew to fit the associates' economic and social goals.

In the following decades, Philadelphia's corporate sphere continued to grow. All of Philadelphia County was incorporated into the City Corporation of Philadelphia in 1854, creating perhaps the largest single municipal district in the country at that time and serving as a model for the incorporation of other large cities including New York's later absorption of Brooklyn. In 1846, Thomas P. Cope, who near the beginning of his long career had been on the city corporation committee overseeing the construction of the city's first waterworks, helped establish the Pennsylvania Railroad Company. In 1857, the Pennsylvania Railroad purchased the state of Pennsylvania's bankrupt Main Line system for the bargain price of \$10,000,000, a fraction of the cost. After the Civil War, the

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Boston, 1800-1830 (Amherst: University of Massachusetts Press, 1999); Kimberly K. Smith, The Dominion of Voice: Riot, Reason, and Romance in Antebellum Politics (Lawrence: University Press of Kansas, 1999).

<sup>43</sup>Robert F. Dalzell, Jr., Enterprising Elite: The Boston Associates and the World They Made (Cambridge: Harvard University Press, 1987), 113-164.

Pennsylvania Railroad Company become the world's largest business corporation, a position it held for thirty years.

The leaders of each kind of corporation, by their use of finance, technology, and ideology, continued in their efforts to limit the level of public scrutiny and input over corporate affairs. Municipal officials at least remained accountable to the electorate, but beginning in the 1850s business leaders increasingly espoused economic liberalism as their mantra to be repeated whenever public officials dared to question the motives or actions of business corporations—notwithstanding the willingness for corporate officers and investors to lobby for land grants, tax abatements, subsidies, legislative barriers to potential competition, and other governmental favors. According to this philosophy, not only was the government less capable of regulating the economy than the “invisible hand” of the marketplace, but also it had no right to try. As the evolution of corporations in Philadelphia indicates, economic liberalism was a justification for structures already established by 1830. In the Revolutionary period, no one questioned the primacy of civil authorities in political and economic matters, because everyone understood the two to be inextricably connected. With the ensuing establishment of a corporate sphere, business corporation boosters created the self-serving illusion that many fundamental economic issues lay beyond the proper bailiwick of elected officials. After the Civil War, corporate leaders would even make the case that the government existed to serve them, convincing governors and presidents to do the corporations' bidding by using government troops in the corporations' private

battles. When corporate leaders did so, they carefully avoided making reference to the Spirit of '76.

The mixed legacy of Josiah White and Joseph S. Lewis still lives in the United States, a society unparalleled in its capacity for economic and technological development but often plagued by the public's inability to brook the power of corporations whose only interest is the bottom line. It did not have to be so. Nor does it now.

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## BIBLIOGRAPHY

### Manuscripts and Archival Collections

- American Scientists Collection, Historical Society of Pennsylvania.
- Bayard, Andrew. Letterbook. Historical Society of Pennsylvania.
- Biddle, Nicholas. Personal Letters, Historical Society of Pennsylvania.
- Biddle, Thomas. Stock Certificates and Transfers, 1804-1866, Historical Society of Pennsylvania.
- City Councils, Watering Committee Papers, 1804-1854, Series 120.42, City Archive of Philadelphia.
- City Treasurer, Loan Certificate Transfer Journals, City Archive of Philadelphia.
- Common Council Minutes. City Archive of Philadelphia.
- Delaware and Schuylkill Canal Navigation Company Papers, Historical Society of Pennsylvania.
- Delaware and Schuylkill Canal Navigation, and Schuylkill and Susquehanna Navigation [ledgers for 1810], Society Miscellaneous Collection, Historical Society of Pennsylvania.
- Edward Carey Gardiner Papers, Mathew Carey Section, Historical Society of Pennsylvania
- Farmers and Mechanics National Bank Papers, Accession 1658, Hagley Museum and Library.
- Ferdinand J. Dreer Autograph Collection, Historical Society of Pennsylvania.
- General Accounts, Corporation of Philadelphia, City Archive of Philadelphia.
- Gordon Chambers Collection, Historical Society of Pennsylvania.
- Graff Family Papers, Historical Society of Pennsylvania.
- McAllister Collection, Historical Society of Pennsylvania Historical Society of Pennsylvania.
- McQuaide Family Collection, Pennsylvania State Archives.

- Mechanics Bank Letter Book, 1824-1846, Philadelphia National Bank Collection, Historical Society of Pennsylvania. Historical Society of Pennsylvania.
- Memorial of Subscribers to Bank Company, Historical Society of Pennsylvania.
- Memorials to the Select and Common Council Regarding High and Broad Streets Cutting Through Penn Square, Historical Society of Pennsylvania.
- Meredith Papers, Historical Society of Pennsylvania.
- Norris Papers, Historical Society of Pennsylvania.
- Papers of Howard N. Potts, Hagley Museum and Library.
- Pennsylvania Company for Insurance on Lives and Granting Annuities, Accession 1476, Hagley Museum and Library.
- Pennsylvania Department of State, Record Group #26, Pennsylvania State Archives.
- Pennsylvania General Assembly, Record Group 7, Pennsylvania State Archives.
- Philadelphia Bank Minute Books, Historical Society of Pennsylvania.
- Philadelphia City Councils, Committee on the Sinking Fund, Series 120.32, Philadelphia City Archives.
- Philadelphia National Bank Collection, Historical Society of Pennsylvania.
- Phillips Family Business Records, Accession 1658, Hagley Museum and Library.
- Poulson, Charles A. Extracts from Various Works of Travel &c. &c. Relating to the City of Philadelphia, 1688-1862, Library Company of Philadelphia.
- Rawle Papers, Historical Society of Pennsylvania.
- Reading Company Collection, Accession 1520. Hagley Museum and Library.
- Rush Papers, Historical Society of Pennsylvania.
- Samuel Fisher Manuscripts, Historical Society of Pennsylvania.
- Schuylkill Navigation Company Papers, Pennsylvania State Archives.
- Schuylkill Navigation Company, Accession 1215, Hagley Museum and Library. Museum and Library Hagley Museum and Library.
- Schuylkill Navigation Company, Accession 1520, Hagley Museum and Library.

Schuylkill Permanent Bridge Company, List of Subscribers, Historical Society of Pennsylvania.

Select Council Minutes, Series 120.3, Philadelphia City Archives.

Sergeant Papers, Historical Society of Pennsylvania.

Simon Gratz Collection, Historical Society of Pennsylvania.

Society Collection, Historical Society of Pennsylvania. Historical Society of Pennsylvania.

Society Miscellaneous Collection, Historical Society of Pennsylvania. Historical Society of Pennsylvania.

Society Miscellaneous Collection, Historical Society of Pennsylvania.

Society Prints, Historical Society of Pennsylvania.

Stauffer Collection, Historical Society of Pennsylvania.

Stewardson, Thomas, Ledger, Historical Society of Pennsylvania.

Tench Coxe Collection, Historical Society of Pennsylvania.

The First Subscribers for the City Water from Centre Square Water Works, Historical Society of Pennsylvania.

Union Canal Papers, Historical Society of Pennsylvania.

Vaux Papers Historical, Society of Pennsylvania.

Water Loan Interest Payment Stubs, City Archive of Philadelphia.

Wurts Family Papers, Hagley Museum and Library.

#### Published Sources

Acts of the Legislature of Pennsylvania, Relating to the Schuylkill Navigation Company. Philadelphia: Josephy & William Kite. 1838.

Academy of Natural Sciences of Philadelphia. Act of Incorporation and Constitution of the Academy of Natural Sciences of Philadelphia. Philadelphia: Dennis Heartt, 1818.

Adams, Donald R. Jr. "Portfolio Management and Profitability in Early-Nineteenth-Century Banking." *Business History Review* 52 (1): 62-79.



- Adams, Donald R., Jr. Finance and Enterprise in Early America: A Study of Stephen Girard's Bank, 1812-1831. Philadelphia: University of Pennsylvania Press, 1978.
- Adams, Donald R., Jr. Wage Rates in Philadelphia, 1790-1830. New York: Arno Press, 1975.
- Albion, Robert G. The Rise of the New York Port, 1815-1860. New York: Scribner, 1939.
- Alspach, Samuel. Schuylkill Canal Navigator. Philadelphia: Joseph Rakestraw, 1827.
- American Fire Insurance Company. Proposals of The American Fire Insurance Company, Established by an Act of Assembly of the Commonwealth of Pennsylvania, for Insuring of Houses, Buildings, Manufactories, Stores, Ships in Harbour and Upon the Stocks, and of Goods, Wares, and Merchandize, and of Agricultural Products, From Loss or Damage by Fire. Philadelphia, 1810.
- American Literary Association. Constitution and By-Laws of the American Literary Association, Instituted at Philadelphia, October the Twenty-sixth, 1805. Philadelphia: Brown & Merritt, 1809.
- An Amateur. Directions for the Use of Anthracite Coal. [New York? , 1830?].
- Anderson B.L. and Cottrell, P. L. Money and Banking in England: The Development of the Banking System, 1694-1914. London: David & Charles, 1974.
- Andrews, Deborah C. "Bank Buildings in Nineteenth-Century Philadelphia" in William W. Cutler III and Howard Gillette, Jr., eds., The Divided Metropolis: Social and Spatial Dimensions of Philadelphia, 1800-1975. Westport, CT: Greenwood Press, 1980: 57-84.
- Appleby, Joyce. Capitalism and a New Social Order: The Republican Vision of the 1790s. New York: New York University Press, 1984.
- Appleby, Joyce. Inheriting the Revolution: The First Generation of Americans. Cambridge: Harvard University Press, 2000.
- Appleby, Joyce. Liberalism and Republicanism in the Historical Imagination. Cambridge: Harvard University Press, 1992.
- Apprentices Library Company of Philadelphia. Charter and By-Laws of the Apprentices Library Company of Philadelphia. Philadelphia: Robb, Pile & McElroy, 1856.

- Apprentices Library Company of Philadelphia. Report of the Managers of the Apprentices Library, Made to the Company, at Its Annual Meeting, Held March 12, 1823. Philadelphia: Jesper Harding, 1823.
- Armytage, W.H.G. A Social History of Engineering. Boulder: Westview Press, 1976.
- Arthur, W. Brian. "Competing Technologies, Increasing Returns, and Lock-In by Historical Events," *The Economic Journal* 99 (March 1989): 116-131.
- Baer, Christopher T. Canals and Railroads of the Middle-Atlantic States, 1800-1860. Wilmington: Eleutherian Mills-Hagley Foundation, 1981.
- Bairoch, Paul. Cities and Economic Development: From the Dawn of History to the Present. Christopher Braider, trans. Chicago: University of Chicago Press, 1988.
- Bank of Penn Township. An Act to Incorporate the Bank of Penn Township, in the County of Philadelphia, and an Act to Recharter Certain Banks, Together with Several Acts of Assembly Relating to Banks; and the By-Laws of the Bank of Penn Township. Philadelphia: Jacob Frick & Co., 1828.
- Bank of Pennsylvania. To the Senate and House of Representatives of the Commonwealth of Pennsylvania, the Memorial of the President and Directors of the Bank of Pennsylvania. [Philadelphia?], 1805?.
- Banning, Lance. "Jeffersonian Ideology Revised: Liberal and Classical Ideas in the New American Republic." *William and Mary Quarterly* 3d Ser. 43 (spring 1986): 3-19.
- Benson, Barbara E., ed. "Benjamin Henry Latrobe & Moncure Robinson: The Engineer as Agent of Technological Transfer." Regional Conference on Economic History, May 14, 1974. Philadelphia: Eleutherian Mills-Hagley Foundation, 1975.
- Benson, Lee. The Concept of Jacksonian Democracy. Princeton: Princeton University Press, 1961.
- Berthoff, Rowland. "Independence and Attachment, Virtue and Interest: From Republican Citizen to Free Enterpriser, 1787-1837" in Uprooted Americans: Essays to Honor Oscar Handlin, ed. Bushman, Richard L., et.al.. Boston: Little, Brown and Company, 1979.
- Bezanson, Anne; Gray, Robert D.; and Hussey, Miriam. Wholesale Prices in Philadelphia: 1784-1861. Philadelphia: University of Pennsylvania Press, 1936.

- Bijker, Wiebe; Hughes, Thomas P.; and Pinch, Trevor J., eds. The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology. Cambridge: MIT Press, 1987.
- Billington, Ray Allen. Westward Expansion: A History of the American Frontier. New York: Macmillan, 1971.
- Binney, Horace. Remarks to the Bar of Philadelphia, on the Occasion of the Deaths of Charles Chauncey and John Sergeant. Philadelphia: C. Sherman, 1853.
- Blake, Nelson Manfred. Water for the Cities: A History of the Urban Water Supply Problem in the United States. Syracuse: Syracuse University, 1956.
- Blandi, Joseph. Maryland Business Corporations, 1783-1852. Baltimore: The Johns Hopkins University Press, 1934.
- Blane, William Newnham. An Excursion Through the United States and Canada During the Years 1822-1823, by and English Gentleman. London: Baldwin, Cradock, and Joy, 1824.
- Blau, Joseph L., et. al. Social Theories of Jacksonian Democracy. New York: Hafner Publishing, 1954.
- Blouin, Francis X., Jr. The Boston Region, 1810-1850: A Study of Regionalization. Ann Arbor: UMI Research Press, 1980.
- Blumberg, Phillip I. The Megacorporation in American Society: The Scope of Corporate Power. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975.
- Bowers, Douglas E. "From Logrolling to Corruption: The Development of Lobbying in Pennsylvania, 1815-1861," *Journal of the Early Republic* 3 (winter 1983): 439-474.
- Breck, Samuel. Sketch of the Internal Improvements Already Made by Pennsylvania; with Observations Upon Her Physical and Fiscal Means for Their Extension; Particularly As They have Reference to the Future Growth and Prosperity of Philadelphia, 2d edition. Philadelphia: M. Thomas, 1818.
- Brissot, J.P. , de Warville. New Travels in the United States of America. Performed in the Year 1788. Dublin: W. Corbet, 1792.
- Bristed, John. The Resources of the United States of America; or, A View of the Agricultural, Commercial, Manufacturing, Financial, Political, Literary, Moral and Religious Capacity and Character of the American People. New York: James Eastburn & Co., 1818.

- Brown, Charles Brockden. An Address to the Congress of the United States on the Utility and Justice of Restrictions Upon Foreign Commerce. With Reflections on Foreign Trade in General, and the Future Prospects of America. Philadelphia: C. & A. Conrad & Co., 1809.
- Brown, Charles Brockden. Arthur Mervyn; or, Memoirs of the Year 1793. Philadelphia: H. Maxwell, 1799.
- Brown, Charles Brockden. Arthur Mervyn; or, Memoirs of the Year 1793. New York: George F. Hopkins, 1800.
- Brown, Richard D. Knowledge is Power: The Diffusion of Information in Early America, 1700-1865. New York: Oxford University Press, 1989.
- Brown, William, Jr., and Charles L, compilers. Digest of the Banking, Trust Company and Building and Loan Association Laws of the Commonwealth of Pennsylvania. Harrisburg: Harrisburg Publishing, 1907.
- Browne, Gary. Baltimore in the Nation, 1780-1861. Chapel Hill: University of North Carolina Press, 1980.
- Bruchey, Stuart. The Roots of American Economic Growth, 1607-1861: An Essay in Social Causation. New York: Harper and Row, 1965.
- Buell, John. Democracy by Other Means: The Politics of Work, Leisure, and Environment. Chicago: University of Illinois Press, 1995.
- Bunting, David. The Rise of Large American Corporations, 1889-1919. New York: Garland Publishing, 1987.
- Burrows, Edwin G. and Wallace, Mike. Gotham: A History of New York City to 1898. New York: Oxford University Press, 1998.
- Cadbury, George and Dobbs, S.P. Canals and Inland Waterways. London: Sir Isaac Pitman & Sons, 1928.
- Cadman, John W. The Corporation in New Jersey, 1791-1875. Cambridge: Harvard University Press, 1949.
- Calhoun, Daniel Hovey. The American Civil Engineer: Origins and Conflict. Cambridge, 1960.
- Callender, Guy S. "The Early Transportation and Banking Enterprises of the States in Relation to the Growth of Corporations." *Quarterly Journal of Economics* 17 (Nov. 1902): 111-162.
- Cameron, Rondo, ed. Banking and Economic Development: Some Lessons of History. New York: Oxford University Press, 1972.

- Cameron, Rondo. Banking and the Early Stages of Industrialization. New York: Oxford University Press, 1967.
- Candler, Isaac. A Summary View of America: Comprising a Description of the Face of the Country, and of several of the Principal Cities; and Remarks on the Social, Moral and Political Character of the People: Being the Result of Observations and Enquiries During a Journey in the United States. London: T. Cadell, 1824.
- Carey, Mathew. A Warning Voice to the Cotton and Tobacco Planters, Farmers, and Merchants of the United States, on the Pernicious Consequences to Their Respective Interests of the Existing Policy of This Country. Philadelphia: H. C. Carey & I. Lea, 1824.
- Carey, Mathew. Address Delivered Before the Philadelphia Society for Promoting Agriculture, at Its Meeting, on July 20, 1824. Philadelphia: Joseph A. Skerritt, 1824.
- Carey, Mathew. Address to the Farmers of the United States on the Ruinous Consequences to Their Vital Interests, of the Existing Policy of This Country. Philadelphia: M. Carey & Son, 1821.
- Carey, Mathew. Address to the House of Representatives of the United States, on Grenville's Treaty. Philadelphia: M. Carey, 1796.
- Carey, Mathew. Address to the Printers and Booksellers Throughout the United States. Philadelphia, 1801.
- Carey, Mathew. An Appeal to the Common Sense and Common Justice or, Irrefragable Facts Opposed to Plausible Theories: Intended to Prove the Extreme Injustice, as Well as the utter Impolity, of the Existing Tariff. Illustrated by a Sketch of the Policy and Situation of England, France, and Holland. Philadelphia: H. C. Carey & I. Lea, 1822.
- Carey, Mathew. Cursory Reflections on the System of Taxation, Esablished in the City of Philadelphia; with a Brief Sketch of its Unequal and Unjust Operation. Philadelphia: Mathew Cary, 1806.
- Carey, Mathew. Examination of a Tract on the Alteration of the Tariff, Written by Thomas Cooper, M.D. Philadelphia: H. C. Carey & I. Lea, 1824.
- Carey, Mathew. Facts and Observations, Illustrative of the Past and Present Situation, and Future Prospects of the United States: Embracing a View of the Causes of the Late Bankruptcies in Boston. Philadelphia: H. C. Carey & I. Lea, 1822.

- Carey, Mathew. Memorial of the Board of the Managers of the Pennsylvania Society for the Encouragement of American Manufactures. Philadelphia: Joseph R. A. Skerret, 1824.
- Carey, Mathew. Sketches Toward a History of the Present Session of Congress, from December 6, 1819 to March 15, 1820. Philadelphia: M. Carey & Son, 1820.
- Carey, Mathew. The Crisis: A Solemn Appeal to the president, the Senate and the House of Representatives, and the Citizens of the United States, on the Destructive Effects of the Present Policy of This Country, on Its Agriculture, Manufactures, Commerce, and Finances. Philadelphia: H. C. Carey & I. Lea, 1823.
- Carey, Mathew. The New Olive Branch: Or, an Attempt to Establish an Identity of Interest Between Agriculture, Manufactures, and Commerce, and to Prove That a Large Portion of the Manufacturing Industry of This Nation Has Been Sacrificed to Commerce; and That Commerce Has Suffered by This Policy Nearly as Much as Manufactures. Philadelphia: M. Carey & Son, 1820.
- Carey, Mathew. Twenty-One Golden Rules to Depress Agriculture, Impede the Progress of Manufactures, Paralyze Commerce, Impair National Resources, Produce a Constant Fluctuation in the Value of Every Species of Property, and Blight and Blast the bounties of Nature, How Bounteously Soever Lavished on a Country. Philadelphia: H. C. Carey & I. Lea, 1824.
- Carey, Matthew, ed. Debates and Proceedings of the General Assembly of Pennsylvania, on the Memorials Praying a Repeal or Suspension of the Law Annuling the Charter of the Bank. Philadelphia: Carey and Co., 1786.
- Carey, Matthew, ed. Debates and Proceedings of the General Assembly of Pennsylvania, on the Memorials Praying a Repeal or Suspension of the Law Annuling the Charter of the Bank. Philadelphia: Carey and Co., 1786.
- Carey, Matthew. Reflections on the Renewal of the Charter of the Bank of Pennsylvania, and An Examination of the Terms of Renewal, Proposed by the Board of Directors, Together With a View of the Immoderate Power Possessed by a Small Number of That Body. Philadelphia: M. Carey, 1829.
- Carpenters' Company of the City and County of Philadelphia. Articles of the Carpenters' Company of the City and County of Philadelphia: and Their Rules for Measuring and Valuing House Carpenters Work, as Revised and Agreed on in the Year 1805. Philadelphia: D. Humphreys, 1805.

- Carter, Edward C., II. Benjamin Henry Latrobe and Public Works: Professionalism, Private Interest, and Public Policy in the Age of Jefferson. Washington: Public Works Historical Society, 1976.
- Chamber of Commerce of the City of New York. Memorial of the Chamber of Commerce of the City of New York. Washington DC: United States Senate, 1803.
- Chandler, Alfred. The Visible Hand: the Managerial Revolution in American Business. Cambridge: Belknap Press, 1977.
- City Corporation of New York. Laws and Ordinances, Ordained and Established by the Mayor, Aldermen, and Commonalty of the City of New York, in Common Council Convened for the Good Rule and Government of the Inhabitants and Residents of Said City. April 27, 1801. New York: Furman & Ward., 1801.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1805. Philadelphia: Jane Aitken, 1806.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1806. Philadelphia: Jane Aitken, 1807.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1807. Philadelphia: Robert Cochran, 1808.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1808. Philadelphia: Robert Cochran, 1809.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1809. Philadelphia: Jane Aitken, 1810.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia, for the Year 1810. Philadelphia: Jane Aitken, 1811.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia for the Year 1811. Philadelphia: Jane Aitken, 1812.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia for the Year 1812. Philadelphia: Lydia R. Bailey, 1814.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia from the twenty-third of December, 1816, to the first of April, 1819. Philadelphia: City Councils, 1819.
- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia from the first of April, 1819, to the first of April, 1823. Philadelphia: City Councils, 1823.

- City Corporation of Philadelphia. Accounts of the Corporation of the City of Philadelphia: from April 1, 1823, to January 1, 1828. Philadelphia: City Councils, 1828.
- City Corporation of Philadelphia. Accounts of the Corporation, for the Year 1802. Philadelphia: Robert Cochran, 1803.
- City Corporation of Philadelphia. Agreements of June 3, 1819, July 20, 1820, & June 14, 1824, Between the Mayor, Alderman & Citizens of Philadelphia, and Schuylkill Navigation Company, Relative to the Water Power &c. at Fair Mount. Philadelphia: Lydia R. Bailey, 1832.
- City Corporation of Philadelphia. Agreements of June 3, 1819, July 20, 1820, & June 14, 1824, Between the Mayor, Alderman & Citizens of Philadelphia, and Schuylkill Navigation Company, Relative to the Water Power &c. at Fair Mount. Philadelphia: King & Baird, 1854.
- City Corporation of Philadelphia. Agreements of June 3, 1819, July 20, 1820, and June 14, 1824, Between the Mayor, Aldermen & Citizens of Philadelphia, and the Schuylkill Navigation Company, Relative to the Water Power, &c., at Fairmount. Philadelphia: F. C. Markley & Son, 1869.
- City Corporation of Philadelphia. An Additional Report on Water Power, by the Watering Committee: with Communications on the Subject from Messrs. Ariel Cooley, Lewis Wernwag, Thomas Oakes, William Briggs, and William Lehman, and Other Documents. Philadelphia: William Fry, 1819.
- City Corporation of Philadelphia. An Ordinance for Raising Supplies, and Making Appropriations, for the Services and Exigencies of the City of Philadelphia, for the Year 1799. Philadelphia: Zachariah Poulson, Jr., 1799.
- City Corporation of Philadelphia. An Ordinance Providing for the Raising of a Sum of Money for Supplying the City of Philadelphia with Wholesome Water. Philadelphia: Zachariah Poulson, Jr., 1799.
- City Corporation of Philadelphia. Committee of Ways and Means Report for Appropriations for 1807, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Seven. Philadelphia: [Jane Aitken?], 1806.
- City Corporation of Philadelphia. Committee of Ways and Means Report for Appropriations for 1806, accompanied by An Ordinance for Raising Supplies and Making Appropriations for the Services of the City, for the Year One Thousand Eight Hundred and Six, and An Ordinance to Assess Levy and Collect a Tax on Personal Estate. Philadelphia: Jane Aitken, 1806.



- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia; Passed Since the Eighteenth Day of June, One Thousand Eight Hundred and Twelve. Philadelphia: Philadelphia Councils, 1815.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia; Passed Since the Fourteenth Day of September, One Thousand Eight Hundred and Fifteen. Philadelphia: City Councils, 1817.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Sixteenth of July, One Thousand Eight Hundred and Seventeen. Philadelphia: City Councils, 1819.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Second Day of April, One Thousand Eight Hundred and Nineteen. Philadelphia: City Councils, 1821.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Third Day of August, One Thousand Eight Hundred and Twenty. Philadelphia: City Councils, 1822.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Twenty-Seventh Day of December, One Thousand Eight Hundred and Twenty-One. Philadelphia: City Councils, 1823.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Fourth Day of February, One Thousand Eight Hundred and Twenty-Three. Philadelphia: City Councils, 1824.
- City Corporation of Philadelphia. Ordinances of the Corporation of the City of Philadelphia. Passed Since the Eighth Day of January, One Thousand Eight Hundred and Twenty-Four. Philadelphia: City Councils, 1825.
- City Corporation of Philadelphia. Report of the Committee for the Introduction of Wholesome Water into the City of Philadelphia. Philadelphia: Zachariah Poulson, jr., 1801.
- City Corporation of Philadelphia. Report of the Committee of Accounts, to the Select and Common Councils, February 8th, 1804. Philadelphia: Robert Cochran, 1804.
- City Corporation of Philadelphia. Report of the Committee of Councils, Exhibiting a Correct Statement of the Accounts of the Corporation of the City of Philadelphia, for the Year 1803. Philadelphia: Wm. Duane, 1804.

- City Corporation of Philadelphia. Report of the Joint Committee of the Select and Common Councils, on the City Debts and Expenditures, and the City Credits and Resources. Philadelphia: Zacharial Poulson, Jr., 1801.
- City Corporation of Philadelphia. Report of the Joint Committee of the Select and Common Councils, on the City Debts and Expenditures, and the City Credits and Resources. Philadelphia: Zacharial Poulson, Jr., 1802.
- City Corporation of Philadelphia. Report of the Joint Committee of the Select and Common Councils, on the Subject of Bringing Water to the City. Philadelphia: Zacharia Poulson, Jr., 1798.
- City Corporation of Philadelphia. Report of the Joint Committee Appointed by the Select and Common Councils, on the Subject of Steam Boats. Philadelphia, 1817.
- City Corporation of Philadelphia. Report of the Watering Committee, on the Disposal of the Surplus Water Power of the River Schuylkill, and the Construction of a Canal Between the Schuylkill and Delaware. Philadelphia: Councils, 1825.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, November 1, 1803. Philadelphia: William Duane, 1803.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, November 1, 1804. Philadelphia: Robert Cochran, 1804.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, November 2, 1809. Philadelphia: Jane Aitken, 1809.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, November 5, 1812. Philadelphia: Jane Aitken, 1812.
- City Corporation of Philadelphia. Report of the Watering Committee Upon the Present State of the Works for Supplying the City with Water, and the Several Other Plans, Proposed for That Purpose, May 5, 1812. Poulson's Daily Advertiser, May 26, 1812, 1812.
- City Corporation of Philadelphia. Report of the Watering Committee, Read in Select Council, November 12, 1818. Philadelphia: William Fry, 1818.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, Read January 14, 1819. Philadelphia: City Councils, 1819.

- City Corporation of Philadelphia. Report of the Watering Committee, on the Subject of Obtaining Water Power from the River Schuylkill. Philadelphia: Lydia R. Bailey, 1820.
- City Corporation of Philadelphia. Report of the Watering Committee to the Select and Common Councils, January 24, 1822. Philadelphia: Lydia R. Bailey, 1822.
- City Corporation of Philadelphia. Report to the Select and Common Councils on the Progress and State of the Water Works on the 24th of November, 1799. Philadelphia: Zachariah Poulson, Jr., 1799.
- City Corporation of Philadelphia. The Ordinances of the City of Philadelphia to Which Are Prefixed, the Act of Incorporation and the Several Supplements Thereto; Together with the Address of George Washington, Late President of the United States, to His Fellow Citizens. Philadelphia: Zachariah Poulson, Jr., 1798.
- City Corporation of Philadelphia. The Ordinances of the City of Philadelphia, and the Several Supplements to the Act of Incorporation, Passed Since the Nineteenth Day of July, in the Year of Our lord One Thousand Seven Hundred and Ninety-Eight. Philadelphia: Select and Common Councils, 1800.
- Clain-Stefanelli, Elvira and Vladimir. Chartered for Progress: Two Centuries of American Banking. Washington: Acropolis, 1975.
- Clark, John Garretson. La Rochelle and the Atlantic Economy During the Eighteenth Century. Baltimore: The Johns Hopkins University Press, 1981.
- Clark, John Garretson. New Orleans, 1718-1812: An Economic History. Baton Rouge: Louisiana State University Press, 1970.
- Cochran, Thomas C. "An Analytical View of Early American Business and Industry," in Joseph R. Freise and Jacob Judd, eds., Business Enterprise in Early New York. Tarrytown: Sleepy Hollow Press, 1979: 1-15.
- Cochran, Thomas C. "The Business Revolution." *American Historical Review* 79 (Dec. 1974): 1449-66.
- Cochran, Thomas C. 200 Years of American Business. New York: Basic Books, 1977.
- Cochran, Thomas C., ed. The New American State Papers, 1789-1860: Volume 2, Roads. Wilmington: Scholarly Resources, Inc., 1972.

- Collins, Herman LeRoy, and Jordan, Wilfred. Philadelphia: A Story of Progress. New York: Lewis Historical Publishing Co., 1941.
- Commonwealth of Pennsylvania. . .
- Commonwealth of Pennsylvania. Acts of Assembly and Ordinances Relating to the Water Works. [Philadelphia].
- Commonwealth of Pennsylvania. Acts of the General Assembly of the Commonwealth of Pennsylvania,.. 1814. Harrisburg: John Bioren, 1814.
- Commonwealth of Pennsylvania. Acts of the General Assembly of the Commonwealth of Pennsylvania.. 1817. Harrisburg: C. Gleim, 1817.
- Commonwealth of Pennsylvania. An Act Incorporating the Schuylkill Valley Navigation Company Passed the 20th of March, 1827; Together with the Several Supplements Passed Thereto. Pottsville: Benjamin Bannan, 1844.
- Commonwealth of Pennsylvania. An Act to Incorporate the Farmers and Mechanics Bank. Philadelphia: Jane Aitken, 1809.
- Commonwealth of Pennsylvania. Laws of the Bank of Pennsylvania. Philadelphia: John Binns, 1811.
- Commonwealth of Pennsylvania. Report of the Senate, Appointed to Enquire Into the Extent and Causes of the Present General Distress. Lancaster: Pennsylvania Senate, 1820.
- Commonwealth of Pennsylvania. Report on Roads, Bridges and Canals, Read in the Senate, March 23, 1822. Harrisburg: C. Mowry, 1822.
- Commonwealth of Pennsylvania. Report, &c. House of Representatives of the Commonwealth of Pennsylvania, Committee to Enquire into the Extent and Causes of the Present General Distress. [Harrisburg, 1820].
- Cooke, Jacob. Tench Coxe and the Early Republic. Chapel Hill: University of North Carolina Press, 1978.
- Cope, Thomas P. Philadelphia Merchant: The Diary of Thomas P. Cope. South Bend: Gateway Editions, 1978.
- Cowan, Robin. "Nuclear Power Reactors: A Study in Technological Lock-In." *Journal of Economic History* 50 (Sep. 1990): 541-567.
- Coxe, Tench. A Brief Examination of Lord Sheffield's Observations on the Commerce of the United States. Philadelphia: Matthew Cary, 1791.

- Coxe, Tench. A View of the United States of America, in a Series of Papers, Written at Various Times, Between the Years 1787-1794. Philadelphia: William Hall, and Wrigley & Berriman, 1794.
- Coxe, Tench. An Address to an Assembly of the Friends of American Manufactures Convened for the Purpose of Establishing a Society for the Encouragement of Manufactures and the Useful Arts, Read in the University of Pennsylvania, on Thursday the 9th of August 1787, By Tench Coxe and Published at Their Request. Philadelphia: R. Aitken & Son, 1787.
- Crocker, Matthew H. The Magic of the Many: Josiah Quincy and the Rise of Mass Politics in Boston, 1800-1830. Amherst: University of Massachusetts Press, 1999.
- Cuming, F. Sketches of a Tour to the Western Country, Through the States of Ohio and Kentucky; a Voyage Down the Ohio and Mississippi Rivers, and a Trip Through the Mississippi Territory, and Part of West Florida. Commenced at Philadelphia in the Winter of 1807, and Concluded in 1809. Pittsburgh: Cramer, Spear, and Eichbaum, 1810.
- Cushing, Caleb. View of the Anthracite Trade of Pennsylvania. North American Review, 1836.
- Daly, Weinberg, John, Allen. Geneology of Philadelphia County Suburbs, 2d. ed.. Philadelphia: Philadelphia Department of Records, 1966.
- Dalzell, Jr., Robert F. Enterprising Elite: The Boston Associates and the World They Made. Cambridge: Harvard University Press, 1987.
- David, Paul A. Technical Choice Innovation and Economic Growth: Essays on American and British Experience in the Nineteenth Century. London: Cambridge University Press, 1975.
- Davis, Benjamin. Some Account of the City of Philadelphia, the Capital of PA, and the Seat of the Federal Congress; of its Civil and Religious Institutions, Population, Trade and Government; Interspersed with Occasional Dissertations. Philadelphia: Richard Folwell, 1794.
- Davis, Joseph S. Essays in the Earlier History of American Corporations. 2 vols.. Cambridge: Harvard University Press, 1917.
- Delaware and Schuylkill Canal Company. Address of the Committee of the Delaware and Schuylkill Canal Company, to the Committees of the Senate and House of Representatives on the Memorial of Said Company. Philadelphia: John Ormrod, 1799.

- Delaware and Schuylkill Canal Company. Extracts From the Resolutions of the Stockholders of the Delaware and Schuylkill and the Procedure of the Managers Thereon in Order to Carry the Same Into Effect. Philadelphia: Delaware and Schuylkill Canal Company, 1800.
- Delaware and Schuylkill Canal Navigation Company. Broadside. , 1796.
- Desilver, Robert. Desilver's Philadelphia Directory and Stranger's Guide, for 1828. Philadelphia: Robert Desilver, 1828.
- Dewey, Davis Rich. Financial History of the United States. New York: Longmans, Green and Co., 1918.
- Dodd, Edwin M. American Business Corporations Until 1860: With Special Reference to Massachusetts. Cambridge: Harvard University Press, 1954.
- Doerflinger, Thomas M. A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia. Chapel Hill: University of North Carolina Press, 1986.
- Duane, William J. Letters, Addressed to the People of Pennsylvania Respecting the Internal Improvement, of the Commonwealth; By Means of Roads and Canals. Philadelphia: Jane Aitken, 1811.
- Duane, William. Observations on the Principles and Operation of Banking; with Strictures on the Opposition to the Bank of Philadelphia . Philadelphia, 1804.
- Duane?], [William. Experience the Test of Government: In Eighteen Essays. Written During the Years 1805 and 1806 to Aid the Investigation of Principles, and Operation of the Existing Constitution and Laws of Pennsylvania. Philadelphia: William Duane, 1807.
- DuBois, Armand Budington. The English Business Company after the Bubble Act, 1720-1800. New York: Octagon Books, 1971.
- Duffin, James M. Guide to the Records of the Sale of Commonwealth Property in Philadelphia County, 1780-1798. Philadelphia: Philadelphia City Archives, 1994.
- Duncan, A. B. Travels Through Part of the United States and Canada in 1818 and 1819, vol. 1. Glasgow: University Press, 1823.
- Duncan, A. B. Travels Through Part of the United States and Canada in 1818 and 1819, vol. 2. Glasgow: University Press, 1823.

- Dunlavy, Colleen. Politics and Industrialization: Early Railroads in the United States and Prussia. Princeton: Princeton University Press, 1994.
- Durrenburger, Joseph A. Turnpikes: A Study of the Toll Road Movement in the Middle Atlantic States and Maryland. Valdosta: Southern Stationery and Printing, 1931.
- Earle, Carville. Geographical Inquiry and American Historical Problems. Stanford: Stanford University Press, 1992.
- Elkins, Stanley and Eric McKittrick. The Age of Federalism. New York: Oxford University Press, 1993.
- Ellis, Richard. "The Market Revolution and the Transformation of American Politics," in Melvyn Stokes and Stephen Conway, eds., The Market Revolution in America: Social, Political, and Religious Expressions, 1800-1880. Charlottesville: University Press of Virginia, 1996.
- Evans, George H. Business Incorporation in the United States, 1800-1943. New York: National Bureau of Economic Research, 1948.
- Evans, Jr., George Heberton. British Corporation Finance, 1775-1850: A Study of Preference Shares. Baltimore: The Johns Hopkins University Press, 1936.
- Evans, Oliver. Exposition of part of the Patent Law. By a Native-Born Citizen of the United States, to Which is Added, Reflections on the Patent Law. [Philadelphia], 1816.
- Evans, Oliver. Patent Right Oppression Exposed: Or Knavery Detected. In an Address, to unite All Good People to Obtain a Repeal of the Patent Laws. To Which is Added, An Alarming Law Case; Also, Reflections on the Patent Laws. Philadelphia: R. Folwell, 1813.
- Farmers and Mechanics Bank. An Act to Re-Charter Certain Banks. To Which Are Added the Several Acts of Assembly Relative to Banks, and the By-Laws of the Farmers and Mechanics Bank. Philadelphia: R. Desilver, 1824.
- Feller, Daniel. The Jacksonian Promise: America, 1815-1840. Baltimore: The Johns Hopkins University Press, 1995.
- Fenstermaker, J. Van. The Development of American Commercial Banking, 1782-1837. Kent: Kent State University, 1965.
- Ferguson, E. James. The Power of the Purse: A History of American Public Finance, 1776-1790. Chapel Hill: University of North Carolina Press, 1961.

- Fligstein, Neil. The Transformation of Corporate Control. Cambridge: Harvard University Press, 1990.
- Flint, James. Letters from America, Containing Observations on the Climate and Agriculture of the Western States, the Manners of the People, the Prospects of Emigrants, &c. &c. Edinburgh: W. & C. Tait, 1822.
- Folsom, Burton W., Jr. Urban Capitalists: Entrepreneurs and City Growth in Pennsylvania's Lackawanna and Lehigh Regions, 1800-1920. Baltimore: The Johns Hopkins University Press, 1981.
- Formwalt, Lee. "Benjamin Henry Latrobe and the Revival of the Gallatin Plan of 1808." *Pennsylvania History* 1981 (48): 99-128.
- Fox, Dixon R. The Decline of the Aristocracy in the Politics of New York, 1801-1840. New York: Columbia University Press, 1919.
- Francis, Joseph Hume. History of the Bank of England. Chicago: Euclid Publishing Company, 1888.
- Gallatin, Albert. Report of the Secretary of the Treasury, on the Subject of Public Roads and Canals; Made in Pursuance of a Resolution of Senate, of March 2, 1807. April 12, 1808. Washington: R.C. Weightman, 1808.
- Garrison, Ervan G. A History of Engineering and Technology: Artful Methods. Boca Raton: CRC Press, 1991.
- Gibbons, Edward S. "The Building of the Schuylkill Navigation System, 1815-1828.," *Pennsylvania History* 57 (January 1990): 13-43.
- Gilje, Paul, ed. Wages of Independence: Capitalism in the Early American Republic. Madison: Madison House, 1997.
- Gillette, Howard, Jr. "The Emergence of the Modern Metropolis: Philadelphia in the Age of Its Consolidation," in William W. Cutler, III and Howard Gillette, Jr., eds., The Divided Metropolis: Social and Spatial Dimensions of Philadelphia, 1800-1975. Westport, CT: Greenwood Press, 1980: 3-26..
- Gilpin, Richard A. Memorial of Richard A. Gilpin, Relative to the Construction of a Tunnel Under the River Schuylkill: Presented to the Select and Common Councils of the City of Philadelphia. [Philadelphia], 1836.
- Gökalp, Iskender. "On the Analysis of Large Technical Systems." *Science, Technology, & Human Values*, 17 (Winter 1992): 57-78.
- Goodrich, Carter, ed. Canals and American Economic Development. New York: Columbia University Press, 1961.



- Goodrich, Carter. "Internal Improvements Reconsidered," *Journal of Economic History* 30 (Jun. 1970): 289-311.
- Goodrich, Carter. "The Revulsion Against Internal Improvements." *Journal of Economic History* 10 (Nov. 1950): 145-169.
- Goubert, Jean-Pierre. The Conquest of Water: The Advent of Health in the Industrial Age. trans. Wilson, Andrew. Princeton: Princeton University Press, 1989.
- Gouge, William M. A Short History of Paper Money and Banking in the United States, including an Account of Provincial and Continental Paper Money. Philadelphia: T.W. Ustick, 1833.
- Graff, Frederic. Notes on the Early History of the Employment of Water Power for Supplying the City of Philadelphia with Water, and the Building and Rebuilding of the Dam at Fairmount. Philadelphia: Engineers Club of Philadelphia, 1886.
- Graff, Frederick. Notes Upon the Water Works of Philadelphia, 1801 to 1815. Notes of Steam Engines in the United States About the Year 1801, and a Description of Those in Use at the Water Works of the City of Philadelphia. Philadelphia: [?], 1876.
- Gross, Robert, ed. In Debt to Shays: The Bicentennial of an Agrarian Rebellion. Charlottesville: University Press of Virginia, 1993.
- Gunn, L. Ray. "Political Implications of General Incorporation Laws in New York to 1860." *Mid-America* 59, 1977.
- Gunn, L. Ray. The Decline of Authority: Public Economic Policy and Political Development in New York, 1800-1860. Ithaca: Cornell University Press, 1988.
- Habakkuk, H.J. American and British Technology in the Nineteenth Century: The Search for Labour-Saving Inventions. Cambridge: Cambridge University Press, 1962.
- Habermas, Juergen. The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society, trans. Thomas Burger, Frederick Lawrence. Cambridge: MIT Press, 1989.
- Hagner, Charles V. Early History of the Falls of Schuylkill, Manayunk, Schuylkill and Lehigh Navigation Companies, Fairmount Waterworks, Etc. Philadelphia: Claxton, Remsen, and Haffelfinger, 1869.
- Hall, Lieutenant Francil, 14th Light Dragoons, H. P. Travels in Canada, and the United States, in 1816 and 1817. Boston: Wells and Lilly, 1818.

- Hamlin, Talbot. Benjamin Henry Latrobe. New York: Oxford University Press, 1955.
- Hammond, Bray. "Long and Short Term Credit in Early American Banking," *Quarterly Journal of Economics* 49 (Nov. 1934): 79-103.
- Hammond, Bray. Banks and Politics in America, from the Revolution to the Civil War. Princeton: Princeton University Press, 1957.
- Hancock, David. Citizens of the World: London Merchants and the Integration of the British Atlantic Community, 1735-1785. New York: Cambridge University Press, 1995.
- Handlin and Mary F. Handlin, Oscar. "Origins of the American Business Corporation." *Journal of Economic History* 5 (May 1945): 1-23.
- Handlin and Mary Flug Handlin, Oscar. Commonwealth: A Study of the Role of Government in the American Economy. Cambridge: Harvard University Press, 1947.
- Hansell, Norris. Josiah White, Quaker Entrepreneur. Easton, PA: Canal History and Technology Press, 1992.
- Hardie, James. The Philadelphia Directory and Register..1793. Philadelphia: T. Dobson, 1793.
- Harris, Ron. Industrialization without Free Incorporation: The Legal Framework of Business Organization in England, 1720-1844. Ph.D diss., Columbia University, 1994.
- Harrison, Joseph H., Jr. "Sic et Non: Thomas Jefferson and Internal Improvement,." *Journal of the Early Republic* 7 (fall 1987): 335-349.
- Harrison, Joseph H., jr. The Internal Improvement Issue in the Politics of the Union 1783-1825. Ph.D diss., Univ. of Virginia, 1954.
- Hartog, Hendrik. Public Property and Private Power: The Corporation of the City of New York in American Law, 1730-1870. Chapel Hill: University of North Carolina Press, 1983.
- Hartz, Louis. Economic Policy and Democratic Thought: Pennsylvania, 1776-1860. Cambridge: Harvard University Press, 1948.
- Hawke, David Freeman. Nuts and Bolts of the Past: A History of American Technology 1776-1860. New York: Harper & Row, 1988.
- Heilbroner, Robert L. "Do Machines Make History?" *Technology and Culture* 8 (July 1967): 333-345.

- Heilbroner, Robert. Technological Determinism Revisited, p. 67-78.. , 1994.
- Hidy, Ralph. The House of Baring in American Trade and Finance: English Merchant Bankers at Work, 1763-1861. Cambridge: Harvard University Press, 1949.
- Hill, Forest G. Roads, Rails & Waterways: The Army Engineers and Early Transportation. Norman, 1957.
- Hindle, Brooke. Technology in Early America: Needs and Opportunities for Study. Chapel Hill: University of North Carolina Press, 1966.
- Hindley, Geoffrey. A History of Roads. Secaucus: The Citadel Press, 1972.
- Hirschman, Albert O. The Passions and the Interests: Political Arguments for Capitalism before Its Triumph. Princeton: Princeton University Press, 1977.
- History of the Chemical Bank, 1823-1913. New York: The Chemical National Bank, 1913.
- Hodgson, G. Economics and Evolution: Putting Life Back into Economics. Oxford: Polity Press, 1993.
- Holdsworth, John Thom. Financing an Empire: History of Banking in Pennsylvania. Chicago and Philadelphia: S.J. Clarke, 1928.
- Horwitz, Morton J. The Transformation of American Law, 1780-1860. Cambridge: Harvard University Press, 1977.
- Howitt, E. Selections from Letters Written During a Tour Through the United States, in the Summer and Autumn of 1819; Illustrative of the Character of the Native Indians, and of Their Descent From the Lost Ten Tribes of Israel; As Well As Descriptive of the Present Situation and Sufferings of Emigrants, and of the Soil and State of Agriculture. Nottingham: J. Dunn, 1820.
- Hughes, Thomas P. Networks of Power: Electrification in Western Society, 1880-1930. Baltimore: The Johns Hopkins University Press, 1983.
- Hughes, Thomas P., and Mayntz, Renate, eds. The Development of Large Technical Systems. Boulder: Westview Press, 1988.
- Hulbert, Archer B. Pioneer Roads and Experiences of Early Travelers. Cleveland, 1904.
- Hunt, Bishop Carleton. The Development of the Business Corporation in England, 1800-1867. New York: Russell & Russell, 1969.

- Hurst, James W. The Legitimacy of the Business Corporation in the Law of the United States, 1780-1970. Charlottesville: University Press of Virginia, 1970.
- Hussey, Miriam. From Merchants to "Colour Men": Five Generations of Samuel Wetherill's White Lead Business. Philadelphia: University of Pennsylvania Press, 1956.
- Hutcheson, Harold. Tench Coxe; A Study in American Economic Development. New York: Da Capo Press, 1969.
- Hutchins, Catherine E., ed. Shaping a National Culture: The Philadelphia Experience, 1750-1800. Winterthur: The Henry Francis du Pont Winterthur Museum, 1994.
- James, Marquis. Biography of a Business, 1792-1942: The Insurance Company of North America. New York: Bobbs-Merrill, 1942.
- John C. Van Horne and Lee W. Formwalt, ed. Correspondence and Miscellaneous Papers of Benjamin Henry Latrobe, vol. 1, 1784-1804. New Haven: Yale University Press, 1984.
- Jordan, John W., ed. Colonial Families of Philadelphia. New York: Lewis Publishing Company, 1911.
- Kasson, Michael. Civilizing the Machine: Technology and Republican Values in America. New York: Grossman Publishers, 1976, .
- Ker, Henry. Travels Through the Western Interior of the United States, from the Year 1808 up to the Year 1816, with a Particular Description of a Great Part of Mexico, or New Spain. Elizabethtown, NY: Henry Ker, 1816.
- Kerber, Linda. Federalists in Dissent: Imagery and Ideology in America. Ithaca: Cornell University Press, 1970.
- Kessler, William C. "A Statistical Study of the New York General Incorporation Act of 1811." *Journal of Political Economy* 48 (Dec. 1948): 877-882.
- Kessler, William C. "Incorporation in New England: A Statistical Study, 1800-1875." *Journal of Economic History* 8 (May 1948): 43-62.
- Kilby, Peter. Entrepreneurship and Economic Development. New York: The Free Press, 1971.
- Klebaner, Benjamin J. "State-Chartered American Commercial Banks, 1781-1801." *Business History Review* 53 (fall 1979): 529-538.

- Lamoreaux, Naomi. Insider Lending: Banks, Personal Connections, and Economic Development in Industrial New England. New York: Cambridge University Press, 1994.
- Larson, John Lauritz. "Bind the Republic Together": The National Union and the Struggle for a System of Internal Improvements." *Journal of American History* 74 (Sep. 1987): 3663-387.
- Larson, John Lauritz. Bonds of Enterprise: John Murray Forbes and Western Development in America's Railway Age. Cambridge: Harvard University Press, 1984.
- Latrobe, B. Henry. Remarks on the Address of the Committee of the Delaware and Schuylkill Canal Company to the Committee of the Senate and House of Representatives, as Far as It Notices the "View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water." Printed by order of the Committee of the Councils. Philadelphia: Zachariah Poulson, Jr., 1799.
- Latrobe, Benjamin Henry. View of the Practicability and Means of Supplying the City of Philadelphia with Wholesome Water in a Letter to John Miller, Esquire from B. Henry Latrobe, Engineer. December 29, 1798. Philadelphia: Zachariah Poulson, Jr., 1799.
- Lebergott, Stanley. "United States Transport Advance and Externalities." *Journal of Economic History* 26 (Dec. 1966): 437-461.
- Lehigh Coal and Navigation Company. Act of the General Assembly of Pennsylvania Concerning the Lehigh Coal and Navigation Company; Together with the Bye-Laws, Etc. Philadelphia: James Kay, Jun. and Brother, 1837.
- Lehigh Coal and Navigation Company. Facts Illustrative of the Character of the Anthracite, or Lehigh Coal, Found in the Great Mines at Mauch Chunk, in Possession of the Lehigh Coal and Navigation Comapny, with Certificates from Various Manufacturers, and Others, Proving its Decided Superiority over Every Other Kind of Fuel. Philadelphia: S. W. Conrad, 1827.
- Lehigh Navigation and Coal Mine Company. Statement of the Lehigh Navigation and Coal Mine Company, with the Terms of Subscription for Stock. Philadelphia: William Brown, 1818.
- Lindstrom, Diane. "American Economic Growth before 1840: New Evidence and New Directions." *Journal of Economic History* 39 (March 1979), 289-301.
- Lindstrom, Diane. Economic Development in the Philadelphia Region, 1810-1850. New York: Columbia University Press, 1978.

- Littlefield, Douglas R. "The Potomoc Company: A Misadventure in Financing an Early American Improvement Project." *Business History Review* 58 (winter, 1984): 562-585.
- Lively, Robert A. "The American System: A Review Article." *Business History Review* 29 (Spring 1955): 81-96.
- Livingood, James Weston. The Philadelphia-Baltimore Trade Rivalry 1780-1860. Harrisburg: Pennsylvania Historical and Museum Commission, 1947.
- Lowber, John C. Ordinances of the Corporation of the City of Philadelphia; to Which Are refixed, the Original Charter, the Act of Incorporation, and Other Acts of Assembly Relating to the City. Philadelphia: Moses Thomas, 1812.
- Maass, Eleanor. "A Public Watchdog: Thomas Pym Cope and the Philadelphia Waterworks." *Proceedings of the American Philosophical Society* 125 (April 1981): 135-151.
- Maier, Pauline. "The Revolutionary Origins of the American Corporation" *William and Mary Quarterly*, 3d Ser., 50 (1993) 51-84, .
- Majewski, John D. A House Dividing: Economic Development in Pennsylvania and Virginia Before the Civil War. New York: Cambridge University Press, 2000.
- Majewski, John. "Commerce and Continuity: Economic Culture and Internal Improvements in Pennsylvania and Virginia." Ph.D. diss. University of California at Los Angeles, 1994.
- Majewski, John. "Who Financed the Transportation Revolution? Regional Divergence and Internal Improvements in Antebellum Pennsylvania and Virginia." *Journal of Economic History* 56 (Dec, 1996): 763-788.
- Malcolm, Charles A. The History of the British Linen Bank. Edinburgh: T. and A. Constable, Ltd., 1950.
- Manufacturers' and Mechanics' Loan Company of Philadelphia. Constitution of the Manufacturers' and Mechanics' Loan Company of Philadelphia. Philadelphia, 1824.
- Margadant, Ted W. Urban Rivalries in the French Revolution. Princeton: Princeton University Press, 1992.
- Martin, Asa Earl. "Lotteries in Pennsylvania Prior to 1833." *PMH&B* 47 (winter 1923): 307-327.

- Martin, John Hill. Martin's Bench and Bar of Philadelphia, Together With Other Lists of Persons Appointed to Administer the Laws in the City and County of Philadelphia and the Province and Commonwealth of Pennsylvania. Philadelphia: R. Welsh, 1883.
- Marx, Leo. The Machine in the Garden: Technology and the Pastoral Ideal in America. New York: Oxford University Press, 1967.
- Maryland Society for the Promotion and Encouragement of American Manufactures. Maryland Society for the Promotion and Encouragement of American Manufactures. Baltimore, 1825.
- Mathews, Alfred, and Hungerford, Austin. History of the Counties of Lehigh and Carbon; in the Commonwealth of Pennsylvania. Philadelphia: Everts & Richards, 1884.
- Matson, Cathy. "Capitalizing Hope: Economic Thought and the Early National Economy." *Journal of the Early Republic* 16 (summer 1996): 273-292.
- Matson, Cathy. Merchants & Empire: Trading in Colonial New York. Baltimore: The Johns Hopkins University Press, 1998.
- McCoy, Drew. The Elusive Republic: Political Economy in Jeffersonian America. Chapel Hill: University of North Carolina Press, 1980.
- McCulloch, Robert. The Pennsylvania Main Line Canal. York, Pa.: American Canal and Transportation Center, 1976.
- McCusker and Russell Menard, John. The Economy of British America, 1607-1789. Chapel Hill: University of North Carolina Press for the Institute of Early American History and Culture, 1987.
- McDonald, Forrest. Novus Ordo Seclorum: The Intellectual Origins of the Constitution. Lawrence: University Press of Kansas, 1985.
- McGaw, Judith. Early American Technology: Making and Doing Things from the Colonial Era to 1850. Chapel Hill: University of North Carolina Press, 1994.
- McGaw, Judith. Most Wonderful Machine: Mechanization and Social Change in Berkshire Paper Making, 1801-1825. Princeton: Princeton University Press, 1987.
- M'Clure, David. Report of the Survey of a Section of the River Delaware, from One Mile Below Chester to Richmond, Above Philadelphia. Taken by Order of the Councils. Philadelphia: Lydia R. Bailey, 1820.

- Mease, James. Archives of Useful Knowledge, a Work Devoted to Commerce, Manufactures, Rural and Domestic Economy, Agriculture, and the Useful Arts. Philadelphia: David Hogan, 1811.
- Mease, James. The Picture of Philadelphia, Giving an Account of Its Origin, Increase, and Improvements in Arts, Sciences, Manufactures, Commerce and Revenue. With a Compendious View of Its Societies, Literary, Benevolent, Patriotic, and Religious. Its Police-The Public Buildings-The Prison and Penitentiary System-Institutions, Monied and Civil-Museum. Philadelphia: B. & T. Kite, 1811.
- Mechanics Bank of Philadelphia. An Act to Re-Charter Certain Banks, and an Act to Extend the Charter of the Mechanics' Bank of the City and County of Philadelphia. To Which are Added the Several Acts of Assembly Relative to Banks. Philadelphia: William F. Geddes, 1834.
- Melish, John. The Necessity of Protecting and Encouraging the Manufactures of the United States, in a Letter to James Monroe, Esq., President of the United States. Philadelphia: John Melish, 1818.
- Melish, John. Travels in the United States of America, in the ears 1806 & 1807, and 1809, 1810, & 1811; Including an Account of Passages Betwixt America and Britain, and Travels Through Various Parts of Great Britain, Ireland, and Upper Canada. Philadelphia: Thomas & George Palmer, 1812.
- Melish, John. Travels in the United States of America, in the ears 1806 & 1807, and 1809, 1810, & 1811; Including an Account of Passages Betwixt America and Britain, and Travels Through Various Parts of Great Britain, Ireland, and Upper Canada. Philadelphia: Thomas & George Palmer, 1812.
- Meredith, William. Eulogium of the Character and Services of the Late John Sergeant. Philadelphia: Crissy & Markley, 1858.
- Merrill, Michael. "Putting 'Capitalism' in Its Place: A Review of Recent Literature." *William and Mary Quarterly* 3d. Ser. 52 (Apr. 1995): 315-326.
- Meyer, Balthasar Henry. History of Transporation in the United States before 1860. Washington: Carnegie Institution of Washington, 1917.
- Michaux, F.A. Travels to the Westward of the Allegany Mountains, in the States of the Ohio, Kentucky, and Tennessee, and Return to Charlestown, Through the Upper Carolinas; Containing Details on the Present State of agriculture and the Natural Productions of these Countries; As Well As Information Relative to the Commercial Connections of These States With Those of the Mountains and with Lower Louisiana. London: J. Mawman, 1805.



- Michener, John H. The Bank of North America: Philadelphia. New York: Cooke, 1906.
- [Mifflin, Samuel]. Observations on the Importance of Improving the Navigation of the River Schuylkill, for the Purpose of Connecting it with the Susquehanna, and Through that River Extending Our Communication to the Genesee Lakes and the Ohio. [Philadelphia?], 1818.
- Miller, Donald L. and Sharpless, Richard E. The Kingdom of Coal: Work, Enterprise and Ethnic Communities in the Mine Fields. Philadelphia: University of Pennsylvania Press, 1985.
- Miller, Nathan. Private Enterprise in Inland Navigation: The Mohawk Route Prior to the Erie Canal. *New York History* 31 (Oct. 1950): 398-413.
- Miller, Nathan. The Enterprise of a Free People: Aspects of Economic Development in New York State During the Canal Period, 1792-1820. Ithaca: Cornell University Press, 1962.
- Miller, William. "A Note on the Business Corporations in Pennsylvania, 1800-1860." *Quarterly Journal of Economics* 55 (Nov. 1940): 150-160.
- Miner, Charles, ed. Lehigh Coal. Certificates from a Number of Persons, Shewing the use and Value of the Lehigh Stone Coal, with Some Prefatory Remarks. Wilkes-Barre, PA: Charles Miner, 1815.
- Miners' Bank of Pottsville. An Act to Re-Charter Certain Banks, Passed the Twenty-Fifth Day of March, 1824, and the By-Laws of the Miners' Bank of Pottsville. Pottsville: Benjamin Bannan, 1831.
- Mokyr, Joel. "Technological Inertia in Economic History." *Journal of Economic History* 52 (June 1992): 325-338.
- Mokyr, Joel. The Lever of Riches: Technological Creativity and Economic Progress. New York: Oxford University Press, 1990.
- Morison, Elting E. From Know-How to Nowhere: The Development of Early American Technology. New York, 1974.
- Morton, Eleanor. Josiah White: Prince of Pioneers. New York: Stephen Daye Press, 1946.
- Mumford, Charles. The Doctrine of Constructive Larceny Considered; As Developed in the Recent Case of George Tyson, the Stock and Exchange Broker. Philadelphia: R.H. Small, 1825.
- Munn, Charles W. The Scottish Provincial Banking Companies, 1747-1864. Edinburgh: John Donald Publishers, 1981.

- Munro, Neil. The History of the Royal Bank of Scotland. Edinburgh: R. & R. Clark, Limited, 1928.
- Mutual Assurance Company. The Deed of Settlement of the Mutual Assurance Company, for Insuring Houses from Loss by Fire, in and near Philadelphia. Philadelphia: William W. Woodward, 1801.
- Mutual Assurance Company. The Deed of Settlement of the Mutual Assurance Company for Insuring Houses from Loss by Fire, in or near Philadelphia. Philadelphia: W. Fry, 1818.
- Mutual Assurance Company for Insuring Houses from Loss by Fire. A Tree Grew in Philadelphia. Philadelphia: The History of the Mutual Assurance Company for Insuring Houses from Loss by Fire. Philadelphia: Mutual Assurance Company, 1959.
- National Institution for Promoting Industry in the United States. Circular and Address of the National Institution for Promoting Industry in the United States, to Their Fellow Citizens. New York: J. Seymour, 1820.
- Neal, Larry. The Rise of Financial Capitalism: International Capital Markets in the Age of Reason. New York: Cambridge University Press, 1990.
- Nelson, John R., Jr. Liberty and Property: Political Economy and Policymaking in the New Nation, 1789-1812. Baltimore: The Johns Hopkins University Press, 1987.
- Nelson, Richard R. Understanding Technical Change as an Evolutionary Process. Professor Dr. F. de Vries Lectures in Economics, v. 8. New York: Elsevier Science Publishing Company, Inc., 1987.
- Nelson, Richard R., and Winter, Sidney G. An Evolutionary Theory of Economic Change. Cambridge: Belknap Press, 1982.
- New York State. The Act of Incorporation of the Manhattan Company, Passed April 2, 1799. New York: Grattan's Office, 1833.
- New-York and Schuylkill Coal Company. History of the Coal Lands, and Other Real Estate, Owned by the New-York and Schuylkill Coal Company. New York: Geo. F. Hopkins, 1826.
- Nolan, J. Bennett. The Schuylkill. New Brunswick: Rutgers University Press, 1951.
- Norton, Paul F. Latrobe, Jefferson and the National Capitol. New York: Garland Publishing, 1977.
- Nye, David E. American Technological Sublime. Cambridge: MIT Press, 1994.

Nye, David E. Consuming Power: A Social History of American Energies. Cambridge: The MIT Press, 1998.

Nye, David. Electifying America: Social Meanings of a New Technology. Cambridge: The MIT Press, 1990.

Paleske, Charles G. Observations on the Application for a Law to Incorporate "The Union Canal Company" Respectfully Submitted to the Members of Both Houses of the Legislature of Pennsylvania. Philadelphia: Duane, 1808.

Paskoff, Paul E. Industrial Evolution: Organization, Structure, and Growth of the Pennsylvania Iron Industry, 1750-1860. Baltimore: The John Hopkins University Press, 1983.

Paxton, John A. The Philadelphia Directory and Register, for 1813. Philadelphia: B. & T. Kite, 1813.

Paxton, John Adems. The Philadelphia Directory and Register for 1818. Philadelphia: E. R. Parker, 1818.

Paxton, John Adems. The Philadelphia Directory and Register for 1819. Philadelphia: John Adems Paxton, 1819.

Pencak, William, and Wright, Conrad Edick, eds. New York and the Rise of American Capitalism: Economic and Social Development. New York: The New-York Historical Society, 1989.

Pennsylvania Property Company. Plan of Association of the Pennsylvania Property Company, Established March 1797. Philadelphia: R. Aitken, 1797.

Pennsylvania Society for the Encouragement of American Manufacturers. Constitution of the Pennsylvania Society for the Encouragement of American Manufacturers. Adopted September 4, 1819. Philadelphia: PSEAM, 1819.

Pennsylvania Society for the Encouragement of American Manufactures. Memorial to the Senate and House of Representatives of the United States: The Memorial of the Pennsylvania Society for the Encouragement of American Manufactures. Philadelphia:, 1820.

Pennsylvania Society for the Encouragement of American Manufactures. Memorial of the Board of Manufactures of the Pennsylvania Society for the Encouragement of American Manufactures, March 1, 1822. Referred to the Committee of the Whole on Resolutions of Mr. Baldwin. Washington, DC: Gales & Seaton, 1822.

- Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts. The Plan of the Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts. Philadelphia: R. Aitken & Son, 1787.
- Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts. A Communication from the Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts. Philadelphia: Samuel Ackerman, 1804.
- Pennsylvania. Act of Incorporation of the Bank of North America, as Re-Chartered on the 21st March, 1825, Together with the By-Laws. Philadelphia: Conrad Zentler, 1827.
- Pennsylvania. Act of Incorporation, and By-Laws, of the Franklin Fire Insurance Company of Philadelphia. [Philadelphia], 1829.
- Pennsylvania. An Act of Assembly and Supplements Thereto, in Relation of the Incorporation of a Company for Opening a Canal and Lock Navigation, Between the Rivers Delaware and Schuylkill, Through the Southern Section of Philadelphia County. Philadelphia: S.C. Atkinson, 1835.
- Pennsylvania. An Act to Incorporate the American Insurance Company of Philadelphia. [Philadelphia], 1831.
- Pennsylvania. An Act to Incorporate the Girard Bank in the City of Philadelphia, Passed on the 3d of April, 1832, and the Act Supplementary Thereto, Passed on the 19th of March, 1836; Together with an Appendix, Containing all the Provisions of other Laws to which Reference is Made. Philadelphia: John C. Clark, 1836.
- Pennsylvania. An Act to Incorporate the Phoenix Insurance Company of Philadelphia. [Philadelphia?], 1804.
- Pennsylvania. An Act to Incorporate the Subscribers to the American Fire Insurance Company. Philadelphia: John Binns, 1810.
- Pennsylvania. An Act to Incorporate the Subscribers to the Insurance Company of North-America. Philadelphia: William W. Woodward, 1801.
- Pennsylvania. No. 9. Report of the Committee on the Petition of the Directors of the Farmers and Mechanics Bank. Lancaster: Benjamin Grimler, 1808.
- Pennsylvania. The Charter and By-Laws of the Pennsylvania Company for Insurance on Lives, Granting Annuities, and Executing Trusts. Philadelphia: James Kay, Jun. & Brother, 1836.
- Perkins, Edward J. American Public Finance and Financial Services, 1700-1815. Columbus, OH, 1994.

- Perkins, Edwin J. Financing Anglo-American Trade: The House of Brown, 1800-1880. Cambridge: Harvard University Press, 1975.
- Perkins, Edwin J. The Economy of British Colonial America, 2d ed. New York: Columbia University Press, 1988.
- Pernick, Martin S. "Politics, Parties, and Pestilence: Epidemic Yellow Fever in Philadelphia and the Rise of the First Party System." *William and Mary Quarterly*, 3d Ser. 29 (October 1972): 559-586.
- Peters, Richard. A Statistical Account of the Schuylkill Permanent Bridge, Communicated to the Philadelphia Society of Agriculture, 1806. Philadelphia: Jane Aitken, 1807.
- Philadelphia Chamber of Commerce. Articles of Association and Rules of Philadelphia Chamber of Commerce. Philadelphia: Zachariah Pouslon, Jr., 1801.
- Philadelphia Chamber of Commerce. Memorial of the Philadelphia Chamber of Commerce. Washington DC: United States Senate, 1803.
- Philadelphia Society for the Promotion of National Industry. Address of the Philadelphia Society for the Promotion of National Industry. Philadelphia: M. Carey & Son, 1819.
- Philadelphia. City Councils. Report of the Committee of the Select and Common Councils of Philadelphia, on the Navigation of the River Schuylkill. Philadelphia: Lydia R. Bailey, 1832.
- Philadelphia: American Patriotic Fund Society. American Patriotic Fund Society for the City and County of Philadelphia. Philadelphia: American Patriotic Fund Society, 1813.
- Phoenix Insurance Company. Articles of Association of the Phoenix Insurance Company of Philadelphia. [Philadelphia], 1803.
- Platt, Harold L. The Electric City: Energy and the Growth of the Chicago Area, 1880-1930. Chicago: University of Chicago Press, 1991.
- Pomerantz, Sidney I. New York: An American City 1783-1803. A Study of Urban Life. Port Washington, NY: Ira J. Friedman, Inc., 1965.
- Powell, H. Benjamin. Philadelphia's First Fuel Crisis: Jacob Cist and the Developing Market for Pennsylvania Anthracite. University Park, PA: The Pennsylvania State University Press, 1978.
- Pred, Alan. Urban Growth and the Circulation of Information: The United States System of Cities 1790-1840. Cambridge: Harvard, 1973.

- Pursell, Carroll W. Early Stationary Steam Engines in America: A Study in the Migration of Technology. Washington: Smithsonian Institution Press, 1969.
- Pursell, Carroll. The Machine in America: A Social History of Technology. Baltimore: The Johns Hopkins University Press, 1995.
- Pusateri, C. Joseph. A History of American Business, 2d ed.. Wheeling, IL: Harlan Davidson, Inc., 1988.
- Raitz, Karl. The National Road. Baltimore: The Johns Hopkins University Press, 1996.
- Ratner, Sidney; Soltow, James H.; and Sylla, Richard. The Evolution of the American Economy: Growth, Welfare, and Decision Making. New York: Basic Books, 1979.
- Redlich, Fritz. "The Philadelphia Waterworks in Relation to the Industrial Revolution in the United States,." PMHB 69 (1945): 243-256.
- Redlich, Fritz. The Molding of American Banking: Men and Ideas. New York: Johnson Reprint Corp., 1968.
- Reed, George Edward, LL.D. Pennsylvania Archives, fourth series. Harrisburg: State of Pennsylvania, 1900.
- Reed, George Edward, LL.D. Pennsylvania Archives, fourth series. Harrisburg: State of Pennsylvania, 1900.
- Reinberger, Mark Edward. "The Baltimore Exchange and its Place in the Career of Benjamin Henry Latrobe". Ph.D diss., Cornell University, 1988.
- Ringwalt, J. L. Development of Transportation Systems in the United States. Philadelphia: J.L. Ringwalt, 1888.
- Roberts, Christopher. The Middlesex Canal, 1793-1860. Cambridge: Harvard University Press, 1938.
- Robinson, James, ed. Philadelphia Directory, City and County Register, for 1803. Philadelphia: William W. Woodward, 1803.
- Robinson, James. Philadelphia Directory for 1804. Philadelphia: John H. Oswald, 1804.
- Robinson, James. Robinson's Original Annual Directory for 1817. Philadelphia: Whitehall, 1817.

- Robinson, James. The Philadelphia Directory for 1805. Philadelphia: James Robinson, 1805.
- Robinson, James. The Philadelphia Directory for 1806. Philadelphia: James Robinson, 1806.
- Robinson, James. The Philadelphia Directory for 1808. Philadelphia: W. Woodhouse, 1808.
- Robinson, James. The Philadelphia Directory for 1816. Philadelphia: James Robinson, 1816.
- Robinson, James. The Philadelphia Directory of 1809. Philadelphia: James Robinson, 1809.
- Robinson, James. The Philadelphia Directory of 1810. Philadelphia: James Robinson, 1810.
- Robinson, James. The Philadelphia Directory, for 1807. Containing the Names, Trades and Residence of the Inhabitants of the City, Southwark, and Northern Liberties; Also, A Calendar, from the First of February 1807 to the 1st of February, 1808, and Other Useful Information. Philadelphia: T.S. Manning, 1807.
- Rothenberg, Winifred. "The Emergence of a Capital Market in Rural Massachusetts, 1730-1838. *Journal of Economic History*, 45 (1984), 781-808, 1984.
- Roy, William G. *Socializing Capital: The Rise of the Large Industrial Corporation in America*. Princeton: Princeton University Press, 1997.
- Royster, Charles. *Fabulous History of the Dismal Swamp Company: A Story of George Washington's Times*. New York: Alfred A. Knopf, 1999.
- Sabel, Jonathan Zeitlin and Charles. "Historical Alternatives to Mass Production: Politics, Markets, and Technology in Nineteenth-Century Industrialization." *Past and Present* 133-176 (August), 1985.
- Saving Fund Society. Articles of Association of the Saving Fund Society, with an Explanation of the Principles of the Institution and its Objects. Philadelphia: Philadelphia Saving Fund Society, 1817.
- Saviotti, Pier Paolo. *Technological Evolution, Variety and the Economy*. London: Edward Elgar Publishing Ltd., 1996.
- Saxe-Weimar Eisenach, Bernhard, Duke of. Travels Through North America, During the Years 1825 and 1826. Philadelphia: Carey, Lea & Carey, 1828.

Scharf, J. Thomas and Westcott, Thompson. History of Philadelphia 1609-1884. Philadelphia: L.H. Everts & Co., 1884.

Scheiber, Harry N. "Property Law, Expropriation, and Resource Allocation by Government: The United States, 1789-1910." Journal of Economic History, 33, 1973.

Schiesl, Martin J. The Politics of Efficiency: Municipal Administration and Reform in America 1800-1920. Berkeley: University of California Press, 1977.

Schultz, Ronald. The Republic of Labor: Philadelphia Artisans and the Politics of Class, 1720-1830. New York: Oxford University Press, 1993.

Schumpeter, Joseph Alois. The Theory of Economic Development; An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle, Revers Opie, trans.. Cambridge: Harvard University Press, 1934.

Schuylkill Coal Company. Remarks and Observations Showing the Justice and Policy of Incorporating "The Schuylkill Coal Company," respectfully addressed to the public, and particularly to the Members of the Legislature. [Philadelphia], 1823.

Schuylkill Navigation Company. [schedule of payments for fifty shares of Schuylkill Navigation Company, issued to Charles, John and Evan Rogers]. [Philadelphia], 1816.

Schuylkill Navigation Company. Address of the President and Managers of the Schuylkill Navigation Company, to the Stockholders. Philadelphia: Jacob Frick & Co., 1821.

Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1822. Philadelphia: James Kay, Jr., & Brother, 1822.

Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 1, 1827. Philadelphia: Lydia R. Bailey, 1827.

Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1828. Philadelphia: Lydia R. Bailey, 1828.

Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 5, 1829. Philadelphia: Lydia R. Bailey, 1829.



- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company to the Stockholders, January 7, 1833. Philadelphia: James Kay, Jun. & Co., 1833.
- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 6, 1834. Philadelphia: James Kay, Jun., & Co., 1834.
- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 5, 1835. Philadelphia: James Kay, Jun. & Co., 1835.
- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 4, 1836. Philadelphia: James Kay, Jun. & Brother, 1836.
- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 4, 1837. Philadelphia: James Kay, Jun. & Brother, 1837.
- Schuylkill Navigation Company. Report of the President and Managers of the Schuylkill Navigation Company, to the Stockholders, January 1, 1838. Philadelphia: James Kay, Jun. & Brother, 1838.
- Schuylkill Navigation Company. Valuable Water Power, Mills, Furnace, Woodlands, &c. On and Near the River Schuylkill About Half a Mile Above the Village of Hamburg Will be Sold at Public Sale. Philadelphia: J.P. Justice, 1831.
- Schuylkill Permanent Bridge Company. Report of the Committee of Accounts, with the Report of the Schuylkill Permanent Bridge Company on the Present State of the Bridge. Philadelphia: Jane Aitken, 1813.
- Scott, William Robert. The Constitution and Finance of English, Scottish and Irish Joint-Stock Companies to 1720, Vol. III: Water Supply, Postal, Street-Lighting, Manufacturing, Banking, Finance and Insurance Companies; Also Statements Relating to the Crown Finances. New York: Peter Smith, 1951.
- Scranton, Philip. Proprietary Capitalism: The Textile Manufacture at Philadelphia, 1800-1885. New York: Cambridge University Press, 1983.
- Searight, Thomas B. The Old Pike. Uniontown, 1894.
- Seavoy, Ronald E. The Origins of the American Business Corporation, 1784-1855: Broadening the Concept of Public Service During Industrialization. Westport: Greenwood Press, 1982.

- Sellers, Charles. The Market Revolution: Jacksonian America, 1815-1846. New York: Oxford University Press, 1991.
- Sergeant, John, et. al. Opinion of Counsel, on the Right of the Schuylkill Navigation Company to Make Another Lock and Canal for the Use of the Navigation at the Fair Mount Dam. Philadelphia: James Kay, Jun. & Co., 1833.
- Sergeant, John. Speech of Mr. Sergeant, Delivered in the House of Representatives, Feb. 22, on the Bank of the United States. [Washington? ], 1819.
- Shaw, Ronald E. Canals for a Nation: The Canal Era in the United States 1790-1860. Lexington: University Press of Kentucky, 1990.
- Sheffield, John, Lord. Observations on the Commerce of the American States. Dublin: Luke White, 1784.
- Shelton, Cynthia J. The Mills of Manayunk: Industrialization and Social Conflict in the Philadelphia Region, 1787-1837. Baltimore: The Johns Hopkins University Press, 1986.
- Sheriff, Carol. The Artificial River: the Erie Canal and the Paradox of Progress, 1817-1862. New York: Hill and Wang, 1996.
- Shlakman, Vera. The Economic History of a Factory Town: A Study of Chicopee, Massachusetts. Northampton: Smith College Press, 1935.
- Simpson, Henry. The Lives of Prominent Philadelphians, Now Deceased. Collected from original and Authentic Sources. Philadelphia: William Brotherhead, 1859.
- Smelser, Marshall. The Democratic Republic, 1801-1815. New York: Harper and Row, 1968.
- Smith, Cecil O., Jr. "The Longest Run: Public Engineers and Planning in France." *American Historical Review* 95 (1990): 657-692.
- Smith, Merritt Roe, and Marx, Leo, eds. Does Technology Drive History? The Dilemma of Technological Determinism. Cambridge: The Massachusetts Institute of Technology Press, 1994.
- Smith, Tom W. "The Dawn of the Urban-Industrial Age: The Social Structure of Philadelphia, 1790-1830." Ph.D. diss., University of Chicago, 1980.
- Smith, Walter B. Economic Aspects of the Second Bank of the United States. Cambridge: Harvard University Press, 1953.

- Smith, William. An Historical Account of the Rise, Progress and Present State of the Canal Navigation in Pennsylvania. With an Appendix, Containing, Abstracts of the Acts of the Legislature Since the Year 1790, and the grants of Money for Improving Roads and Navigable Waters throughout the State; to Which is Annexed, "An Explanatory Map.". Philadelphia: Zachariah Poulson, Jr., 1795.
- Somerset, John, Marquis of Worcester. A Century of the Names and Scantlings of Such Inventions. London: J. Grismond, 1663.
- Stafford, Cornelius William. Philadelphia Directory for 1801. Philadelphia: William W. Woodward, 1801.
- Stafford, Cornelius William. Philadelphia Directory, for 1798. Philadelphia, 1798.
- Stafford, Cornelius William. Philadelphia Directory, for 1799. Philadelphia: William W. Woodward, 1799.
- Stafford, Cornelius William. The Philadelphia Directory for 1797. Philadelphia: William W. Woodward, 1797.
- Stapleton, Darwin. "Benjamin Henry Latrobe and the Transfer of Technology," in Pursell, Carroll, ed., Technology in America: A History of Individuals and Ideas. Cambridge: The Massachusetts Institute of Technology Press, 1982: 34-44.
- Stapleton, Darwin. The Transfer of Early Industrial Technologies to America. Philadelphia: American Philosophical Society, 1987.
- Staudenmaier, John M. Technology's Storytellers: Reweaving the Human Fabric. Cambridge: The Society for the History of Technology and the Massachusetts Institute of Technology Press, 1985.
- Steinberg, Theodore. Nature Incorporated: Industrialization and the Waters of New England. New York: Cambridge University Press, 1991.
- Stephens, Thomas. Stephens's Philadelphia Directory, for 1796. Philadelphia: Thomas Stephens, 1796.
- Stradly, Leighton P. Early Financial and Economic History of Pennsylvania. New York, 1942.
- Sutcliff, Robert. Travels in Some Parts of North America, in the Years 1804, 1805, and 1806. York, England: W. Alexander, 1811.
- Swanson, Donald F. and Trout, Andrew P. "Alexander Hamilton's Hidden Sinking Fund." *William & Mary Quarterly* 3d.Ser., 49 (Jan. 1992): 108-116.

- Swetnam, George. Pennsylvania Transportation. Gettysburg: Pennsylvania Historical Association, 1964.
- Sylla, Richard. "Monetary Innovation in America." *Journal of Economic History* 42 (March 1982): 21-30.
- Sylla, Richard; Legler, John B.; and Wallis, John J. "Banks and State Public Finance in the New Republic: The United States, 1790-1860." *Journal of Economic History* 47 (June 1987): 391-403.
- Tarr, Joel A. and Dupuy, Gabriel, eds. Technology and the Rise of the Networked City in Europe and America. Philadelphia: Temple University Press, 1988.
- Taylor, Alan. William Cooper's Town: Power and Persuasion on the Frontier of the Early American Republic. New York: Vintage Books, 1995.
- Taylor, George Rogers. The Transportation Revolution. New York: Harper and Row, 1951.
- Teaford, Jon. The Municipal Revolution in America: The Origins of Modern Urban Government, 1650-1825. Chicago: University of Chicago Press, 1975.
- Temin, Peter. "Steam and Waterpower in the Early Nineteenth Century." *Journal of Economic History* 26 (Jun. 1966): 187-205.
- Thernstrom, Stephan. Poverty and Progress: Social Mobility in a Nineteenth Century City. Cambridge: Harvard University Press, 1964.
- Thompson, Peter. Rum Punch and Revolution: Taverngoing and Public Life in Eighteenth-Century Philadelphia. Philadelphia: University of Pennsylvania Press, 1999.
- Thornton, William. Political Economy: Founded in Justice and Humanity. In a Letter to a Friend. Washington, DC: Samuel Harrison Smith, 1804.
- Trescott, Paul B. Financing American Enterprise: The Story of Commercial Banking. New York: Harper and Row, 1963.
- Tully, Alan. Forming American Politics: Ideals, Interests, and Institutions in Colonial New York and Pennsylvania. Baltimore: The Johns Hopkins University Press, 1994.
- Union Canal Company. The Union Canal. [Philadelphia], 1826.

- Ver Steeg, Clarence L. Robert Morris: Revolutionary Financier. With an Analysis of His Early Career. Philadelphia: University of Pennsylvania Press, 1954.
- Wainwright, Nicholas B. History of the Philadelphia National Bank: A Century and a Half of Philadelphia Banking, 1803-1953. Philadelphia: Philadelphia National Bank, 1953.
- Wainwright, Nicholas B. Philadelphia in the Romantic Age of Lithography. Philadelphia: The Historical Society of Pennsylvania, 1958.
- Waldstreicher, David. In the Midst of Perpetual Fetes: The Making of American Nationalism 1776-1820. Chapel Hill: University of North Carolina Press for the Omohundro Institute of Early American History and Culture, 1997.
- Wallace, Anthony F. C. Rockdale: The Growth of an American Village in the Early Industrial Revolution. New York: W.W. Norton & Company, 1978.
- Wansey, Henry. The Journals of an Excursion to the United States of North America, in the Summer of 1794. Salisbury: J. Easton., 1796.
- Ward, J.R. The Finance of Canal Building in Eighteenth-Century England. New York: Oxford University Press, 1974.
- Warner, Sam Bass, Jr. The Private City: Philadelphia in Three Periods of Its Growth. Philadelphia: University of Pennsylvania Press, 1968.
- Watson, Harry L. Liberty and Power: The Politics of Jacksonian America. New York: Hill and Wang, 1990.
- Watson, John F. Annals of Philadelphia in the Olden Times. Philadelphia: Leary, Stuart, & Co., 1909.
- Watts, Irma A. "Pennsylvania Lotteries of Other Days." *Pennsylvania History* 2 (1935): 40-53.
- Watts, Steven. The Republic Reborn: War and the Making of Liberal America, 1790-1820. Baltimore: The Johns Hopkins University Press, 1987.
- Way, Peter. Common Labour: Workers and the Digging of North American Canals, 1780-1860. New York: Cambridge University Press, 1993.
- Weidner, Charles H. Water for a City: A History of New York City's Problem with Water from the Beginning to the Delaware River System. New Brunswick: Rutgers University Press, 1974.
- Weigley, Russell F., editor. Philadelphia: A 300-Year History. New York: W.W. Norton & Company, 1982.

- Weld, Isaac. Travels Through the United States and the Provinces of Upper and Lower Canada, During the Years 1795, 1796, and 1797. London: John Stockdale, 1799.
- White, Francis. The Philadelphia Directory. Philadelphia: Young, Stewart, and M'Culloch, 1785.
- White, Josiah. Circular. Harrisburg: Hamilton & Son, 1832.
- White, Josiah. Josiah White's History Given by Himself. Philadelphia: Lehigh Coal and Navigation Company, 1909.
- White, Lawrence. Free Banking in Britain: Theory, Experience, and Debate, 1800-1845. New York: Cambridge University Press, 1984.
- Wilburn, Jean A. Biddle's Bank: The Crucial Years. New York: Columbia University Press, 1967.
- Wilentz and Michael Merrill, Sean, editors. The Key of Liberty: The Life and Democratic Writings of William Manning, "A Laborer," 1747-1814. Cambridge: Harvard University Press, 1993.
- Wilson, James. Considerations on the Bank of North-America. Philadelphia: Hall and Sellers, 1785.
- Wilson, Thomas. The Philadelphia Directory and Stranger's Guide, for 1825. Philadelphia: John Bioren, 1825.
- Winner, Langdon. Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought. Cambridge: The Massachusetts Institute of Technology Press, 1977.
- Winner, Langdon. The Whale and the Reactor: A Search for Limits in an Age of High Technology. Chicago: University of Chicago Press, 1986.
- Winslow, Stephen N. Biographies of Successful Philadelphia Merchants. Philadelphia: James K Simon, 1864.
- Wood, Gordon S. The Creation of the American Republic, 1776-1787. Chapel Hill: University of North Carolina Press, 1969.
- Wood, Gordon. The Radicalism of the American Revolution. New York: Vintage Books, 1992.
- Wright, Frances. Views of Society and manners in America: in a Series of Letters from That Country to a Friend in England, During the Years 1818, 1819, and 1820. London: Longman, Hurst, Rees, Orme, and Brown, 1821.

- Wright, Robert E. "Bank Ownership and Lending Patterns in New York and Pennsylvania, 1781-1831." *Business History Review* 73 (Spring 1999): 40-60.
- Wright, Robert E. "Thomas Willing (1731-1832): Philadelphia Financier and Forgotten Family Founder." *Pennsylvania History* 63 (1996): 525-560.
- Yearly, Clifton K. Enterprise and Anthracite: Economics and Democracy in Schuylkill County, 1820-1875. Baltimore: The Johns Hopkins University Press, 1961.
- Young, Alfred F. The Shoemaker and the Tea Party: Memory and the American Revolution. Boston: Beacon Press, 1999.
- Young, Jeremiah S. A Political and Constitutional Study of the Cumberland Road. Chicago: The University of Chicago Press, 1904.
- Young, John Russell, ed. Memorial History of the City of Philadelphia from its First Settlement to the Year 1895. New York: New York History Company, 1895.

## VITA

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