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**Economic Independence and the
Encouragement of Manufactures:
Technology Transfer in the Textile
Industry, 1783-96**

When Henry Wansey, a self-described ‘Wiltshire clothier’, visited David Dickenson’s cotton mill in New York on May 31, 1794, he observed that the factory consisted of ‘two large buildings four story high, and eighty feet long’ and a ‘water wheel, twenty feet in diameter’. In the buildings, he found ‘[t]welve or fourteen workmen from Manchester’ manning twenty six looms that produced ‘fustians, calicoes, nankeens, nankinets dimities, etc.’. Wansey was surprised to find that the looms utilised the newly invented spring shuttle, a device that he had only recently incorporated into his own production in England, and that the factory spun thread using improved versions of Sir Richard Arkwright’s water-frame and carding devices. More importantly, Wansey noted that ‘[a]ll of the machinery in wood, steel, and brass, were

made on the spot from models brought from England and Scotland'.¹

As a successful English cloth manufacturer, Wansey would have been very familiar with the latest textile technologies. His Wiltshire mill contained sixteen looms and employed more than 130 individuals. Wansey's seven week excursion to the United States left him both impressed with and critical of American manufacturing efforts. Aware of British restrictions against the export of technology, Wansey was awed by the sophistication of American factories. As a rival manufacturer, however, Wansey was also disparaging, noting '[t]he company also try at too many things, and the goods they make are very inferior to what they get from us'. Because Wansey was a rival manufacturer who produced high-quality cloth, it is possible that he may have exaggerated American defects. At the same time, Wiltshire manufacturers were less technologically advanced than the rest of England and Wansey may have overstated American technical progress. Through Wansey's observations, however, it is clear that early-American textile production relied heavily on imported technology, skilled labour and methods of production.²

¹ Henry Wansey, 'The Journal of an Excursion to the United States of North America, in the Summer of 1794', in *Henry Wansey and His American Journal 1794*, ed. David John Jeremy (Philadelphia: American Philosophical Society, 1970; reprint, 1796), 82–3, 83n; David John Jeremy, ed. *Henry Wansey and His American Journal 1794* (Philadelphia: American Philosophical Society, 1970), 1, 32–3.

² Wansey, 'The Journal of an Excursion to the United States', 82–3; Jeremy, *Henry Wansey*, 1, 5, 32–3.

Following the Treaty of Paris, Americans found themselves subject to new British commercial policies that prevented the nations from trading on equal terms. Because Americans imported more than they exported in the late-eighteenth century, these regulations became a major cause for concern. Many Americans worried that the United States was becoming increasingly dependent on British manufactured goods and advocated importing British technologies to foster domestic manufacturing efforts. Beginning in the 1780s, Americans established manufacturing societies to encourage skilled workers to immigrate. These societies existed as both economic and political entities that espoused revolutionary protectionist language. Proponents of industrialism looked to technology transfer as a means of upholding the virtues of republicanism and creating a national power. These individuals perceived industrialism as an extension of the American Revolution, and saw manufacturing as a struggle to achieve equal trading terms with Britain. At the same time, the British government worked to counter American efforts by restricting emigration and elevating intellectual capital to the level of state secrecy.

The Society for Establishing Useful Manufactures (SUM) represented the pinnacle of a fifteen-year Revolutionary debate over the potential for manufacturing to provide Americans with economic independence from Britain. The SUM realised the vision outlined by Tench Coxe and Alexander Hamilton in Hamilton's *Report on the Subject of Manufactures* and provided a proving ground for the

Federalists' idea for a balanced economy.³ Despite the lofty ambitions of its founders, however, the SUM ultimately failed because its founders failed to adapt British factory methods to a predominately agrarian populace. In imitating British technology and methods of production, the Society failed to innovate and widespread mismanagement forced the factory to be abandoned in 1796.⁴ The failure of the SUM also signalled the demise of public initiatives to promote manufacturing, and made way for a new era based on private enterprise.⁵ As state-supported corporations proved to be ineffectual in encouraging commerce, indirect subsidies emerged as the preferred means of encouraging manufactures. Later attempts at large-scale production avoided the Society's mistakes and initiated an unprecedented period of commercial growth. Without these

³ Martin Öhman has profiled Coxe's vision for western development, emphasizing that Coxe believed that expansion would provide an 'engine of economic diversification'. Coxe believed that the greatest threat to the nation's future was its unbalanced economy, favoring agriculture over manufacturing. Martin Öhman, 'Perfecting Independence: Tench Coxe and the Political Economy of Western Development', *Journal of the Early Republic* 31(3), 2011, 397–433, quotation 397; With regard to the Federalists' vision for the American economy, Cathy Matson and Peter Onuf have noted that '[t]he great task for revolutionary political economists was to realign agricultural, commercial, and manufacturing interests so that they reinforced one another and sustained the new political order'. Cathy D. Matson and Peter S. Onuf, *A Union of Interests: Political and Economic Thought in Revolutionary America* (Lawrence: University Press of Kansas, 1990), 29.

⁴ Russell Roberts, 'Hamilton's Great Experiment: The Society for Establishing Useful Manufactures', *Financial History* 65, 1999, 24.

⁵ State governments did, however, continue to promote commerce through improvements in transportation. John Lauritz Larson, *Internal Improvement: National Public Works and the Promise of Popular Government in the Early United States* (Chapel Hill and London: University of North Carolina Press, 2001).

early experiments in technology transfer, however, the growth of the Industrial Revolution in the United States would have been seriously impeded.

Technology transfer occurs when intellectual property, in the form of skilled workers or machinery blueprints, is transported to another country. Beginning in the fourteenth century, European monarchs issued import patents to foreign artisans to induce immigration. Import patents were simply open letters that conveyed monopolistic privileges in exchange for immigration. Rulers used these patents to establish new industries by rewarding individuals for introducing technology rather than inventors. England used import patents extensively to introduce new trades and technologies. The Tudors modified this practice by using secret agreements instead of open letters to attract foreign craftsmen. Domestic inventors resented these agreements, however, and Parliament began to challenge the monarchy's ability to enter into exclusive contracts with skilled workers. Parliament eventually resolved these disagreements when it standardised English patent law with the passage of the Statute of Monopolies in 1623. The Statute institutionalised the British government's policy of protecting inventors and their intellectual property from competitors.⁶

Britain sought to maintain the technological advantages it had obtained by elevating intellectual capital to the status of state secrecy. Under mercantilism, British leaders concerned

⁶ Mitchel B. Wallerstein, Mary Ellen Moguee and Roberta A. Schoen, *Global Dimensions of Intellectual Property Rights in Science and Technology* (Washington, DC: National Academy Press, 1993), 44–8.

themselves with maintaining a balance of trade that upheld Britain's status as the leading industrial power. British authorities accomplished this by adopting a system of trade restrictions that prevented an outflow of skilled workers. Skilled workers emerged as the primary disseminators of technological change because regulators and entrepreneurs only partially understood textile technologies. It took several years for a manufacturer to become proficient and employers exhibited a strong preference for previously trained employees. Because manufacturers frequently built machines based on personal experience instead of drawings or blueprints, their expertise was highly sought after by investors hoping to construct large-scale factories. As a result, penalties on emigration were greater than penalties for exporting machinery.

Restrictions on emigration became even more important after the American Revolution, and Parliament strengthened existing regulations to include steep fines and imprisonment for artisans leaving the country. Emigrating workers also lost their citizenship and their property could be seized. Parliament also introduced penalties against ship captains and ruled that ships could be stopped at any time and searched for suspected emigrants. In 1795 Parliament reinforced this law to prevent foreign ships from sailing without first presenting a detailed list of passengers and their occupations to a port officer. At first, regulators enforced this law so rigidly that few foreign ships were cleared to leave. The Passenger Act of 1803 further restricted emigration by limiting the number of emigrants that each ship could legally

carry. During the War of 1812, emigrating manufacturers could even be tried for treason. The threat of emigrating manufacturers was so great that British authorities considered instituting a passport system to identify prohibited emigrants. By restricting emigration, British authorities hoped to prevent the dissemination of technology that would lead to American industrialism.⁷

Manufacturers, however, frequently evaded these laws. Many manufacturers travelled under an alias, carrying only their indenture papers as identification. Loopholes in British regulatory mechanisms also allowed emigrants to escape detection. Trade restrictions fell under the purview of six government departments and these agencies frequently found disagreement over definitions of artisans, manufacturers and mechanics under the prohibitory statutes. Because published drawings of textile machinery were uncommon until the early-nineteenth century, many regulators were unaware of the latest technologies. Machinery could be smuggled by disassembling it and labelling it as farm equipment. British authorities frequently seized machine parts found in bales of raw cotton but were often unable to identify whether regulations prohibited the machinery or not. Machinery could also be exported from Britain to Ireland, where regulations

⁷ Doron S. Ben-Atar, *Trade Secrets: Intellectual Piracy and the Origins of American Industrial Power* (New Haven: Yale University Press, 2004), 44, 114–18; David John Jeremy, ‘Daming the Flood: British Government Efforts to Check the Outflow of Technicians and Machinery, 1780-1843’, *Business History Review* 51(1), 1977, 2, 8–12; David J. Jeremy, *Transatlantic Industrial Revolution: The Diffusion of Technologies Between Britain and America, 1790–1830s* (North Andover, MA: Merrimack Valley Textile Museum, 1981), 30, 262.

were less restrictive before shipping the equipment to the United States. Due to the British government's inconsistent regulatory policies, more than one hundred thousand emigrants left for the United States from Ulster between 1783 and 1812, many of them skilled workers in the textile industry.⁸

British manufacturers also worked to protect the secrets of their trade. Textile manufacturers maintained complete control over their business activities and avoided dispensing technical knowledge for fear of fostering competition within their industry. Factory workers were sworn to secrecy and strangers were not permitted on mill property. For this reason, most mills had small windows and entranceways that mill owners locked during operating hours. Because secret patents were rare in Britain, many British manufacturers declined to apply for patent protection because they worried that competitors would find a way to gain access to the patent scrolls. In a society where intellectual capital did not receive adequate state protection many entrepreneurs jealously guarded the secrets of their production.⁹

The American Revolution inextricably linked economic and political issues in the debate over non-importation. As tensions escalated, a shared consumer culture united Americans across regions and classes in their refusal to

⁸ Jeremy, 'Damming the Flood', 3–4, 7, 13, 28; Jeremy, *Transatlantic Industrial Revolution*, 42–3.

⁹ Jeremy, *Transatlantic Industrial Revolution*, 36–7. Jeremy, 'Damming the Flood', 17.

purchase British products.¹⁰ Acutely aware of their reliance on British manufactured goods, and informed by a culture of republicanism, Americans attached political meaning to everyday consumption. Domestic manufacturing presented an alternative to British dependence, and Americans began to perceive the consumption of domestic manufactures as patriotic. The boycotts assumed a new political meaning for Americans who opposed British taxation. Boycott organisers corresponded with individuals from other cities to create nationwide boycotts in conjunction with local non-importation societies. Non-importation provided an economic face for republicanism by linking consumption with dependence.¹¹

The ideology of non-importation continued to resonate with many Americans even after the Revolution. As late as 1789, George Washington anticipated a time when it would 'be unfashionable for a gentleman to appear' in clothing that had not been produced domestically.¹² The same forces that compelled Americans to reject British imported goods also encouraged Americans to form institutions to foster domestic manufacturing. Wealthy Americans worked together to form

¹⁰ T.H. Breen, *The Marketplace of Revolution: How Consumer Politics Shaped American Independence* (Oxford: Oxford University Press, 2004); T.H. Breen, "'Baubles of Britain": The American and Consumer Revolutions of the Eighteenth Century', *Past and Present* 119, May 1988, 76.

¹¹ T.H. Breen, 'Narrative of Commercial Life: Consumption, Ideology, and Community on the Eve of the American Revolution', *William and Mary Quarterly* Third Series 50(3), 1993, 485–7; Breen, "'Baubles of Britain'", 78–96.

¹² Edwin G. Burrows and Mike Wallace, *Gotham: A History of New York City to 1898* (New York: Oxford University Press, 1999), 297; quoted in Ron Chernow, *Alexander Hamilton* (New York: Penguin Books, 2004), 277.

manufacturing societies that could raise the necessary capital and lobby state legislators in the promotion of domestic manufacturing. Just as non-importations societies corresponded with one another during the Revolution to coordinate resistance to British rule, manufacturing societies corresponded with prominent American policymakers to organise the diffusion of technological knowledge. Manufacturers, in turn, linked patriot ideology with self-sufficiency to lobby for state protectionism. These individuals petitioned for ‘encouragement’, a vague term in the eighteenth century that could refer to bounties, tariffs or promoting manufacturing through other means.¹³

Manufacturers considered societies to be charitable, semi-public organisations. These societies worked closely with government officials to provide encouragement for manufacturing efforts. Many Americans considered manufacturing societies to be charitable because they provided employment for unskilled workers. Some individuals believed that domestic production would raise wages by increasing the demand for labour. These proponents believed that domestic production would remedy the downward pressures on wages in Britain caused by overpopulation and overproduction. ‘A Hosier’ wrote to Alexander Hamilton from Glasgow on 6 July 1790 urging him to convince ‘Congress or

¹³ Lawrence A. Peskin, ‘From Protection to Encouragement: Manufacturing and Mercantilism in New York City’s Public Sphere, 1783–1785’, *Journal of the Early Republic* 18(4), 1998, 591; Frank Warren Crow, ‘The Age of Promise: Societies for Social and Economic Improvement in the United States 1783–1815’, (PhD diss., University of Wisconsin-Madison, 1952), 196.

private Societys' to offer bounties to emigrating hosiers. The hosier mentioned that 'were 1000 or 2000 to be imported into America there would be plenty left in this Country; when it would serve America it would only raise the Wages of those left in Britain to a proper Levell [*sic*]'. He noted that hosiers would not emigrate without assistance because of the high cost of traveling and the risk of imprisonment. He concluded by encouraging Hamilton to '[r]emember the Poor, Hard Wrought half Starved Workmen of Britain'. Members of manufacturing societies seldom profited from their activities, believing instead that they were providing a service to the community by reducing dependency.¹⁴

The Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts (PSEM), founded in 1787, emerged as one of the first attempts to establish large-scale textile production in the United States. One of the PSEM's foremost organisers, Tench Coxe, would become one of the country's most adamant proponents of domestic manufacturing. A Philadelphia native and descendant of Irish immigrants, Coxe attended the University of Pennsylvania and studied law before joining his father's mercantile firm. Coxe's father served as an official in the New Jersey Society for Encouragement of Manufacturers and was influenced by British colonial policy to enter into a non-importation

¹⁴ 'Letter to "Manager or Partners of Company for Weaving Cotton Cloth late got up or Erected in Philadelphia" from a "Hosier" in Glasgow', in *Industrial and Commercial Correspondence of Alexander Hamilton Anticipating His Report on Manufactures* ed. Arthur Harrison Cole (New York: Augustus M. Kelley Publishers, 1968; reprint, 1928), 183–4; Crow, 'The Age of Promise', 201, 276.

agreement with other merchants in 1765. Coxe gained credibility among merchants for his early involvement in numerous manufacturing associations, but his reputation was always tarnished by his suspected association with loyalist forces during the American Revolution. Following the Revolution, Coxe demonstrated newfound commitment to the Federalist cause by outlining a grand industrial vision for the newly created United States.¹⁵

Coxe addressed the PSEM at its first meeting at the University of Pennsylvania, providing an outline for the Society's goals and activities. Coxe linked economic self-sufficiency with political independence, concluding that autarky provided the 'means of our POLITICAL SALVATION'.¹⁶ Coxe also viewed the consumption of British goods in political terms, stating '[i]t behoves [*sic*] us to consider our untimely passion for European luxuries as a malignant and alarming symptom, threatening convulsions and dissolution to the political body'.¹⁷ Coxe believed that domestic manufacturing would reduce dependency and

¹⁵ According to one biographer, Coxe's intense desire to make American manufacturing compete with Britain can be viewed as an attempt to 'reestablish himself in the esteem of his fellow citizens'. Harold Hutcheson, *Tench Coxe: A Study in American Economic Development* (New York: Da Capo Press, 1969; reprint, Baltimore: Johns Hopkins University Press, 1938), 1–8, quotation 9.

¹⁶ Tench Coxe, 'An Address to an Assembly of the Friends of American Manufacturers. Convened for the Purposes of Establishing a Society for the Encouragement of Manufacturers and the Useful Arts, Read in the University of Pennsylvania on Thursday the 9th of August, 1787' in *The American Museum: or Repository of Ancient and Modern Fugitive Pieces, &c Prose and Poetical for August, 1787* 2d ed. (Philadelphia: Mathew Carey, 1789) II, no. 2, 255.

¹⁷ *Ibid.*, 254.

promote enlightened citizenry. He advocated establishing a national society to reward introducers of technologies, 'whether foreign or American' and noted that '[t]he state might with great convenience enable an enlightened society, established for the people, to offer liberal rewards in land'.¹⁸ By rewarding introducers of technology, Coxe revealed his strong support for technology transfer.

Coxe was careful to craft his proposals in ways that appealed to agrarian interests. Throughout his address, Coxe praised agriculture stating 'nothing should be attempted, which may injure our agricultural interests, they being undoubtedly the most important', and 'our people must not be diverted from their farms'.¹⁹ Like many Revolutionary thinkers, Coxe perceived manufacturing as perfectly aligned with agricultural interests to promote prosperity and economic independence from Britain.²⁰ He asserted that manufacturing would provide a market for agricultural goods and 'that more profit to the individual, and riches to the nation, will be derived from some manufactures, which promote agriculture, than from any species of cultivation whatever'.²¹ By portraying agricultural and manufacturing interests as inextricably linked, Coxe ensured that his proposals would be well received by a predominately agrarian audience.

¹⁸ Ibid., 253.

¹⁹ Ibid., 249, 251.

²⁰ Coxe's biographer observes that he emphasized the need for a 'balanced national economy, by which he meant the joint and harmonious pursuit of agriculture, manufacturing, and commerce to promote the wealth of nations'. Hutcheson, *Tench Coxe*, 190.

²¹ Coxe, 'An Address to an Assembly of the Friends of American', 249.

Coxe also countered agrarian arguments against the feasibility of manufacturing in the United States. Critics decried high labour costs as evidence of the futility of encouraging manufacturing efforts. Coxe believed that capital expenditures could offset the high cost of labour by using labour-saving and energy-saving technologies. In an address at the University of Pennsylvania, Coxe emphasised that factories employing the latest technologies ‘are not burdened with any heavy expense of boarding, lodging, clothing, and paying workmen; and they multiply the force of hands to a great extent, without taking our people from agriculture’.²² Coxe believed that investments in technology would lead to significant improvements in productivity and would eventually lead to the profitability of manufacturing. By highlighting the advantages of imported technology, moreover, Coxe reassured his listeners that manufacturing would not divert labourers from agriculture. Coxe also countered Jeffersonian arguments against manufacturing by observing that manufacturing could promote republicanism. Coxe noted that ‘[e]xtreme poverty and idleness, in the citizens of a free government will ever produce vicious habits, and disobedience to the laws; and must render the people fit instruments for the dangerous purposes of ambitious men’.²³ Coxe believed that by providing the industrious poor with employment, manufacturing would make these individuals

²² *Ibid.*, 250.

²³ *Ibid.*, 253.

ideal citizens who would obey the laws and pursue 'honest means of sustenance'.²⁴

Most importantly, Coxe advocated encouraging the immigration of skilled workers, stating that '[e]migration from Europe will also relieve and assist us'.²⁵ Coxe believed that Americans should adopt foreign means of production to achieve economic independence, stating that 'we must carefully examine the conduct of other countries in order to possess ourselves of their methods of encouraging manufactories, and pursue such of them, as apply to our own situation, so far as it may be in our power'.²⁶ Coxe even suggested forming a committee within the PSEM 'to visit every ship arriving with passengers from any foreign country, in order to enquire what persons they may have on board, capable of constructing useful machines, qualified to carry on manufactures, or coming among us with a view to that kind of employment'.²⁷ For Coxe, the importation of foreign technologies was necessary to promote economic independence from Britain and to counter agrarian arguments against the high cost of labour.

To implement Coxe's proposals, the PSEM lobbied the Pennsylvania Legislature to provide bounties for manufacturers who build new machinery or introduced new technologies. The PSEM also succeeded in petitioning the

²⁴ Ibid.

²⁵ Ibid., 251.

²⁶ Ibid., 253.

²⁷ Ibid.

state legislature to prohibit the destruction or export of textile machinery from the United States. Much like the British prohibitory statutes, this law subjected emigrating artisans to a £350 fine and twelve months imprisonment and placed a £100 fine on individuals who enticed emigration. To recruit additional workmen, the Society sent James Walsh, a factory superintendent, to England with a £50 letter of credit. Coxe also sent Andrew Mitchell to England to make models of factory equipment. British authorities discovered Mitchell, however, and he was forced to flee to France without the blueprints. By 1788, the Society had completed three spinning jennies and a carding machine. Despite Coxe's best intentions, however, the PSEM was ultimately unsuccessful. The PSEM was plagued by many of the same problems that would later lead to the SUM's failure.²⁸ The difficulty of acquiring the latest technology and retaining skilled manufacturers, coupled with the challenges of adapting British factory methods to local conditions signalled the PSEM's demise. As a result, the PSEM experienced constant supply problems since it could weave cloth faster than it could spin thread. The PSEM eventually failed when fire consumed the factory in 1790.²⁹

The immigration of Samuel Slater in 1789 represents one of the few profitable examples of technology transfer during this time. Before immigrating, Slater served as an apprentice of

²⁸ Neil Longley York, *Mechanical Metamorphosis: Technological Change in Revolutionary America* (Westport, CT and London: Greenwood Press, 1985), 164–5.

²⁹ Jeremy, 'Damming the Flood', 29–33; Ron Chernow, *Alexander Hamilton* (New York: Penguin Books, 2004), 372.

Jedediah Strutt, a partner of Richard Arkwright. Arkwright's famous water-frame was superior to the spinning jenny because it could produce continuously and with stronger yarn. After reading an advertisement in a Pennsylvania newspaper that the Pennsylvania Legislature offered a £100 bounty for building a carding machine, Slater sailed to New York. Initially the New York Manufacturing Company employed Slater, but after three weeks he found their machinery 'not worth using'.³⁰ Slater wrote to Moses Brown, a successful Quaker merchant who expressed interest in establishing a factory in Rhode Island. Brown offered Slater the profits from the first six months of operations if Slater would build and maintain the necessary equipment. By 1808, according to one estimate, only fifteen spinning mills were in operation throughout the country, half of which were owned by Slater, his partners or previous employees. Slater was successful because he adopted British factory methods to existing American business patterns. When Slater arrived in the United States, textiles manufactures had begun to employ the 'putting out system', where factory owners contracted labour out to individual households. Slater encouraged this system by recruiting whole families for his factory production. Women and children worked cleaning cotton while men worked in the factory weaving the yarn into cloth. By introducing corporate ownership and factory methods of

³⁰ Samuel Slater to Moses Brown, December 2, 1789 in *Memoir of Samuel Slater, the Father of American Manufactures. Connected With A History of the Rise and Progress of the Cotton Manufacture in England and America with Remarks on the Moral Influence of Manufactories in the United States*, George S. White (Philadelphia: No. 46 Carpenter Street, 1836), 72.

production while maintaining the putting out system, Slater adapted British technology to existing American business patterns.³¹

Skilled workers frequently solicited support from Americans before emigrating. Just as Slater wrote to Moses Brown, other manufacturers consulted Americans living abroad or American diplomats about the potential for receiving encouragement from the state. While serving as a diplomat in Paris, Thomas Jefferson received numerous letters from manufacturers hoping to emigrate and the statesman participated in technology transfer by forwarding letters of introduction to manufacturing societies in the United States. Henry Wyld wrote to Jefferson on 20 May 1788 asking Jefferson to inform him 'by letter what progress the wire Business hath made in America, whether you manufacture Cards for dressing Cotton and Wool or import them?'.³² British expatriates living in France increasingly wrote to Jefferson as violence escalated in the French Revolution. Joseph Fielding cited the 'present unsettled state of affairs' for his desire to emigrate and asked Jefferson what

³¹ Charles Sellers, *The Market Revolution: Jacksonian America 1815–1848* (New York: Oxford University Press, 1991), 27; Crow, 'The Age of Promise', 258; Jonathan Prude, *The Coming of Industrial Order: Town and Factory Life in Rural Massachusetts 1810–1860* (New York: Cambridge University Press, 1983), 35–6; Barbara M. Tucker, *Samuel Slater and the Origins of the American Textile Industry, 1790–1860* (Ithaca: Cornell University Press, 1984), 47–50, 89; White, *Memoir of Samuel Slater*, 33, 37, 42, 72–3.

³² Henry Wyld to Thomas Jefferson, May 20, 1788 in *The Papers of Thomas Jefferson* ed. Julian P. Boyd (Princeton: Princeton University Press, 1956), XIII, 183.

encouragement he could hope to obtain in the United States.³³ Jefferson also worked to acquire models of British factory equipment from British expatriates in France.³⁴ He also facilitated transfer through assisting Andrew Mitchell and others in their efforts to smuggle British technologies to the United States. Jefferson was reluctant to support technology transfer, however, believing instead that '[t]hose who labor in the earth are the chosen people of God' and that '[d]ependence begets subservience'.³⁵ As a result, Jefferson advocated '[w]hile we have land to labor then, let us never wish to see our citizens occupied at a work bench ... let our work shops remain in Europe'.³⁶ Ultimately Jefferson believed that only independent yeomen farmers could uphold the virtues of republicanism. On one hand, Jefferson worried that immigrating manufacturers would introduce the negative effects of the Industrial Revolution to the United States. On the other hand, Jefferson was concerned about American dependence on British imports and facilitated technology transfer to promote economic independence.³⁷

Because the State Department controlled the distribution of patents in the eighteenth century, Jefferson received additional solicitations from foreign artisans while serving as the department's head. These manufacturers frequently

³³ Joseph Fielding to Thomas Jefferson, October 28, 1789 in *The Papers of Thomas Jefferson*, XV, 528.

³⁴ Ben-Atar, *Trade Secrets*, 124.

³⁵ Thomas Jefferson, *Notes on the State of Virginia* (Richmond: J.W Randolph, 1853; reprint, 1782), 176.

³⁶ *Ibid.*

³⁷ Ben-Atar, *Trade Secret*, 159.

requested assistance in immigrating to the United States. Although Jefferson opposed British mercantile regulations, he worried that supporting artisans directly could provoke an international dispute. When acting in an official capacity, Jefferson often asserted that he lacked both the authority and means to encourage manufacturing and that '[i]t is not the policy of the government ... to give aid to works of any kind'.³⁸ By 1791, however, Jefferson began to adopt a compromise solution. When George Parkinson applied to Jefferson to assist him in immigrating, Jefferson made arrangements for Parkinson's family to immigrate without helping Parkinson directly. Instead, Tench Coxe entered into an agreement with Parkinson to pay for his passage in exchange for models or Arkwright's technology. Once in the United States, both Jefferson and Hamilton assisted Parkinson's in establishing his business. Hamilton's department subsidised Parkinson's living expenses and Jefferson's office rewarded Parkinson with a patent on 24 March 1791. Jefferson's ambivalence toward encouraging manufacturing led him to continue to make arrangements for artisans' families to immigrate without providing direct support to manufacturers.³⁹

³⁸ Thomas Jefferson to Thomas Digges, June 19, 1788 in *The Papers of Thomas Jefferson*, XIII, 261.

³⁹ Doron S. Ben-Atar, "Alexander Hamilton's Alternative: Technology Piracy and the Report on Manufactures." *William and Mary Quarterly* Third Series 52(3), 1995, 390; Chernow, *Alexander Hamilton*, 372, 374; 'Receipt from George Parkinson, July 30, 1791' in *The Papers of Alexander Hamilton* ed. Harold C. Syrett and Jacob E. Cooke (New York: Columbia University Press, 1965), VIII, 588.

Jefferson also received letters from Americans living abroad who hoped to encourage American manufacturing.⁴⁰ Thomas Digges wrote to Jefferson on several occasions, informing him of manufacturers seeking to immigrate. Digges owned property on the Maryland side of the Potomac River opposite Mount Vernon but moved to London following the American Revolution. He faced charges of disloyalty from both sides of the Atlantic throughout his career. Digges carefully worded his letters to appeal to Jefferson, giving his solicitations a new political meaning. When responding to Jefferson's arguments against the feasibility of establishing textile manufactures in the United States, Digges emphasised that a cotton mill had recently opened in Virginia, Jefferson's home state. Moreover, Digges countered Jefferson's arguments against the desirability of encouraging manufacturers by describing prospective immigrants as ideal citizens. Digges described one manufacturer as 'an excellent scholar & man of genius' and noted another's 'love of liberty'.⁴¹ Digges concluded the letter by mentioning that the manufacturer would make a perfect fit for the Virginia mill adding that he was 'not only a perfect master, but can construct *every article of machinery* necessary for the Cotton Manufactory'.⁴² Jefferson responded that, while in France, he had not heard of the Virginia mill but that '[i]n general it is impossible that manufactures

⁴⁰ As Doron S. Ben-Atar notes, 'Americans roamed England in the 1780s looking for recruits'. Ben-Atar, *Trade Secrets*, 116–17.

⁴¹ Thomas Digges to Thomas Jefferson, May 12, 1788 in *Letters of Thomas Attwood Digges (1742-1821)* ed. Robert H. Elias and Eugene D. Finch (Columbia: University of South Carolina Press, 1982), 408–10.

⁴² *Ibid.*

should SUCCEED in America from the high price of labor'.⁴³ Although Jefferson remained unconvinced by Digges's arguments, the letters reveal how advocates of manufacturing politicised immigration by depicting prospective immigrants as ideal citizens.⁴⁴

As manufacturing societies became more vigilant in their pursuit of foreign skilled workers, rumours began to circulate among factory workers that emigration to the United States was a simple means of obtaining prosperity. In 1784, Benjamin Franklin issued a pamphlet in England entitled *Information to Those Who Would Remove to America* in an attempt to dispel these myths. Although he was an advocate of American manufacturing, Franklin worried that many 'mistaken ideas and expectations' circulated about Americans who were 'rich, capable of rewarding, and disposed to reward, all sorts of ingenuity'. Accordingly, these workers believed that Americans were 'ignorant in all the sciences' and that those who immigrated would be rewarded with 'lands gratis to strangers, with negros to work for them, utensils of husbandry, and stocks of cattle'. Franklin hoped to discourage these 'wild imaginations' to prevent such misconceptions from tarnishing the new nation's reputation as a promoter of manufacturing. He did not wish, however, to discourage immigration altogether. Franklin was quick to advise that '[s]trangers, indeed, are by no means excluded from exercising

⁴³ Thomas Jefferson to Thomas Digges, June 19, 1788 in *The Papers of Thomas Jefferson*, XIII, 261.

⁴⁴ Carrol W. Pursell Jr., 'Thomas Digges and William Pearce: An Example of the Transit of Technology', *William and Mary Quarterly*, Third Series, 21, 1964, 552.

[their] professions' and that 'the husbandman is an honour there, and even the mechanic'. Franklin also defended American ingenuity by emphasising the existence of nine universities and a 'number of small academies'. By emphasising American advantages while dismissing misconceptions, Franklin hoped to inform English skilled workers of the new nation's economic potential.⁴⁵

Alexander Hamilton's *Report on the Subject of Manufactures* provided the most enthusiastic support for American manufacturing efforts.⁴⁶ Hamilton was especially influenced by Tench Coxe, who penned an initial draft of the *Report*. Coxe had recently replaced William Duer as Assistant

⁴⁵ Benjamin Franklin, 'Information for Those Who Would Remove to America', in *The Works of Dr. Benjamin Franklin Consisting of Essays, Humorous, Moral, and Literary: With His Life, Written By Himself* (Chiswick: Whittingham Press, 1824), 258–67.

⁴⁶ Doron S. Ben-Atar acknowledges that interpretations of Hamilton's *Report on the Subject of Manufactures* differ significantly. Although most studies view the *Report* as an outline of Hamilton's industrial vision, John R. Nelson argues that Hamilton was concerned primarily with establishing stable property rights and that domestic manufacturing remained only a secondary concern. Nelson notes that Hamilton generally sided with merchants, who opposed tariffs on imported goods, rather than manufacturers who would have supported tariffs to protect domestic industries. Nelson supports his arguments by observing that manufacturers turned to the Democratic-Republicans in the 1790s when the party began supporting tariffs on British goods. On the other hand, Lawrence Peskin emphasises that merchants and manufacturers compromised in the late-eighteenth century to support the encouragement on manufactures and that '[t]hese men moved away from the politics of protection and toward a new political agenda: encouragement of large-scale manufacturing'. Ben-Atar, 'Alexander Hamilton's Alternative: Technology Piracy and the Report on Manufactures', 394n; see also John R. Nelson Jr., 'Alexander Hamilton and American Manufacturing: A Reexamination', *The Journal of American History* 65(4), 1979, 971–95; Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry*, 92.

Secretary of the Treasury, in a choice that clearly revealed Hamilton's pro-manufacturing sentiment. Hamilton and Coxe revised the draft five times before Hamilton submitted the final version to Congress on 5 December 1791. Both leaders viewed industrialism as a prerequisite to American stability and security. Following the success of Hamilton's plan for public credit and the threat of war in Europe, Hamilton believed that the time was right to confront British trade restrictions. The *Report* outlined his industrial vision that incorporated many of Coxe's arguments for protective tariffs and European immigration. Hamilton approached technological piracy from a utilitarian standpoint, stating '[i]t is the right of every independent nation, where not restrained by Treaty, to pursue its own interest, in its own way'.⁴⁷ The *Report* was integral in motivating Americans to adopt pro-manufacturing policies and even gained the attention of Americans living abroad. Observing Hamilton's *Report* from London, Thomas Digges wrote to Hamilton on 6 April 1792, offering to publish one-thousand copies in Dublin and distribute them throughout England and Ireland. Digges also encouraged Hamilton to advertise a bounty for emigrating artisans in British newspapers, 'for in these Countrys they hardly ever will publish any favourable account of America or insert a paragraph which may lead to people to Emigration'.⁴⁸

⁴⁷ Alexander Hamilton, 'Second Draft of the Report on the Subject of Manufactures', in *The Papers of Alexander Hamilton*, X, 60.

⁴⁸ Stanly Elkins and Eric McKittrick, *The Age of Federalism* (New York: Oxford University Press, 1993), 258; Jacob E. Cooke, 'Tench Coxe, Alexander Hamilton, and the Encouragement of American Manufactures', *William and Mary Quarterly* Third Series 32(3)1975), 370–2; Chernow,

Hamilton also tailored his *Report* to appeal to agrarian leaders. Before defending the feasibility of manufacturing against agrarian arguments, Hamilton prefaced his arguments with ‘[t]he foregoing suggestions are *not designed to inculcate an opinion that manufacturing industry is more productive than that of Agriculture*’.⁴⁹ Hamilton also observed that ‘[i]t ought readily to be conceded, that the cultivation of the earth ... has *intrinsically a strong claim to pre-eminence over every other kind of industry*’.⁵⁰ By advocating European immigration, Hamilton sought to pacify his agrarian opponents, who argued that support for manufacturing would divert citizens from agricultural pursuits. Hamilton confronted this argument in his assertion that ‘[m]any, whom Manufacturing views would induce to emigrate, would afterwards yield to the temptations, which the particular situation of the country holds out to Agricultural pursuits’.⁵¹ By adapting his pro-manufacturing arguments to appeal to a primarily agrarian audience, Hamilton’s *Report on Manufactures* reveals the political implications of his industrial vision.

The Society for Establishing Useful Manufactures (SUM) was the ultimate embodiment of Coxe and Hamilton’s ideas. The SUM began as the New Jersey Society for Establishing Useful

Alexander Hamilton, 371–2; Thomas Digges to Alexander Hamilton, April 6, 1792, in *Letters of Thomas Attwood Digges (1742-1821)*, 437, quotation 440.

⁴⁹ Alexander Hamilton, ‘Report on the Subject of Manufactures’, in *The Papers of Alexander Hamilton*, X, 245.

⁵⁰ *Ibid.*, 236.

⁵¹ *Ibid.*, 254.

Manufactures, founded six months before Hamilton issued his *Report*. The Society relied on government action to raise capital for a national textile mill in the same way that transportation proponents solicited funding for internal improvements in the nineteenth century.⁵² This approach represented a dramatic reversal of the states' positions under the Articles of Confederation, where policymakers had disavowed the sponsorship of technological piracy. Hamilton and Coxe hoped that a national factory would encourage innovation and the diffusion of technology through imitation.⁵³ At the same time, Hamilton and Coxe did not seek simply to replicate British industrialism. Both proponents believed that Americans would have to adapt British technologies to suit American conditions in an effort to challenge British supremacy.⁵⁴ Although Hamilton's *Report* served as the inspiration for many of the Society's members, he never served as an official or stockholder in the organisation. Some historians interpret Hamilton's lack of involvement to his fear that hurting Britain would aid France in the French Revolutionary Wars.⁵⁵ After writing the Society's prospectus and lobbying in the New Jersey

⁵² Larson, *Internal Improvement*.

⁵³ Chernow, *Alexander Hamilton*, 372.

⁵⁴ Ben-Atar, 'Alexander Hamilton's Alternative', 393.

⁵⁵ *Ibid.*, 413.

Legislature for the organisation's charter, Hamilton limited his involvement in the Society's activities.⁵⁶

The Society selected the factory's location along the Passaic River in northern New Jersey for specific political purposes. Aside from the fast-moving waters along the Passaic Falls, locating the factory in New Jersey allowed the Society to raise adequate capital from financiers in both New York City and Philadelphia without endangering calls of localism from either city. New Jersey was also free of existing competition and the state legislature was very receptive to the Society's plans. Although some members of the Society wanted to name the town Hamilton, the directors strategically named it Paterson, after William Paterson, the Governor of New Jersey. The New Jersey Legislature responded by granting the Society eminent domain, a municipal charter, tax exemption for ten years and allowed the organisation to raise \$100,000 through a state lottery. In addition, the legislature subscribed to \$10,000 of the Society's stock. The Society eventually raised more than \$600,000 in capital, and promised to become the largest industrial enterprise in the newly-formed United States.⁵⁷ The SUM came at the end of the manufacturing society movement and had the advantage of obtaining numerous benefits from the state that previous economic societies had requested.⁵⁸

⁵⁶ Ben-Atar, *Trade Secrets*, 123; Crow, *The Age of Promise*, 260; Chernow, *Alexander Hamilton*, 373; Elkins and McKittrick, *The Age of Federalism*, 262.

⁵⁷ Roberts, 'Hamilton's Great Experiment', 24.

⁵⁸ Chernow, *Alexander Hamilton*, 373; Davis, *Essays in the Earlier History of American Corporations*, (Cambridge: Harvard University Press,

Those who opposed the organisation's monopoly status became bitter opponents of the SUM. In a predominately rural society, many agrarians questioned the benefits of domestic manufacturing, fearing that manufacturing societies would unintentionally import the negative effects of the Industrial Revolution to the United States. These individuals believed that only yeomen farmers would sufficiently uphold the virtues of republicanism and serve the public's best interest as disinterested citizens. Although some of the SUM's opponents objected to all manufacturing, many were only opposed to the organisation's size. Some contemporaries believed that the Society had been established primarily for the benefit of speculators. The *New-York Journal* reported on August 31 that 'the spirit of patriotism' had manifested in 'the disinterested minds of Stock gamblers' to 'establish a Cotton Manufactory'.⁵⁹ These allegations were supported by the fact that several of the Society's leading organisers were also members of the New Jersey Legislature. The *National Gazette* charged that 'the talking and leading members were ... generally subscribers to the manufacturing scheme'.⁶⁰

Critics' fears of speculation were exacerbated when several of its members declared bankruptcy during the financial panic of 1792. Competing manufacturers also decried the use of government resources to benefit a private company. 'A

1917), II, 375–7; Crow, *The Age of Promise*, 261; Peskin, *Manufacturing Revolution*, 114–16.

⁵⁹ *New-York Journal*, August 31, 1792; quoted in Joseph Stancliffe Davis, *Essays in the Earlier History of American Corporations*, I: 374.

⁶⁰ *National Gazette*, November 7, 1792; quoted in Joseph Stancliffe Davis, *Essays in the Earlier History of American Corporations*, I: 377.

Mechanic' wrote to the *Connecticut Courant* asking if Congress had done anything to benefit Connecticut mechanics and answered by noting 'I am told they have not, but on the contrary, that they are building large manufactories at the expense of government which will create an influx of ware to our detriment'. The mechanic further emphasised that the SUM had the effect of '*planting a Birmingham and Manchester amongst us*;' and with a new set of workmen under the patronage of Congress, to take the business out of the hands of those already engaged in the arts ...'.⁶¹ Some merchants opposed manufacturing efforts as well, fearing that domestic manufacturing would undercut their trade in imported products.⁶²

In August of 1791, Hamilton worked tirelessly on behalf of the Society to negotiate contracts with the most-qualified refugees he could find. The Society eventually contracted with Pierre Charles L'Enfant, the architect who laid out the plans for Washington D.C, to construct the town and factory buildings. The Society also hired Thomas Marshall, an employee of Arkwright who had worked to erect Arkwright's Derbyshire mill, to work as the factory superintendent. The Society hired four additional English immigrants, George Parkinson, William Pearce, Joseph Mort and William Hall to supervise the construction of machinery and oversee the Society's bleaching and calico printing.⁶³ Although the

⁶¹ *Connecticut Courant*, May 14, 1792; quoted in Joseph Stancliffe Davis, *Essays in the Earlier History of American Corporations*, I: 433.

⁶² Peskin, *Manufacturing Revolution*, 116; Prude, *The Coming of Industrial Order*, 39; Crow, *The Age of Promise*, 263.

⁶³ Chernow, *Alexander Hamilton*, 374.

Society's leaders worked to raise sufficient capital and hire the most-qualified workers, the organisation eventually failed for a number of reasons. The Society's board of directors lacked experience in manufacturing and were deeply affected by the Panic of 1792. These directors were susceptible to hiring manufacturers who provided misleading representations of their abilities when seeking employment. Once employed, these workers frequently performed their duties in a perfunctory manner, worked on other projects, stole equipment or left the industry entirely to pursue agriculture. In addition, technology in the textile industry quickly became obsolete and it was difficult to ascertain a worker's level of skill. Moreover, the Society's grandiose plans were unrealistic for an overwhelmingly agrarian economy and the organisation's managers did not adequately adapt British factory methods to deal with these challenges. Manufacturers in the early-nineteenth century learned from the mistakes of the SUM and were integral in developing a framework for adjusting British technology to American forms of production. The Society's corporate organisation consisted of thirteen directors, a governor and a deputy governor. This structure proved to be both a benefit and a detriment to the Society. Because most of the directors lacked experience in manufacturing, the Society's upper management engaged in inefficient practices from the onset.⁶⁴ As a result, the Society overextended itself by attempting to produce too many

⁶⁴ Davis observes that '[i]n the matter of the treasurership, carelessness was the rule from the beginning'. Davis, *Essays in the Earlier History of American Corporations*, II, 457.

varieties of cloth. To recruit workmen for these ventures, the Society entered into open-ended agreements with mercantile firms to pay for the passages of additional workmen, paying a five-percent commission for workers in desired trades. This practice resulted in the Society inefficiently importing artisans skilled in producing cloth varieties that the factory never manufactured. Despite the Society's grand intentions, the workers at Paterson succeeded only in spinning, weaving and calico printing.

The Panic of 1792 only complicated these issues, as the crisis resulted in the bankruptcies of the Society's governor and three of its directors. Although the SUM survived the panic, it encountered difficulties in reclaiming funds that had been appropriated to directors who had declared bankruptcy. Ultimately the Society lost more than \$50,000 and suffered immeasurable damage from critics who viewed the bankruptcies as proof of the Society's speculative nature.⁶⁵

Given the organisation's management problems, it is not surprising that many of the workmen obtained their employment based on unrepresentative claims of their abilities. When Thomas Marshall solicited Hamilton for employment in July, 1791, he mentioned that '[t]he Laws of England being very severe against the Emigration of Mechanic's, I am deprived of every Testimony or Document of

⁶⁵ 'Contract with James and Shoemaker, November 5, 1792', in *The Papers of Alexander Hamilton*, XIII, 17; Elkins and McKittrick, *The Age of Federalism*, 280; Davis, *Essays in the Earlier History of American Corporations*, II, 394, 410, 455, 475.

my Capability in the Manufactory'.⁶⁶ Skilled workers in the textile industry frequently professed a lack of documentation for their credentials. The excuse was both plausible and difficult to disprove by a prospective employer. Manufacturers used this technique to exaggerate their abilities, often describing themselves as 'full acquainted with every modern improvement' or emphasising their connection to Richard Arkwright, the famed English inventor.⁶⁷ The fact that manufacturers' knowledge quickly became obsolete provided additional difficulties for entrepreneurs. David John Jeremy observes that 'it was always hard to tell whether the immigrant's information or skill was worth having'.⁶⁸ Marshall's exaggerated claims were exposed only months after he had already been employed by the SUM. William Hall wrote to Hamilton stating his belief that Marshall was 'much acquainted with the theory of the Business but I am very doubtful if He is much acquainted with the practice'.⁶⁹ Despite his poor performance, Marshall remained on the payroll and the Society even increased his salary in 1793. The Society's generosity towards him notwithstanding, Marshall wrote repeatedly to Hamilton requesting loans to 'keep [his] accounts even for the present'.⁷⁰

⁶⁶ Thomas Marshall to Alexander Hamilton, July 19, 1791 in *The Papers of Alexander Hamilton*, VIII, 556.

⁶⁷ Ibid.

⁶⁸ Jeremy, *Transatlantic Industrial Revolution*, 140.

⁶⁹ William Hall to Alexander Hamilton, August 29, 1791 in *The Papers of Alexander Hamilton*, IX, 121.

⁷⁰ Thomas Marshall to Alexander Hamilton, May 30, 1792 in *The Papers of Alexander Hamilton*, XI, 456-457; Thomas Marshall to Alexander

Other employees of the SUM performed their duties in a perfunctory manner or pursued other projects while on the Society's payroll. Peter Colt wrote to Hamilton shortly after becoming superintendent of the factory inquiring about Joseph Mort. Colt noted

I have never seen him here; & am assured he is in Virginia pursuing business no ways essential to the Interest or views of this Society. Will there be any hazard in discharging him altogether? It is pretty certain he cannot be useful to us this Season.⁷¹

He also commented on William Hall's wages, noting 'I find Mr. Hall also retained on a Salary of £ 300 Sterlg. It is worthy of some consideration if his salary should not be reduced untill [*sic*] such time as he is able to render Some Service to the Factory'.⁷² Although the directors fired Mort at the next meeting of the board of directors, the Society took no action against Hall and they even raised William Pearce's salary despite the fact that Colt noted that 'I am well aware that many persons, & even some of the Directors, consider him not only as a *bad Man*, but particularly unfriendly to the Interest of the Society. That he is an imprudent Man I can have no doubt'.⁷³ The directors fired Pearce six months later after

Hamilton, May 30, 1792 in *The Papers of Alexander Hamilton*, XV, 408-409.

⁷¹ Peter Colt to Alexander Hamilton, March 27, 1793 in *The Papers of Alexander Hamilton*, 253-254.

⁷² *Ibid.*

⁷³ Peter Colt to Alexander Hamilton, May 7, 1793 in *The Papers of Alexander Hamilton*, XIV, 420-1.

finding that ‘many articles which were under his care’ went missing.⁷⁴ Pearce used the stolen equipment to construct his own mill in Philadelphia. Even Henry Wansey, the English manufacturer who visited the United States in 1794, observed that ‘the English workmen are dissatisfied, and ready to leave the factory as soon as they have saved up a few pounds, in order to become landholders up the country, and arrive at independence’.⁷⁵ The SUM experienced constant difficulties from immigrant workers leaving the factory and taking up agriculture as the availability of cheap land typically made farming a more profitable alternative.⁷⁶ Although members of the board of directors strived to hire competent management, their efforts were subject to informational inequalities that were only slowly remedied when Peter Colt became superintendent in 1793.⁷⁷

Dissatisfied workers would sometimes leave the factory for weeks without notifying their employers.⁷⁸ L’Enfant

⁷⁴ Peter Colt to Alexander Hamilton, November 7, 1793 in *The Papers of Alexander Hamilton*, XV, 391.

⁷⁵ Wansey, ‘The Journal of an Excursion to the United States of North America’, 83.

⁷⁶ Jeremy, *Transatlantic Industrial Revolution*, 9.

⁷⁷ Pursell Jr., ‘Thomas Digges and William Pearce: An Example of the Transit of Technology’, 557; Davis, *Essays in the Earlier History of American Corporations*, II, 462.

⁷⁸ The workers’ refusal to work can also be read as a sign of resistance to factory discipline. Cynthia Shelton argues that because immigrant textile manufactures had encountered trade unions and labor activism in the mills of northern England, these mechanics brought with them a distinct ideology that would help shape labour activism in the United States; Cynthia J. Shelton, *The Mills of Manayunk: Industrialization and Social Conflict in the Philadelphia Region, 1787–1837* (Baltimore and London: The Johns Hopkins University Press, 1986).

frequently disagreed with the board of directors over the size and scope of the town and factory. Peter Colt noted that the English workers did not share L'Enfant's grandiose ambitions, stating '[a]n *English manufacturer* cannot bring himself to believe that a *French Gentlemen* can possibly know anything respecting manufactures'.⁷⁹ Dissatisfied, L'Enfant left the SUM for several weeks in 1793, much to the chagrin of the other employees who needed his buildings completed to continue their production. During L'Enfant's absence, Hamilton received several complaints emphasising that 'no arrangements can be made' during the course of 'Maj. L'Enfant's extraordinary long Absence'.⁸⁰ L'Enfant's absence reduced the SUM to inefficiently housing its weavers in sheds to continue production.

The Society's grandiose plans limited the organisation's ability to hire employees that were best-suited to efficient production. L'Enfant's plans for the society were particularly counterproductive. The architect envisioned a large metropolitan city, complete with canals and cross streets, and designed his plans accordingly. Historians have noted that if L'Enfant's proposed canal had been carried through, it would have surely bankrupted the Society.⁸¹ In constructing the factory buildings, L'Enfant did not make the factory's production a priority, and instead built extravagant buildings

⁷⁹ Peter Colt to Alexander Hamilton, May 7, 1793, in *The Papers of Alexander Hamilton*, XIV, 420–1.

⁸⁰ Peter Colt to Alexander Hamilton, February 28, 1793, in *The Papers of Alexander Hamilton*, XIV, 171; Nicholas Low to Alexander Hamilton, March 4, 1793, in *The Papers of Alexander Hamilton*, XIV, 189.

⁸¹ Ben-Atar, *Trade Secrets*, 178–9.

before waterwheels could be constructed. Instead of taking advantage of the Passaic River's natural advantages, the first cloth produced at Paterson employed oxen to power the factory machinery. From the failure of the SUM, proponents of manufacturing realised that imitating European cities and means of production would not be sufficient to foster American industrialism.⁸²

The Society's failure to adapt to local circumstances also contributed to the factory's downfall. The directors chose to build Paterson on a 700 acre stretch of land neighbouring the Acquackanock Township, a small, close-knit community of Dutch Reformed settlers that shared a strong ethnic identity. Residents fervently opposed the SUM's proposal to incorporate thirty-six square miles of the township and resisted any efforts on the part of the factory that might challenge their communal identity. Although the SUM initially intended to hire underemployed women and children from the surrounding area, farmers refused to send their wives and children to work in the factory. Dutch farmers complained that the factory did not provide educational or religious services for workers employed in the mills. As a result, the directors relied on Irish immigrants recruited from New York City.⁸³ Because the SUM did not cater to the needs of the local population, the directors struggled to take advantage of the township's natural advantages. Subsequent

⁸² Elkins and McKittrick, *The Age of Federalism*, 279; Ben-Atar, *Trade Secret*, 178–9.

⁸³ Howard Harris, "'Towns-People and Country People': The Acquackanock Dutch and the Rise of Industry in Paterson, New Jersey, 1793-1831', *New Jersey History* 106(3-4), 1988, 23–37.

manufacturers learned from the SUM's missteps and made great strides to adjust production to local conditions.

Without these early experiments in industrialism, however, the growth of the Industrial Revolution would have been seriously impeded. Later efforts at large-scale production learned that British technology and factory methods had to be adapted to satisfy a predominately agrarian populace. Later manufacturers, such as Francis Cabot Lowell, avoided the Society's mistakes, pioneering the Lowell system that combined integrated production with moral reinforcement for workers to appease agrarian leaders. Lowell travelled to Britain for health reasons in 1811. Upon his return, he incorporated the Boston Manufacturing Company and established the first integrated cotton mill in the United States. There is no reason to suggest he planned to enter the textile industry beforehand, however, his status as a gentlemen traveling abroad for health reasons allowed him to gain the trust of factory managers and tour factories. Instead of competing with British manufacturers for variety or quality, Lowell modified simple British machinery that could produce large quantities of standardised cloth. Whereas previous manufacturers sought to prevent the dissemination of technology, Lowell and his associates leased their patent rights to competing firms. Licensing agreements allowed Lowell to subsidise his development costs and net a profit of \$8,354 for his company between 1817 and 1823. The Boston Manufacturing Company also sold machinery, netting \$33,190 during the same time period. Lowell avoided many of the SUM's missteps and allowed the textile industry to

expand dramatically throughout the nineteenth century. By 1832, textile companies comprised eighty eight of the 106 largest businesses in the United States.⁸⁴

Even Paterson experienced resurgence in the nineteenth century. In 1809, Roswell Colt became governor of the SUM and began building factories in the area. The region thrived during the War of 1812, and at the war's end the town claimed sixteen mills producing cotton textiles, wire, and lumber.⁸⁵ The SUM survived until 1846 as a result of its generous charter, which gave the corporation exclusive rights to provide water to inhabitants of the town.⁸⁶ Although the SUM failed to produce a national manufacturing centre, the Society was integral in shaping the development of Paterson's industry in the years that followed. When the factories closed, skilled mechanics opened new enterprises.⁸⁷ By the late-nineteenth century, the town had introduced a variety of new industries and had adopted flexible production methods that allowed manufactures to adjust to changing circumstances.⁸⁸

⁸⁴ Daniel Walker Howe, *What Hath God Wrought: The Transformation of America, 1815–1848* (New York: Oxford University Press, 2007), 132–6; Jeremy, *Transatlantic Industrial Revolution*, 95, 101, 185; Ben-Atar, *Trade Secrets*, 201.

⁸⁵ Harris, “‘Towns-People and Country People”, 35.

⁸⁶ Roberts, ‘Hamilton’s Great Experiment’, 24.

⁸⁷ Herbert G. Gutman, ‘The Reality of the Rags-to-Riches “Myth”: The Case of the Paterson, New Jersey, Locomotive, Iron, and Machinery Manufactures, 1830–1880’, in Herbert G. Gutman ed., *Work, Culture, and Society in Industrializing America: Essays in American Working Class and Social History* (New York: Vintage Books, 1977), 216–18.

⁸⁸ By the mid-nineteenth century, manufactures in Paterson had adopted production methods similar to those described by Philip Scranton for the Philadelphia region. Textile manufactures in Philadelphia easily

Eighteenth-century advocates of manufacturing described prospective immigrants as ideal citizens and tailored their proposals to meet the demands of an agrarian society. Proponents of industrialism looked to technology transfer as a means of remedying trade inequalities and creating a national power. These individuals perceived the Industrial Revolution as an extension of the American Revolution and as a struggle to achieve equal trading terms with Britain. Because skilled workers required considerable support in order to immigrate, private societies emerged to encourage immigration. As the British government lifted emigration restrictions and technological piracy failed to hold up in court, the tariff emerged as the preferred means of encouraging manufactures. Published drawings further reduced the need for immigration. Abraham Rees published *The Cyclopaedia; or Universal Dictionary of Arts, Sciences, and Literature* between 1802 and 1820. The volumes contained large, detailed engravings of common factory equipment and were republished in several editions between 1810 and 1822. Cheap and reliable patents also helped to protect the textile industry. Between 1793 and 1836 patents could be obtained for as little as thirty dollars and courts increasingly protected the rights of innovators. Although American industrialism employed British technology and imported labour, it followed its own course of development. The process of technology transfer saw American ideas transferred to Britain as

transitioned between producing different types of cloth, carpets, and curtains to meet the changing needs of consumers. Philip Scranton, *Proprietary Capitalism: The Textile Manufacture at Philadelphia 1800–1885* (Philadelphia: Temple University Press, 1983).

American inventors sought to protect their ideas internationally. Moreover, Americans were not alone in importing British technology. French manufacturers focused on enticing Catholic workers to emigrate, using the same 'ideal citizen' arguments that American proponents of manufacturing espoused.⁸⁹

⁸⁹ Darwin H. Stapleton, *The Transfer of Early Industrial Technologies to America* (Philadelphia: American Philosophical Society, 1987), 28–9; John R. Harris, 'Industrial Espionage in the Eighteenth Century', *Industrial Archeology Review* 7(2), 1985, 131. Jeremy, 'Damming the Flood', 18; Jeremy, *Transatlantic Industrial Revolution*, 24, 185; David John Jeremy, 'British Technology Transmission to the United States: The Philadelphia Region Experience, 1770–1820', *Business History Review* 47(1), 1973, 37–8; Ben-Atar, *Trade Secrets*, 194, 198–9, 208.