

Thomas P. Schmidt  
Professor Robert Ellickson  
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FINANCING INNOVATION:  
INFRASTRUCTURE DEVELOPMENT IN NEW HAVEN, 1750-1850

## ***I. Introduction***

The nineteenth century was a time of astonishing change in technologies of transportation. When the Constitution was ratified, to travel from New Haven to Hartford would require an arduous and uncertain trip on a rough road that could span more than a day.<sup>1</sup> At the start of the twentieth century, railroads conveyed thousands of people daily along that route in a few hours, and the first automobiles were motoring over roads. The great progress in infrastructure development radically transformed the commercial, physical, and cultural landscape of America.

This transformation required great mobilizations of capital and human labor, which, in turn, were dependent upon a variety of institutions: corporations, banks, courts to enforce contracts, regulatory bodies, and more. Behind the physical infrastructure of America lies a legal and institutional infrastructure which enables change even as it responds to it. This paper will explore the development of this more abstract infrastructure. Beginning in the late eighteenth century, business organizations and transactional structures progressed rapidly as they supported physical and economic development of the country. Vast mobilizations of energy and capital had to be coordinated; law served this function. Through a series of case-studies from New Haven the paper will consider the role of law in the development of the young nation.

To make a strong claim that law enabled or caused the developments of the nineteenth century would be difficult, if not impossible, to verify. Law is always

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<sup>1</sup> George Henry Watrous, *Travel and Transportation*, in HISTORY OF THE CITY OF NEW HAVEN TO THE PRESENT TIME 351, 353 (Edward E. Atwater ed., 1887).

embedded in a larger set of economic and social practices. James Willard Hurst has written that “the main influences upon public policy came from currents of life outside of and environing the formal legal system. . . . The deepest roots of the law of the business corporation drew from the general life, and not just from the law.”<sup>2</sup> But even Hurst conceded that we must “make due allowance for legal elements.”<sup>3</sup> The law responds to the currents of social and economic energy around it, but it can also coordinate and channel these currents into productive and beneficial uses.

This paper will make this broad question of the relationship law to the economic and technological change more tractable by exploring it in the context of three specific cases: infrastructure improvements in the city of New Haven which range from the mid-eighteenth to the mid-nineteenth century. I will attend closely to the techniques of financing and the organizational structures that were employed to carry them out. The first case-study is the extension of the Long Wharf in New Haven harbor; the second is the construction of a network of turnpike roads; the final is the Farmington Canal. Over time innovations in law allowed for projects on a ever grander scale. Through these examples I hope to glimpse the concurrent development of the “abstract” and “physical” infrastructure of America.

The three infrastructure projects I have chosen were undertaken through corporate forms, so the early theory and practice of corporate law will be an important focus.<sup>4</sup> In

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<sup>2</sup> JAMES WILLARD HURST, *THE LEGITIMACY OF THE BUSINESS CORPORATION IN THE LAW OF THE UNITED STATES* 154 (1970).

<sup>3</sup> *Id.*

<sup>4</sup> The literature is extensive; some of the seminal studies are: OSCAR HANDLIN & MARY FLUG HANDLIN, *COMMONWEALTH: A STUDY OF THE ROLE OF GOVERNMENT IN THE AMERICAN ECONOMY: MASSACHUSETTS, 1774-1861*; HERBERT HOVENKAMP, *ENTERPRISE & AMERICAN LAW* (1991); HURST, *supra* note 2; Susan Pace Hamill, *From Special*

the early nineteenth century the corporation was in a state rapid flux. In 1780, colonial legislatures had granted only seven charters to business corporations. In the last ten years of the century, state legislatures conferred corporate charters upon 295 businesses.<sup>5</sup> This huge increase in the practical use of the corporation stimulated juridical thinking, and there was “little relevant legal experience from which to draw.”<sup>6</sup> America from early on made far more extensive use of the corporate form than England.<sup>7</sup> American states, united and individually, built “a public policy toward the corporation almost wholly out of our own wants and concerns.”<sup>8</sup> If constitutional law was the arena of our legal creativity in the eighteenth century, over the nineteenth our energies fastened increasingly onto corporate law.

The broad arc of development in thinking about the corporation is simple to describe. The “mercantilist” conception of the corporation was ceding to the classical, economic conception. The mercantilist corporation is a creature of the sovereign with a specific purpose. “State involvement was presumed from the very act of incorporation.”<sup>9</sup> The predominance of this conception in early America can be seen in the type of organizations that were incorporated. From 1780 to 1801, the states granted 317 corporate charters to enterprises; of these almost two-thirds were for transportation

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*Privilege to General Utility: A Continuation of Willard Hurst’s Study of Corporations*, 49 AM. U.L. REV. 81 (1999); Morton J. Horwitz, *Santa Clara Revisited: The Development of Corporate Theory*, 88 W. VA. L. REV. 173 (1985); David Millon, *Frontiers of Legal Thought I: Theories of the Corporation*, 1990 DUKE L.J. 201; Joseph H. Sommer, *The Birth of the American Business Corporation: Of Banks, Corporate Governance, and Social Responsibility*, 49 BUFFALO L.R. 1011 (2001);

<sup>5</sup> MORTON J. HORWITZ, *THE TRANSFORMATION OF AMERICAN LAW, 1780-1860*, at 112 (1977).

<sup>6</sup> HURST, *supra* note 2, at 8.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> HOVENKAMP, *supra* note 4, at 12.

companies, such as turnpikes or toll bridges; twenty percent were for banks and insurance; ten percent to provide local public services, such as water; and less than 4% for general businesses.<sup>10</sup> At its origin 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.”<sup>11</sup>

This idea of the corporation began to erode in the nineteenth century and was eventually replaced by what Hovenkamp calls the classical model. Rather than a grant from the state with special privileges attached, “[u]nder classicism the corporation became nothing more than a device for assembling large amounts of capital so it could be controlled efficiently by a few active managers.”<sup>12</sup> This view of the corporation is present in John Marshall’s decision in *Dartmouth College v. Woodford*,<sup>13</sup> which held that a corporate charter was a “contract” within the meaning of Article I, section 10, and that therefore a state could not modify or revoke a corporate charter at will. The consummation of “classical theory” of the corporation was the general incorporation statute, which took hold in the latter half of the nineteenth century. Just about anyone could incorporate themselves into a firm and compete equally in the market for capital, labor, and products.

In the first half of the nineteenth century, then, the corporation underwent radical conceptual change. Through this period the corporation “occup[ied] a twilight zone in the eyes of the law, sometimes conceived of as a public instrumentality, at other times

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<sup>10</sup> HURST, *supra* note 2, at 17.

<sup>11</sup> Oscar Handlin & Mary F. Handlin, *Origins of the American Business Corporation*, 5 J. ECON. HIST. 1, 22 (1945).

<sup>12</sup> HOVENKAMP, *supra* note 4, at 12.

<sup>13</sup> 17 U.S. (4 Wheat.) 518 (1819).

regarded as a private entity.”<sup>14</sup> The corporations described in this paper, chartered to carry out infrastructure improvements in and around New Haven, are hybrid entities, straddling the public-private divide in a way that is mostly foreign to modern lawyers. I will identify and characterize the salient features of these organizations in light their historical context. The major themes are: How did these organizations and their financing facilitate the massive undertaking of infrastructure improvement? What were the distributional consequences of choosing one form of organization, or one form of subsidy, over another? Who bore the burdens and enjoyed the benefits of infrastructure development, and how much did these groups overlap?

## II. “*The Benefit of a Wharf*”

New Haven’s settlers had commercial aspirations, and they chose to situate their settlement on a large harbor in order to become a trade hub for the coastal United States, and even Europe and the West Indies.<sup>15</sup> Though the harbor was wide, and protected from the open Atlantic by Long Island, it was soon apparent that it had shortcomings: the harbor was very shallow and the long channel was difficult for ships to navigate.<sup>16</sup> The inhabitants of New Haven recognized early on that some sort of wharf or channel, extending into the shallow harbor, would be necessary if their commercial aspirations would be realized. Within a few years of settlement the following petition appears in the town records:

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<sup>14</sup> Horwitz, *supra* note 5, at 113.

<sup>15</sup> FLOYD M. SHUMWAY & RICHARD HEGEL, *NEW HAVEN: A TOPOGRAPHICAL HISTORY* 8 (1988).

<sup>16</sup> *Id.*

On the 5th August, 1644, Mr. Malbon, Mr. Lamberton and Mr. Evance, having *seriously* considered the *great damage* which this towne doth suffer many ways, by reason of the flatts which hinders vessels and boates from coming neare the towne when the tyde is anything low, did [ask the Court to] grant them Four days worke for *every man* in the towne fro sixteen to sixty years old towards the digging of a channell, and let them have the benefit of a *Wharfe*, and Ware house . . . .<sup>17</sup>

The General Court accepted their request, and New Haven's first wharf was constructed as a result of this conscription. Notably, the Court also established a committee that, in consultation with the governor, magistrates, and undertakers of the project, would "agree up such tearmes as may be equal and for the public good."<sup>18</sup> The Court provided for oversight of the project to ensure that the Wharf would indeed serve the public. In this very early construction project, we see both compelled contribution toward and public regulation of an infrastructure improvement. New Haven's legal institutions were still infant, but the basic problems that will face the city in the provision of public goods – how to solicit public contribution, and how to monitor the product – are present in embryonic form, and the Court is certainly aware of them. The episode shows primitive legal institutions responding to enduring practical pressures.

The Long Wharf itself originated in a grant of land from the city to Jonathan Atwater and several partners in 1717. Not much was accomplished toward actual construction for twenty years, however, and in 1736 Atwater sold most of his interest to several other proprietors. They operated as an of unincorporated partnership, and through a mixture of subscriptions from the public and wharfage fees, promptly extended the

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<sup>17</sup> Thomas R. Trowbridge, *History of the Long Wharf in New Haven*, in 1 PAPERS OF THE NEW HAVEN COLONY HISTORICAL SOCIETY 83, 85 (1865).

<sup>18</sup> *Id.* at 86.

wharf about 400 feet into the harbor.<sup>19</sup> Through the 1840s and 50s all of the income from wharfage and leases was invested back into the wharf itself, in the form of extensions and physical repairs.<sup>20</sup> The income could barely cover the cost of upkeep, no dividends were paid to the proprietors, and by 1758 the partnership had mostly folded.

In 1760 the proprietors of the wharf approached the Connecticut legislature for assistance, explaining that the wharf “is much gone to decay and wants repairing, and that the owners being numerous and living remote from one another, and some of them careless about said wharf or unable or incapacitated to contribute to said repairs, it is impracticable equitably to rectify and keep in repair said wharf under present circumstances.”<sup>21</sup> In response the legislature granted a charter to the “Union Wharf Company in New Haven.” It proclaims the former proprietors of the Union Wharf “incorporated and imbodyed into one intire company for the purpose of rectifying, repairing and managing said wharf for the future.”<sup>22</sup> The charter does not enumerate the standard incidents of corporate personality; instead the sole power is granted “to meet and hold their meetings to consult about and transact, do and order the matters of repairing and managing said wharf.”<sup>23</sup> That is the substance of the corporate grant. In essence, the charter seems to confer a rudimentary governance structure, and then the power to “transact” for the circumscribed purpose of the maintenance of the wharf. There is no explicit provision for limited liability, nor is there an authorization for issuing

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<sup>19</sup> Anisha S. Dasgupta, *Public Finance and the Fortunes of the Early American Lottery*, 24 QUINNIPIAC L. REV. 227, 242 n.76 (2006).

<sup>20</sup> Trowbridge, *supra* note 17, at 90.

<sup>21</sup> 9 THE PUBLIC RECORDS OF THE COLONY OF CONNECTICUT 400 (Charles J. Hoadly ed. 1880).

<sup>22</sup> *Id.*

<sup>23</sup> *Id.* at 401.



capital stock. In short, it is hard to perceive how the corporate form alone would improve the financial situation of wharf. It may, however, have led to more efficient management, since local partners to act without the consent of “remote” ones.

Indeed, the Union Wharf Company consistently lacked funds for maintenance and improvement. The one partial success was the construction, in 1770, of a pier off the shore, not connected to the main wharf.<sup>24</sup> Remarkably, it was funded almost entirely by public subscriptions. There does not appear to be any sense that subscribers were thereby becoming shareholders in the company. Shortly before the Revolution money was scarce; the list of sixty subscribers contains people contributing salt, beef, molasses, brandy, and labor, anything to help the effort. As a nineteenth-century historian describes it: “It is probably one of the most extraordinary subscriptions on record, as a public spirited offering from a community interested in the welfare of a great public enterprise.”<sup>25</sup> The subscriptions were motivated by “public-spiritedness”; the corporate form was not *per se* used to mobilize and aggregate the capital by its profit-making power.

For other improvements, when public subscriptions were insufficient, the Union Wharf Company used lotteries to raise capital.<sup>26</sup> In 1772, the Company petitioned the state legislature for “liberty to set up a lottery” to raise funds to extend Long Wharf out to the pier where ships unloaded at high tide. The legislature granted permission to the Company for the lottery. One notable stipulation of the grant is that the fees collected on the part of the wharf constructed with lottery funds would go to Yale: “the wharfage of such part of said wharf as shall be built with said monies so to be raised . . . [would be]

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<sup>24</sup> Dasgupta, *supra* note 19, at 243.

<sup>25</sup> Trowbridge, *supra* note 17, at 92.

<sup>26</sup> For a general account of lotteries as a technique of public finance in early America, see Dasgupta, *supra* note 19.

appropriated to the use of Yale College.”<sup>27</sup> Since the state was granting a privilege in allowing the Company to hold a lottery, it apparently felt free to attach conditions.

The amount raised by the lottery is not recorded, but it apparently was insufficient.<sup>28</sup> When the proprietors petitioned the legislature for permission to run another lottery, they explained the sum raised by the first was “small and inadequate to Effect [its] very beneficial purposes.”<sup>29</sup> The legislature granted permission to raise £3000 by lottery; the actual yield, however, was shy of £100. Both lotteries had failed of their purpose, and the company was in dire financial straits. Through 1799, no dividends had ever been paid for to the owners of the wharf. All of the income had been spent upon repairs.<sup>30</sup>

The most effective mode of raising capital for the wharf was through voluntary subscriptions. From 1802 to 1810 the about \$16,000 was raised through subscriptions. Trowbridge explains that “the vast majority of these contributors generously relinquished all rights in the wharf which they might have acquired by donations.”<sup>31</sup> These contributors, in other words, were not investing in the Company to profit directly by returns. Trowbridge indicates that these contributors were moved by an altruistic public spiritedness; one suspects that many also expected to profit indirectly from increased commerce on the wharf. This blend of motives for investment will recur in later infrastructure projects.

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<sup>27</sup> *Id.* at 243.

<sup>28</sup> *Id.* at 244.

<sup>29</sup> *Id.*

<sup>30</sup> Trowbridge, *supra* note 17, at 95.

<sup>31</sup> *Id.* at 96.

The proprietors of Long Wharf seemed perennially to have been unable to make repairs and improvements that they believe would have benefited the community. It was a public good that was underprovided, to use the language of economics.<sup>32</sup> There is every reason to believe that if more sophisticated financial technologies were available—such as long-term public debt finance, or more advanced organizational forms—more cost-justified work on the Wharf would have been done.

The story of Long Wharf, then, demonstrates what happens when “institutional infrastructure” lags behind the needs of “physical infrastructure,” and cannot provide the means to effectuate important public projects. There were two salient weaknesses in the method of financing the project. First, the lottery was ineffective as a method of public finance. Both of the lotteries held for Long Wharf raised completely insufficient funds. Moreover, the lotteries were probably inequitable. The Governor of Massachusetts wrote, in 1790, that lotteries “withdraw the people’s attention from industry, & . . . distract them with the hope of gain by chance & accident. They also . . . [laid] a very unequal tax upon the people at large; the indigent, & embarrassed . . . being . . . generally the greatest adventurers.”<sup>33</sup> The same criticism would apply to New Haven.

Second, the corporate form of “Union Wharf Company” was not well utilized to aggregate capital. The corporate charter only granted powers very narrowly for the highly specific purpose of effectuating repairs. It is unclear whether under the charter (which would be construed narrowly by a court)<sup>34</sup> the Union Wharf Company would have the

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<sup>32</sup> See, e.g., JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 182-87 (3d ed., 2010) (discussing the optimal provision of public goods).

<sup>33</sup> HANDLIN & HANDLIN, *supra* note 4, at 69.

<sup>34</sup> E.g., *Charles River Bridge v. Warren Bridge*, 36 U.S. 420, 421-22 (1837) (holding that corporate charters are to be strictly construed).

independent power to borrow money secured by a lien on property or the receivables of the wharfage. Additionally, there is no provision in the charter for limited liability for the owners of the Wharf, which would have been an inducement to further investment. Finally, the charter does not authorize the issuance of stock, and “subscribers” to the corporation do not seem to have obtained any ownership interest in it at all. Thus the corporate form was not made the engine of fund-raising: People would invest as a “public spirited” gesture or because of the expectation of some indirect gain, and not because they expected to obtain any direct profit or dividend.

### III. “*Vents for Industry*”: *New Haven’s Turnpikes*

In 1862 Ralph Waldo Emerson enumerated some of the benefits of good roads: “When the Indian trail gets widened, graded, and bridged to a good road,—there is a benefactor, there is a missionary, a pacificator, a wealth-bringer, a maker of markets, a vent for industry.”<sup>35</sup> In the early Republic there were many powerful advocates for improving the national transportation network, for opening up “vents for industry” and uniting the nation socially and economically. The broad economic benefits flowing from this sort of infrastructure development are well-known.<sup>36</sup> George Washington recognized the need to “improve the country’s natural advantages by developments in

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<sup>35</sup> Ralph Waldo Emerson, *American Civilization*, ATLANTIC MONTHLY, Jan.-June 1862, at 503.

<sup>36</sup> Albert Fishlow, *Internal Transportation in the Nineteenth and Early Twentieth Centuries*, in 2 THE CAMBRIDGE ECONOMIC HISTORY OF THE UNITED STATES 543, 546 (Stanley L. Engerman and Robert E. Gallman eds., 2000) (“An essential attribute of transport investment . . . is that its social returns tend to be large.”).

transportation.”<sup>37</sup> Albert Gallatin, Jefferson’s Secretary of the Treasury, authored an influential report on roads and canals, where he opined: “Good roads and canals will shorten distances, facilitate personal and commercial intercourse, and unite, by a still more intimate community of interests, the remote corners of the United States.”<sup>38</sup>

The first substantial internal improvement projects in the United States were the construction of better facilities for overland transport.<sup>39</sup> Starting in the late eighteenth century there was a flurry of turnpike construction throughout the country. By 1810, Connecticut alone had constructed 1148 miles of turnpikes, at a cost of about a thousand dollars a mile, more than any other state in the Union.<sup>40</sup> Connecticut was “a real leader in the turnpike movement.”<sup>41</sup> These turnpikes were almost exclusively the result of private enterprise rather than public investment. Throughout the Northeast, turnpike companies were the “leading type of business organization” in the first thirty years of the nineteenth century.<sup>42</sup> In that period, one-third of all incorporations in Connecticut were for turnpikes.<sup>43</sup> As such the turnpike companies are fundamental to any analysis of the nature of the corporation in early American law.

The turnpike charters that populate Connecticut’s statute books follow the same basic form, and indeed tend to repeat significant portions of language. The charter for the Hartford and New Haven Turnpike can serve as a paradigm. This turnpike company was

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<sup>37</sup> CARTER GOODRICH, *GOVERNMENT PROMOTION OF AMERICAN CANALS AND RAILROADS, 1800-1809*, at 3 (1960).

<sup>38</sup> *Id.* at 28-29.

<sup>39</sup> Fishlow, *supra* note 36, at 548.

<sup>40</sup> Fishlow, *supra* note 36, at 549 tbl. 13.1.

<sup>41</sup> 4 JOSEPH STANCLIFFE DAVIS, *ESSAYS IN THE EARLIER HISTORY OF AMERICAN CORPORATIONS* 221 (1917).

<sup>42</sup> Daniel B. Klein & John Majewski, *Economy, Community, and Law: The Turnpike Movement in New York, 1797-1845*, 26 *LAW & SOC’Y REV.* 469, 470 (1992).

<sup>43</sup> *Id.* tbl. 1.

not the first time the state had granted a monopolistic franchise on that route: In 1717 John Munson was granted an exclusive privilege to operate a common carrier between New Haven and Hartford for seven years.<sup>44</sup> In exchange for this monopolistic grant he was required to depart New Haven on the first Monday of every month and return within a week, the coldest winter months excepted. Providing transportation through regulated private enterprise thus had a pre-history.

The corporate charter for the Hartford and New Haven Turnpike exhibits several notable advances on the Union Wharf Company's charter. First, the company was granted the power of eminent domain, and required to post a bond of \$50,000 dollars in the State Treasury in order to secure damage payments. Investing a corporation with the state's power of eminent domain was common in that era: "In the first half of the 19th century, states freely lent this power [eminent domain] to private businesses that served 'public' purposes—canal or turnpike companies, very notably."<sup>45</sup> If damage payments were below market value (and the records are too scant to make a judgment), this would have involved involuntary private subsidies for the particular public good. All in all, clothing turnpike companies with eminent domain power is in keeping with the dynamic, rather than static and agrarian, conception of property in land that took root in the early nineteenth century.<sup>46</sup>

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<sup>44</sup> FREDERIC J. WOOD, *THE TURNPIKES OF NEW ENGLAND* 349 (1919).

<sup>45</sup> LAWRENCE M. FRIEDMAN, *A HISTORY OF AMERICAN LAW* 182 (2d ed. 1985).

<sup>46</sup> See HORWITZ, *supra* note 5, at 30 ("As the spirit of economic development began to take hold of American society in the early years of the nineteenth century, however, the idea of property underwent a fundamental transformation—from a static agrarian conception entitling an owner to undisturbed enjoyment, to a dynamic, instrumental, and more abstract view of property that emphasized the newly paramount virtues of productive use and development."); see also JAMES WILLARD HURST, *LAW AND THE CONDITIONS OF FREEDOM IN THE NINETEENTH CENTURY UNITED STATES* 9-10 (1956).

The charter specifies that “there shall be eight hundred shares” of stock in the corporation,<sup>47</sup> and that the shares are “transferable.”<sup>48</sup> It further authorizes dividends to the shareholders, when the income from the tolls exceeds the costs of maintenance and repair. When, however, the turnpike company has returned to its investors an interest of twelve percent *per annum*, “the said road and bridges shall be, and remain discharged from said toll.”<sup>49</sup> That is, once a certain level of profit is reached, the turnpike reverts to public ownership.

The Company, according to the charter, would be very closely regulated. The charter creates a committee of two to oversee the Company’s operations. The charter does not explicitly require that the committee be disinterested; it is clear, however, that they are meant to represent the public interest, and all vacancies would be filled by appointments from the General Assembly. The committee is empowered, at the Company’s expense, to inspect the roadway and bridges of the turnpike, and make a report to the General Assembly; to “determine how much money is necessary and proper to be laid out from time to time, in repairs and betterments, on said road and bridges”; and to fix the place of the toll gates.<sup>50</sup> The charter also sets out in great detail the fares that can be charged at the toll.<sup>51</sup> These vary based on the size of the vehicle and the purpose of the trip. There are also a number of exemptions from the toll: people passing

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<sup>47</sup> Resolve Incorporating the Hartford and New Haven Turnpike Company, 1837 Conn. Spec. Acts 1298.

<sup>48</sup> *Id.* at 1300.

<sup>49</sup> *Id.*

<sup>50</sup> *Id.* at 1299.

<sup>51</sup> *Id.* at 1298-99.

through to a place of worship, men engaged in military service; people “going to and from gristmills,” and people “attend[ing] to their ordinary farming business.”<sup>52</sup>

The charter grants the company more extensive powers that had been granted to the Union Wharf Company, and it is given far more latitude to devise its own internal procedures of governance in by-laws. The Company is granted authority

to sue and be sued in all courts of record, to appoint such officers, to ordain and establish such by-laws, ordinances and regulations, as may be necessary for the government of said company, and the raising such sum or sums of money as shall be necessary for the discharging said damages, making said road, building the necessary bridges, and keeping both in good repair, subject however to be repealed . . . .<sup>53</sup>

While the charter does not confer an official title on James Hillhouse, he is the only future officer mentioned by name, and is clearly at least *primus inter pares*. The charter sets a date for the first meeting at the corporation, for the purpose of choosing officers and adopting any necessary bylaws. Significantly, “the members of said company shall have as many votes in such meetings as they hold shares in said company.”<sup>54</sup> This provision for shareholder control was lacking from the Union Wharf Charter. The power of the shareholders is, of course, attenuated by the broad powers granted to the committee of the General Assembly. However, the shareholder vote provision indicates, at least, that owners of the company’s capital were entitled to some voice in its management. Theoretically, the corporation was meant to serve the interests of shareholders as well as the public. This would be an inducement to invest.

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<sup>52</sup> *Id.* at 1299.

<sup>53</sup> *Id.* at 1298.

<sup>54</sup> *Id.*



The first meeting of the Hartford and New Haven Turnpike Company was held in November 1798. By December, it was announced that all shares in the company had already been purchased, and there was a waiting list of more persons eager to buy.<sup>55</sup> Apparently “as much joy and excitement attended the opening of the turnpike in 1799 as greeted the railroad thirty-eight years later.”<sup>56</sup> Despite this enthusiasm, the company’s early financial performance was abysmal. Albert Gallatin, in the *Report* of 1808 cited above, gives some of the numbers. The construction of the road cost \$79,261, which amounts to \$2280 per mile for the 34.75 mile length of the road. About \$18,000 of the capital was spent to purchase the land through which the road passes. According to Gallatin, the net income of the turnpike from the tolls (presumably at the time of the report), deducting for annual repairs and expenses, was less than \$3000 dollars.<sup>57</sup> That is a return of less than four pennies on the dollar to investors.

Over the next several years the General Assembly began to generalize the regulation of the proliferating turnpike companies. Indeed, one historian has written that “modern public-service commissions were anticipated by Connecticut as early as 1803.”<sup>58</sup> The Act of 1803 provided for two commissioners to be appointed annually to inspect turnpike roads and require repairs and improvements. The commissioners were empowered to order that the turnpike gates be open until the repairs were completed.<sup>59</sup> The Act also provides that turnpike companies and their employees “may, and they are hereby empowered to make such drains, and clear such water-courses, and places where

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<sup>55</sup> Wood, *supra* note 44, at 349-50.

<sup>56</sup> *Id.* at 350.

<sup>57</sup> This section of Gallatin’s report is reproduced in Wood, *supra* note 44, at 14.

<sup>58</sup> *Id.* at 34.

<sup>59</sup> An Act Relating to Turnpike Roads § 2, THE PUBLIC STATUTE LAWS OF THE STATE OF CONNECTICUT 641 (1839).

water may drain off from such turnpike road, into or through any person's land, or possessions, so far as may be necessary, sufficiently to drain the water off, from such turnpike road." This is another instance of the abrogation of the common law of property in the interest of economic development.

By some measures, the turnpike movement was an astonishing success. In the aggregate the turnpike companies mobilized over a million dollars to construct more than one thousand miles of roads in Connecticut. In the northern states as a whole, over 11,000 miles of turnpikes were constructed from the commercial boom of the 1790s to 1830. Most of that was completed by 1820, and in New England even earlier.<sup>60</sup> This represents an impressive mobilization of capital and resources.

Why did the turnpike boom happen when it did? Unlike railroads and steamboats, the turnpike boom was not precipitated by technological discovery. The Revolution and the birth of a nation at the verge of vast, unexploited continent perhaps contributed to the energy and timing of the project. More importantly, Connecticut had enhanced legal and institutional forms since the Long Wharf charter to channel the energy for public improvements. If "politics in the grand sense" and the deepest "organization of power" were the preoccupations of the eighteenth century, at the nineteenth century "was prepared to look at the law more casually, as an instrument to be used."<sup>61</sup> The turnpikes are an early instance of this kind of American pragmatism.

The central feature of the charters is the exclusive franchise and the power to collect tolls. This is the engine of the whole enterprise. This was enforced by laws against

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<sup>60</sup> Fishlow, *supra* note 36, at 548-49.

<sup>61</sup> HURST, *supra* note 46, at 10.

“shunpiking,” and the penalty of double damages for toll evaders.<sup>62</sup> The tolls functioned as a kind of targeted taxation. One person scribbled in a common-place book in 1795: “no tax can operate so fair and so easy, as that of paying turnpike toll, as each person is taxed in proportion to the benefit he derives from a good road, and all strangers and travelers are made equally tributary to its support—what can be more just?”<sup>63</sup>

Additionally, the corporate form and permission to issue stock allowed capital to flow in from beyond the confines of a single municipality. The Union Wharf Company had been unable to raise enough money through subscriptions to pay its expenses; it therefore had to resort to lotteries as device of public finance, which were unsuccessful. The turnpike companies, by contrast, were able to muster sufficient capital, at least for initial construction. Whatever the motives of the individual shareholders, the turnpike companies were far more successful in raising money than the Wharf. This may be due, in part, to organizational advances in the corporation. The charters authorized turnpike companies to issue shares that would pay dividends from profits. The shares were liquid, and, indeed were bought and sold with some frequency.<sup>64</sup>

Hurst explains the need the delegate certain public functions to corporations by reference to the political and economic realities of the time: “We felt the need to promote a volunteer muster of capital for sizable ventures at a time when fluid capital was scarce and there were severe practical limits on the government’s ability to tax in order to

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<sup>62</sup> An Act Relating to Turnpike Roads § 11, THE PUBLIC STATUTE LAWS OF THE STATE OF CONNECTICUT 643 (1839).

<sup>63</sup> Klein & Majewski, *supra* note 42, at 481.

<sup>64</sup> Rich Mancill, The Turnpike Era in New Haven: The Role of Corporations, Entrepreneurs, and Social Norms in Creating Early America’s Transportation Infrastructure (unpublished seminar paper on file with author).

support direct intervention in the economy.”<sup>65</sup> The record of turnpike companies in Connecticut substantiates Hurst’s suggestion. But there is still a fundamental puzzle in this story of the turnpikes’ partial success: they were almost all unprofitable as private ventures. The Hartford and New Haven Turnpike was not an outlier. In New England as a whole, only five or six turnpikes out of 230 were demonstrably profitable ventures.<sup>66</sup> There are several plausible explanations for this pervasive unprofitability. Shunpiking was widespread and prohibitions perhaps under-enforced.<sup>67</sup> The marginal advantage over common roads was slim, and perhaps not enough to justify paying the toll.<sup>68</sup> The state government’s energetic regulation of the turnpike companies may also have contributed to financial problems – there were stringent preemptory upkeep laws, rates were fixed and inflexible, and the exemptions from toll paying were broad. Another possible explanation for unprofitability is that, given the quasi-public nature of these corporations, the corporations and their directors may have viewed their own purpose as greater than just paying high dividends to investors. The directors may have viewed their involvement in the turnpike as philanthropic, or as a method to enhance their social status and prestige. Most likely all of these factors contributed to the companies’ unprofitability.

Another seeming oddity is that people persistently bought stock in these corporations that were almost uniformly unprofitable. In New Haven, all six of the chartered turnpike companies quickly sold out of stock.<sup>69</sup> It seems unlikely that people, seized by some speculative fever, were investing solely for direct personal profit, when

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<sup>65</sup> HURST, *supra* note 46, at 23.

<sup>66</sup> Fishlow, *supra* note 36, at 551.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> Mancill, *supra* note 64.

there was such widespread financial difficulty. Many, however, would have profited indirectly from the construction of the turnpikes. The turnpikes would have facilitated commerce and reduced shipping costs. Moreover, property values adjacent to the turnpikes may have increased in value as a result of construction. Indeed, many of the subscribers to the Company's stock lived on or near the path of the turnpikes.<sup>70</sup> People may also have been induced to invest by a lingering sense of civic duty; if the Union Wharf had been able to raise a substantial sum just through voluntary subscription, the turnpikes surely could have raised some capital with a remote prospect of gain. Additionally (though this is necessarily speculative) there may have been significant social pressure to invest; one suspects that people of means who failed to contribute anything, and tried to free-ride on the efforts of others, might have found their social standing significantly diminished.

#### ***IV. "A Work Which Is Itself Magnificent": The Farmington Canal***

The Farmington Canal ran from the New Haven harbor about 80 miles north to Northampton, Massachusetts. The immediate inspiration for the Farmington Canal was the dazzling success of the Erie Canal in New York.<sup>71</sup> The Erie was a financial and physical marvel. It extended 364 miles, from New York City to the Lake Erie, and was built between 1817 and 1825. It was also highly profitable. "Few public investments were so well rewarded or so immediate in their impact."<sup>72</sup> Before construction was even complete the canal had collected over one million dollars in revenue. In its first decade of

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<sup>70</sup> *Id.*

<sup>71</sup> ROLLIN G. OSTERWEIS, *THREE CENTURIES OF NEW HAVEN, 1638-1938*, at 244 (1953).

<sup>72</sup> Fishlow, *supra* note 36, at 554.

operation, the annual net gain was 8% of the total cost of the canal.<sup>73</sup> The Erie Canal slashed transportation costs dramatically, as agricultural products floated east and manufactured products and immigrants floated west.<sup>74</sup> It confirmed New York as the great commercial *entrepôt* of the nation.<sup>75</sup> Finally, it was a source of national pride, an emblem of American ingenuity, energy, and potential.

New Haven was eager to emulate this success. James Hillhouse was a particularly emphatic advocate of a canal to open access the Farmington Valley and establish New Haven as a commercial center. The legislature incorporated “The President, Directors, and Company of the Farmington Canal” in May of 1822. As with the turnpike companies, the charter created a hybrid entity, with elements of a for-profit firm and a public instrumentality. The charter grants the normal catalogue of corporate powers – to sue and be sued, to establish by laws and other modes of governance, to hold land, to appoint officers, to employ laborers.<sup>76</sup> It also grants all incidental powers related to the purpose of incorporation. The company is authorized to issue as many shares of stock “as shall be necessary to carry into complete effect, the entire object of said corporation.” The shares are fully transferable.<sup>77</sup> Finally, the act explicitly furnishes the company with the power “to enter upon, and take possession of, and use . . . any lands, waters and streams necessary for the prosecution of the improvements intended by this act,” thus once again lodging the power of eminent domain in a corporation.

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<sup>73</sup> *Id.*

<sup>74</sup> PETER L. BERNSTEIN, *THE WEDDING OF THE WATERS: THE ERIE CANAL AND THE MAKING OF A GREAT NATION* 26 (2005).

<sup>75</sup> *Id.* at 27.

<sup>76</sup> *THE ACT INCORPORATING THE PRESIDENT, DIRECTORS AND COMPANY OF THE FARMINGTON CANAL* 3 (New Haven 1838).

<sup>77</sup> *Id.*

One significant change in organizational structure from the turnpike companies is the creation of an explicitly disinterested commission with broad but carefully delineated responsibilities in the charter itself. The six-person “Board of Commissioners” is first directed to survey and lay out the course of the canal. The fact that the Act lodges this determination in the Board, who were prohibited from having any financial interest in the corporation, suggests that the legislature did not want to desire for profit to warp the course of the canal.<sup>78</sup> The Board is also empowered to hear all claims for damages by those whose land was taken; the act provides that the Board “shall make a just and equitable estimate and appraisal of the loss or damage, if any, over and above the benefits and advantages to the respective owners or proprietors.”<sup>79</sup> The subtraction of any benefit from the damage award reveals an affirmative policy in favor of development, consistent with the “dynamic” conception of land identified by Horwitz.<sup>80</sup> Landowners are forced not only to surrender part of their plot, but to accept a benefit as well. The company and its workmen are also permitted to enter any lands with equipment to repair the canal.<sup>81</sup>

The commissioners are also required annually to inspect the canal, bridges, and other appurtenances, and if they find the condition unsatisfactory, to suspend the collection of tolls until the defects are repaired. The act also give to the Board of Commissioners the power to “open subscriptions for the stock of said corporation, on such terms and conditions, and to such an amount, as they shall judge necessary.”<sup>82</sup> In the modern corporation, the decision to issue stock to raise capital paradigmatically belongs

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<sup>78</sup> *Id.* at 4-5.

<sup>79</sup> *Id.* at 5.

<sup>80</sup> See *supra* note 46 and accompanying text.

<sup>81</sup> *Id.*

<sup>82</sup> *Id.* at 8.

to the directors.<sup>83</sup> Here, the power sharing arrangement between the disinterested commissioners and the elected officers of the corporation indicates the mixed public-private nature of the corporation, and an ambiguity about whose interest it is in fact intended to serve. Finally, the board is charged with setting toll rates, provided that annual dividends to the company never exceed twelve percent. Simeon Baldwin was the first Chairman of the commission.

Primarily through the tenacious efforts of Simeon Baldwin, Judge Benjamin Wright, who had been chief engineer of the Erie Canal, was recruited to lay out the Farmington Canal. He estimated the costs at about \$421,000. After Massachusetts granted to charter for the portion of the canal that would run through its state, stock subscriptions for the Farmington Canal were offered to the public in July of 1823. Although a substantial sum was raised, it was not sufficient to begin construction. The total amount contributed by individual stockholders over the whole life of the Farmington Canal Company was \$237,195 – well below what was required to undertake a project of this scale.

As a result – and this is a second significant difference from the financing of turnpike companies – the state and city subsidized the canal company. The State of Connecticut did not make any direct contributions from its treasury to the enterprise. The city made two rather small ones: it promised to loan \$100,000 in installments, secured by a mortgage on the canal, but then repudiated its loan after the first \$20,000. When it reneged it also relinquished its mortgage, in effect converting the \$20,000 into a gift.<sup>84</sup>

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<sup>83</sup> DEL. CODE ANN. tit. 8, § 151.

<sup>84</sup> HENRY F. WALRADT, *THE FINANCIAL HISTORY OF CONNECTICUT FROM 1789-1861*, at 93-94 (1912).



Additionally, the city contracted to pay the company \$3000 per year to use water from the canal.<sup>85</sup> This was a small portion of the 1.5 million dollars eventually sunk into the enterprise.<sup>86</sup> Indeed, the government subsidies to the canal were indirect. Section 22 of the original charter provided that all stock in the company shall not “be subject to any taxation whatever.”<sup>87</sup> A subsequent act of 1824 exempted all corporate profits from taxation as well. The preamble explained that the canal “if completed, would be of great public utility” and that the act was passed “for the purpose of inducing persons to subscribe to the Stock.”<sup>88</sup> The company was exempt from taxation unless its net annual income exceeded 6% of its capital stock, in which case it was required to pay one-sixth of the excess income.<sup>89</sup>

The State employed a second major tactic of indirect finance. It granted a charter to the Mechanics Bank in 1824 with the stipulation that it would contribute \$200,000 to the Canal Company’s stock. In return, the capital stock of the bank was forever exempt from all taxation.<sup>90</sup> Similarly, in 1831 the State chartered another bank with a similar stipulation to buy \$100,000 of company stock, in return for tax exemptions. New Haven itself (thought not the State) invested in \$100,000 of stock at a moment of particular financial peril.

With respect to “institutional and legal infrastructure,” there are a few advances on turnpike companies that are notable because they presage major changes in the future,

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<sup>85</sup> *Id.*

<sup>86</sup> The figure comes from WALRADT, *supra* note 84, at 94.

<sup>87</sup> THE ACT INCORPORATING THE PRESIDENT, DIRECTORS AND COMPANY OF THE FARMINGTON CANAL 11 (New Haven 1838).

<sup>88</sup> *Id.* at 13.

<sup>89</sup> *Id.*

<sup>90</sup> WALRADT, *supra* note 84, at 93.

even if they were not immediately effective here. First, the Canal Company was able to attract capital from a wider geographical area. Turnpike finance was almost completely local, with the lead investors often situated right on the path of the proposed road. Though more New Haveners invested in the canal than any other place, there was significant investment from New York, which, if anything, would have been hurt by a successful canal operating to the North. This indicates greater liquidity in capital markets.<sup>91</sup>

The change in commercial attitude, from local subscription to foreign speculation, is captured well in a letter from James Hillhouse to Simeon Baldwin from March 1823:

In conversation last evening, the subject of the projected canal thro' Connecticut was mentioned, and some surprise was expressed that its friends did not avail themselves of the present disposition in this city to speculate in almost every thing. Persons better able to judge than myself were of opinion, that, if the books were opened here under the care of some respectable person well known in the commercial community, the stock, connected as it is understood to be with a bank, would be taken of immediately.<sup>92</sup>

In the end, there were 924 shares of Farmington Canal stock purchased in New York City, out of a total of 5414. Individual citizens of New Haven, by contrast, bought 1229. Whereas the Union Wharf had been unable to get permission to sell lottery tickets in New York, and turnpike investment had been local, the Farmington Canal was able to tap into a larger well of capital. This was probably facilitated by the explosion of banks that

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<sup>91</sup> A wider geographical range of investors would create pressure make the interest of shareholders more central to corporate governance, because investors would not longer be able to expect any indirect benefits or increases in social prestige. Though there is not hint of this in the Farmington Canal, the change in investor constituencies may have contributed to the eventual ascendancy of the “classical” idea of the corporation.

<sup>92</sup> Letter from James Hillhouse to Simeon Baldwin, Jan. 24, 1824 (on file at the New Haven Historical Society).

occurred at the beginning of the nineteenth century: the number of state banks doubled – from 117 to 232 – in five years between 1811 and 1816.<sup>93</sup> As Hillhouse’s letter indicates, these banks could help market securities out of state.

Another intriguing development is the possibility of foreign investment in the canal. In the file of the New Haven Historical Society is an instrument or bond between the Farmington Canal Company and a Dutch financier named Wilhelm Willink. Willink was a wealthy Amsterdam merchant who had been a member of the Holland Land Company (which had held title to some 5 millions acres of land in western New York and Pennsylvania) and an investor in the Louisiana Purchase.<sup>94</sup> The bond is duly signed by Hillhouse as President, and bears the Company seal. The transaction involved a loan of \$500,000 to be paid back in installments, at an interest of 5% per annum. The Company secured the loan by granting all its title in the canal and receivables to the Willink: “more effectually to secure the payment of said bond, [the Company] doth give, grant, bargain, sell, set over, assign, and confirm, unto [Willink], and to his heirs, and assigns forever, all the Right, Title, Interest, and Estate, which [it] hath in and to the Farmington Canal, so called . . . with full power to collect, & receive all tolls, and other emoluments arising from said canal . . . .” There is no mention of this bond in the few published histories of the canal, and there is no sign of the transaction on the accounting records of the company, so apparently the bond was never executed. Nevertheless, the bond is hint of

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<sup>93</sup> Hugh Rockoff, *Banking and Finance, 1789-1914*, in 2 THE CAMBRIDGE ECONOMIC HISTORY OF THE UNITED STATES 643, 647 (Stanley L. Engerman and Robert E. Gallman eds., 2000)

<sup>94</sup> AUGUSTUS J. VEENENDAAL, JR., SLOW TRAIN TO PARADISE: HOW DUTCH INVESTMENT HELPED BUILD AMERICAN RAILROADS 9 (1996).

the wave of foreign capital that was about to reach the United States, and would help to fund the railroad boom.

A final hint of things to come was the possibility of Federal involvement in the project. Hillhouse had been a United States Senator from 1796-1810, and lobbied the federal government aggressively for assistance with the project.<sup>95</sup> In 1830 Samuel Butman, a Representative from Maine, reported a bill from the Committee on Internal Improvements to the House to purchase, for the United States, 250 shares of stock in the Farmington Canal Company. The bill never passed, but it anticipates the modern era, where the federal government is intimately involved local infrastructure development. All in all these three precocious innovations, though they did not benefit the Farmington Canal much, suggest a hunger for legal devices to mobilize ever more capital and to release commercial energies.

As it was, the Company labored constantly in a state of “financial embarrassment” almost from the start.<sup>96</sup> Construction began in 1825 and already by 1827 the company had depleted all the funds from the stock subscription, and was in a state of “financial paralysis.”<sup>97</sup> This was only partially relieved by a subscription of stock from the City. Throughout the construction phase money was scarce; there were long delays when the company was unable to pay creditors. The company limped along, weighed down by debt, the income from tolls never covering the constant damage from freshets and vandals.

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<sup>95</sup> There are copies of his correspondence with the Senate on file at the New Haven Historical Society.

<sup>96</sup> Watrous, *supra* note 1, at 359.

<sup>97</sup> *Id.*

A major effort to revive the company was made in 1836. The formally separate entities managing the two branches of the canal – one covering Connecticut, one Massachusetts – were merged into a single company called the “New Haven and Northampton Canal Company.” The merger resembled a Chapter 11 restructuring. The two companies were dissolved and the stock relinquished. The total loss of the two companies was \$1,039,041.62.<sup>98</sup> Creditors of the old companies could transfer their claims to the new entity, some at a discount. Some creditors would be paid with stock in the new entity. However, even this new capital structure was not enough to rescue the company. To use a distinction from bankruptcy law, the firm’s distress was economic rather than financial.<sup>99</sup> Meanwhile, the rapid advances in railroad technology made the canal increasingly obsolete. In 1846 a railroad was chartered to run alongside the canal. The canal closed for good in 1847.

The Farmington Canal Company, then, like the turnpike companies, was in isolation a financial disaster. It was never profitable. There is an old story, perhaps apocryphal, that only one shareholder ever received a dividend. He was a farmer who complained to the officers that no returns ever came in, and he was recommended, in response, to mow the grass along the tow-path. “This he did yearly to his great satisfaction and emolument.”<sup>100</sup> Nonetheless, the canal was built, and was in operation for nearly two decades. The legal devices employed by the state were instrumental. The corporation was able to pool together enough capital from different jurisdictions and two banks to excavate thousands of tons of dirt and open a channel of trade with the interior:

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<sup>98</sup> Watrous, *supra* note 1, at 360.

<sup>99</sup> BARRY E. ADLER ET AL., *BANKRUPTCY* 26 (4th ed. 2007).

<sup>100</sup> Watrous, *supra* note 1, at 359.

“a work which [was] itself magnificent,” as Governor Wolcott said at the groundbreaking ceremony.<sup>101</sup> However, to defend the Farmington Canal merely because it in fact was built or because of its “positive externalities” rings hollow when the Erie Canal to the south was so fabulously profitable, on its own terms.

Comparing the Erie Canal to the Farmington Canal is difficult. It may be that underlying, fundamental economic factors created the success of the former and failure of the latter; perhaps there was just not enough demand along the route of the Farmington Canal to make the construction of the canal cost-justified. On the other hand, it is possible that, despite the financial failure of the Company, the Canal generated enough positive externalities that its construction was, on balance, justified. One broadside published in New Haven in 1839 as part of an effort to induce investment argued:

The Canal is of vital importance to the City of New Haven, by furnishing new opportunities and facilities for business; by bringing into the center of the city an inexhaustible supply of water for public use in case of fire; by cleansing low grounds which had long been a nuisance; by improving the harbor; by furnishing valuable water privileges, which are improved for highly useful manufacturing establishments; and, in general, by conferring great advantages on every portion of the community.<sup>102</sup>

If this is case, then the Company could have been profitable if it had only properly internalized the benefits that it created. A different organizational structure may have rescued it.

Unlike the Farmington Canal, the Erie Canal was financed and built by the State. New York had an early experience funding water transportation projects through private franchise. In 1792 it had charter the Western Inland Lock Navigation Company to

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<sup>101</sup> Amy L. Trout, *The Story of the Farmington Canal* 4 (New Haven Colony Historical Society 1995).

<sup>102</sup> OSTERWEIS, *supra* note 71, at 248.

connect the Hudson River to Lake Ontario.<sup>103</sup> The Company ran out of funds, and never reached either of its designed end points. This episode may have cautioned New Yorkers against reliance on private corporation for large-scale infrastructure improvements.<sup>104</sup>

Canal plans lay dormant until the Gallatin Report renewed national interest in internal improvements, and New York State appointed a commission to examine the possible revitalization and westward expansion of the Western Company. The eventual commissioners “were emphatic on public financing, ownership and control of the Canal by New York State.”<sup>105</sup> In a report issued to the legislature they explained: “Such large expenditures can be made more economically under public authority than by the care and vigilance of any company.”<sup>106</sup> And so, largely due to the energetic politicking by the mayor of New York City, DeWitt Clinton, the legislature agreed to finance and built the project itself.<sup>107</sup> It authorized in 1812 borrowing \$5 million for the project, financed by bonds secured by the State’s credit.<sup>108</sup> The State’s guarantee made these bonds relatively low-risk securities, and the issue was an enormous success.<sup>109</sup> What DeWitt Clinton called “a powerful engine of commerce” had been set in motion.<sup>110</sup> Canal paper became “the hot new issue of the day.”<sup>111</sup> Wealthy New Yorkers were making large investments,

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<sup>103</sup> Julius Rubin, *An Innovating Public Improvement: The Erie Canal*, in CANALS AND AMERICAN ECONOMIC DEVELOPMENT 15, 21 (Carter Goodrich ed., 1961).

<sup>104</sup> Fishlow, *supra* note 36, at 553.

<sup>105</sup> BERNSTEIN, *supra* note 74, at 156.

<sup>106</sup> *Id.* at 157.

<sup>107</sup> CYNTHIA CLARK NORTHRUP, THE AMERICAN ECONOMY: A HISTORICAL ENCYCLOPEDIA 469 (2003).

<sup>108</sup> Fishlow, *supra* note 36, at 554.

<sup>109</sup> NORTHRUP, *supra* note 107, at 469.

<sup>110</sup> BERNSTEIN, *supra* note 74, at 233.

<sup>111</sup> *Id.*

John Jacob Astor alone invested some \$213,000,<sup>112</sup> and soon out-of-state investors began to participate. As a result, New York was able to borrow more each year. The first interest in canal paper from British investors came in 1822, and soon there were not enough bond issues to satisfy the voracious foreign appetite. British investors were buying positions in old issues at a premium. Foreigners would ultimately own more than half of the \$8 million canal debt.<sup>113</sup> Income from the Canal was enough that, even at the height of its indebtedness, New York's canal fund was operating at a surplus.<sup>114</sup>

The remarkable success of the Erie Canal invites a critical comparison with the Farmington Canal. Why was the project not, like Erie, financed through bonds? Why was it financed through equity, and not public debt? One explanation is political. A powerful faction in Connecticut favored improving navigation on the Connecticut River and building a Canal around Enfield Falls.<sup>115</sup> This would have improved Hartford's commercial standing. The Farmington Canal, by contrast, would boost New Haven at the expense of Hartford in competition for business in the Connecticut Valley. The so-called "Riverites" opposed the interests on the canal.<sup>116</sup> It may simply have been impossible to secure public financing for the canal with such a powerful set of opponents in Hartford. Additionally, in the absence of some targeted tax, the people of Hartford could not have been enthusiastic about guaranteeing with their tax dollars the debt of a canal company that would only hurt them economically.

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<sup>112</sup> *Id.* at 234.

<sup>113</sup> *Id.*

<sup>114</sup> *Id.* at 235.

<sup>115</sup> OSTERWEIS, *supra* note 71, at 247.

<sup>116</sup> Trout, *supra* note 101, at 2.



New Haven itself could not issue municipal bonds without the authorization of the state. State governments were fully sovereign and so could borrow money; cities needed an express grant from the state legislature to do the same. In 1732 the Connecticut legislature dissolved the town government of New London for borrowing “without the Authority of this Government.”<sup>117</sup> Though now long-term debt has justly been called “the foundation of modern urban life,”<sup>118</sup> it was not until after the Civil War that Connecticut even granted municipalities the power to issue bonds when they wished.<sup>119</sup>

Many public goods that municipalities can provide have a substantial life. The economic benefits from a canal or road, for example, are spread out across time. The advantage of debt financing of a public good of this sort is that it spreads the financial burdens across time correspondingly. The first generation of users, if forced to bear the whole cost, will be induced to undersupply the public good. Debt finance, by contrast, “provides the relevant mechanism for spreading the costs of public projects over time.”<sup>120</sup> The municipality can then pay back the debt either through taxes, assessments, or tolls.

The usefulness of debt financing for a canal is evident. A canal requires a large up-front investment and has a long useful life, and then the income from tolls can focus the burden on a specific group of users. The success of the Erie Canal vindicates this model. On the other hand, if a corporation is profitable, it could conceivably distribute the burden just as effectively, and enrich risk-taking investors through dividends. The corporate form imposes the risk of the enterprise on a group of investors, sometimes but

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<sup>117</sup> Dasgupta, *supra* note 19, at 234 n.22.

<sup>118</sup> ERIC H. MONKKONEN, *THE LOCAL STATE: PUBLIC MONEY AND AMERICAN CITIES* 1 (1995).

<sup>119</sup> CONN. GEN. STAT. tit. 8, § 17 (1875).

<sup>120</sup> ROBERT S. AMDURSKY & CLAYTON P. GILLETTE, *MUNICIPAL DEBT FINANCE LAW: THEORY AND PRACTICE* 11 (1992).

not necessarily beneficiaries of the public good; debt finance diffuses the risk through a jurisdiction who presumably will be the beneficiaries of the public good. In this way, debt finance can internalize the benefits created by a public goods, by imposing most risk on the likely beneficiaries.

It is difficult to undertake a critical analysis of the financial and legal mechanisms employed on the Farmington Canal, since there are so many moving variables. As a starting point, it is worth noting that the canal was built (by no means a certainty), and that the community realized some commercial benefit as a result. The canal would probably not have been built without some legal ingenuity, and advances on the institutional forms that generated the turnpikes. The indirect forms of public finance, through the compelled subscriptions of newly chartered banks and tax breaks, were lifelines at vital moments.

But one ultimately is left with the impression that a more public approach, like that taken on the Erie Canal, may have been the better choice. Debt financing with the guarantee of a State makes the investment more attractive to less daring investors. More capital could have been raised up front. There is some suggestion that the commissioners of the canal chose the cheapest methods of construction available out of shortage of funds, even when not in the long term interest of the company.<sup>121</sup> For example, the locks were built from wood apparently because it was the cheapest option; over the years, the wood rotted and had to be replaced, and great expense to the company.<sup>122</sup> A better initial job at construction may have made the canal more reliable, which would have encouraged more traffic, and generated more revenue, which then could have been re-

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<sup>121</sup> Trout, *supra* note 101, at 5-6.

<sup>122</sup> *Id.*

invested, in a virtuous cycle. As it was, the initial shortage of capital created a vicious cycle of shut-downs, loss of revenue, and inadequacy of funds. All in all, the Farmington Canal is a story of mixed success; an important public good was provided, due in large part innovative financial maneuvers. However, the city was not able to avail itself of a technique, municipal debt finance, which was known, and may have been more suitable.

## ***V. Conclusions***

“Internal improvements” of the sort discussed in this paper—wharves, roads, canals—are classic public goods.<sup>123</sup> Private providers of pure public goods cannot reap the benefits they produce. Basic economic theory holds that, as a result, “the private sector in fact underprovides public goods because of the free-rider problem.”<sup>124</sup> One does not have to contribute to public goods in order to enjoy them, so provision for them will be less than socially optimal. Did New Haven underprovide public goods by delegating provision to private corporations? Calculating the “socially optimal” amount of wharves, turnpikes or canals would be complex; suffice it to say, however, that New Haven was not paralyzed by the free rider problem in providing them. A tremendous amount of labor and capital was directed toward significant infrastructure development: a wharf and a pier, hundreds of miles of roads, and an eighty-mile canal. These are not mean achievements.

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<sup>123</sup> Technically speaking, economists might regard these as “impure” public goods, because in principle the effect of tollgates and wharfage fees is to make the good excludable. They can still, however, be analyzed as public goods because the tolls were not universally applicable and perfectly enforced, and because the goods result in positive externalities which are not remunerated.

<sup>124</sup> GRUBER, *supra* note 32, at 188.

A combination of factors allowed for New Haven to provide these adequately, if not optimally. First, the projects were not truly left to the “private sector.” To say that roads or canals in New Haven were “privatized” would be to mask a much more complex reality. There was significant public oversight, and many of the powers that would be vested in the directors of a modern corporation were given to appointees of the state; conversely, certain powers of the state were vested in the corporation. Second, tolls made the good in question at least partially excludable, and so helped the corporation internalize the benefits they have produced. Finally, New Haveners seemed authentically motivated by a kind of civic pride and altruism. The fact that stock sold so readily even when it was of dubious value suggest that people were merely pursuing their own private gain. The tireless efforts of New Haven’s leading citizens toward the projects also suggest that social capital was abundant. Moreover, desire for prestige and status is a powerful motivator, and these corporations were an arena for citizens to distinguish themselves and gain social standing.

Another issue in the provision of public goods is how most effectively to distribute the burden of creating them. In the case of the projects studied here, this was partially solved by the mechanism of tolls, which function as a special assessment on users. However, not a single one of these projects garnered enough from tolls or wharfage fees to match basic maintenance costs, let alone the initial capital investment. Capital had to be supplied elsewhere. One source of subsidies is from the land taken by eminent domain, though the extent is hard to calculate without reliable information about fair market value against which to compare the damage awards. Most of the capital for these enterprises in fact came from voluntary, individual subscriptions of stock, supplemented,

in the case of the canal, by two large institutional investors. Some of New Haven's wealthiest citizens contributed (and lost) significant sums. Morton Horwitz has written that in this same period the legal system tended to impose the burdens of economic development on poorer segments of society. The common law—through, for example, the growth of negligence, or the absence of a just compensation principle—“provide[d] substantial subsidies for those who undertook schemes of economic development.”<sup>125</sup> As a result, Horwitz argues that “the tendency of subsidy through legal change during this period was dramatically to throw the burden of economic development on the weakest and least active elements in the population.”<sup>126</sup> The story of the wharves, turnpikes, and canals at least casts some doubt on this conclusion. The wealthier citizens of New Haven not only sunk a great deal of money into unprofitable investments; they gave a tremendous amount of time serving as officers and commissioners for these corporations, selling the stock, and lobbying the legislature for charters and grants. Horwitz's focus is almost exclusively on what happened in courts. I have focused on the law outside the courtroom, on transactional structures rather than the unfolding of judicial doctrine. From the more transaction point of view, the distribution of the costs of development looks more equitable: elite New Haveners willingly shouldered significant burdens to realize these public goods.

A major theme of this paper and this period of American legal history is how the law relates to the fundamental economic and technological change of the nineteenth century. Is law just dragged along passively by more powerful cultural or economic forces? Or can it affirmatively bring about social change? Nicholas Murray Butler, the

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<sup>125</sup> HORWITZ, *supra* note 5, at 100.

<sup>126</sup> *Id.* at 101.

longtime President of Columbia University in the early twentieth century, believed the latter: “I weigh my words when I say that in my judgment the limited liability corporation is the greatest single discovery of modern times. . . . Even steam and electricity are far less important than the limited liability corporation, and they would be reduced to comparative impotence without it.”<sup>127</sup> For Butler, law is the prime mover, engine of progress. A more modest theory—and the premise of this paper—is that law has some power to facilitate development and change, but that it is merely one of a range of institutional and social forces. The law can release energy, to use Hurst’s phrase, even if it is not itself energy. “The substance of what business wanted from law was the provision for ordinary use of an organization through which entrepreneurs could better mobilize and release economic energy.”<sup>128</sup> Law is not just parasitic upon business; the two are joined in a healthier symbiosis. Ultimately, the law and the economy are interdependent, and in constant conversation. Developments in business require new legal mechanisms, which can then be creatively utilized in new, larger projects, which will then require more legal innovation, and so on. The history of New Haven in the early Republic exhibits this dialectic in action.

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<sup>127</sup> HURST, *supra* note 2, at 9.

<sup>128</sup> HURST, *supra* note 46, at 17.