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Building DuPont: Capitalism, manufactures, and place in early America, 1800-1820

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BUILDING DUPONT: CAPITALISM, MANUFACTURES, AND
PLACE IN EARLY AMERICA, 1800-1820

by

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Bachelor of Arts
University of California, Berkeley
2006

A thesis submitted in partial fulfillment
of the requirements for the

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ABSTRACT

**Building Dupont: Capitalism, Manufactures, and
Place in Early America, 1800-1820**

by

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Though there is a rich literature dealing with the DuPont Company, the historiography remains dedicated to studies of the family's life, corporate methods, working-class culture, and technological know-how. Rarely do studies engage the company's wider economic position or regional influence in early America. This study analyzes the way early American culture guided and influenced DuPont's growth and success. It also examines the company's efforts to promote manufactures, create markets, and shape its surrounding landscape. As in other parts of the world, the development of industrial capitalism, and the wider acceptance of domestic manufacturers and large-scale industry in the United States accelerated the emergence of factory towns, milling villages, and long-term urban growth. The DuPont Company and its founder E.I. du Pont played an instrumental role in these developments and helped determine their specifically American characteristics. Furthermore, this thesis asserts that the environment in and around Wilmington shaped DuPont's early development, and that the firm was instrumental in organizing the economic, social, and physical world around it.

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My time in Las Vegas has surely been productive, but California remains the source of my inspiration. I have lived most of my life in the San Francisco Bay Area and can think of few places that offer a better modern-day example of innovative culture and the way industries organize landscapes. The region is also home to many of my immediate friends and family members. It is doubtful I would be where I am in my studies without them. I am greatly indebted to my parents for their love, support, and confidence in my abilities. They have always made returning home relaxing and special. Finally, more than anyone else, Laura Salcido has tolerated my absence, enhanced my spirits, and provided

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INTRODUCTION

“The Wisdom of the world has been, and is fairly attainable by us, as by other industrious and qualified nations, and the inventive genius of the people of the United States has produced a very great number of curious and valuable instruments and machines.”

Tench Coxe¹

In *A Statement of the Arts and Manufactures* Tench Coxe addressed two fundamental sentiments shared by many in America’s early republic. First, that wisdom, knowledge, and understanding were all obtainable to the United States’ industrious population. Second, that this industrious spirit led to valuable creations and new tools with which to engage the world. But these words, and others throughout this work, also imply that collecting wisdom and creating these tools was some form of destiny or purpose for the American people. It was something that they should achieve, or better yet, something they were meant to achieve more so than any other peoples. “It would have been a mine of wealth, lost to the country,” Coxe wrote, “if the talent to invent the invaluable saw gin, to prepare cotton for the manufacturer’s card, had not been exerted, and if the inventive and fabricating powers of our citizens minds and bodies had not been applied to steam energy.”² Americans were hardworking, vigilant people, and in the newly United States it was their job to invent, produce, and improve. Those who did none of these things were depleting their own fortunes, and worse, diminishing national wealth.

In America’s early national period—roughly between 1789 and 1830—statements like these were tied to economic growth and development. In the decades after the Revolution, politicians and citizens throughout the country discussed and debated

¹ Tench Coxe, *A Statement of the Arts and Manufactures for the year 1810* (Philadelphia: Cornman, 1814) Early American Imprints Series II: Shaw-Shoemaker, 1801-1819 (Accessed: October 25, 2009),49.

² Coxe, *A Statement of the Arts*, 50.

potential directions for the newly independent economy, all while making individual economic choices. Historian Lance Banning suggests that the Founding Fathers had distinctive views about the economic policies “necessary to secure a permanent foundation for the nation’s freedom.”³ The Founders, however, were not the only individuals with strong opinions on how to direct the national economy. Planters, farmers, manufacturers, laborers, and other ordinary citizens all held strong feelings about how to secure freedom and national stability. For one example, some manufactures envisioned “a nation of producers,” that could withdraw from world-trade altogether and avoid draining specie from the national coffers.⁴ This was in sharp contrast to the internationalist sentiments that permeated post-Revolutionary War discussions about the economy. Statesmen such as Thomas Jefferson and James Madison envisioned a national economy tied to free international trade. They labored to open overseas markets and counteract American dependence on British trade. In contrast to Jefferson’s and Madison’s Anglophobia, Alexander Hamilton, while also focusing on the international arena, hoped to link economic growth to revenues earned from British imports.

Different economic preferences gained traction in specific localities like cities and hinterlands, or the American North and South. In the South, plantation households organized the economy and society by directing slave or wage labor and facilitating market exchange. In Manhattan, as limited real estate became a valuable commodity, investors and businessmen increasingly gained control over a scarce housing market and

³ Lance Banning, “Political Economy and the Creation of the Federal Republic,” in *Devising Liberty: Preserving and Creating Freedom in the New American Republic*, ed. David Thomas Konig (Stanford: Stanford University Press, 1995), 11-12.

⁴ Lawrence Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry* (Baltimore: The Johns Hopkins University Press, 2003), 6.

placed political power in the hands of a few prominent landowners.⁵ The point is that there was no clear consensus, no one direction and no one dominating endeavor or activity that defined the antebellum economy.

Despite these differing and often competing viewpoints in the nation's early years, nearly all of these groups desired some form of economic growth and national development.⁶ As capitalist behavior took hold, many seemed to share Coxe's sentiment that a mine of wealth should not be wasted. The chapters that follow consider the emergence of domestic industries in this economic arena. Specifically, they ask how a nationalizing and capitalist economic culture motivated the actions of manufactures, and how those producers defended the significance of their productions. They also analyze the contributions of industrialists to national development through the creation and

⁵ A good work on the Southern economy is Jack P. Greene, *Pursuits of Happiness: The Social Development of Early Modern British Colonies and the Formation of American Culture* (Chapel Hill: The University of North Carolina Press, 1988); and for Manhattan, Elizabeth Blackmar, *Manhattan for Rent 1785-1850* (Ithaca: Cornell University Press, 1989).

⁶ Economic growth commonly refers to an increase in the productive capacity of an economy. This might apply to individuals, groups, or entire societies that increase output and trade through such methods as product specialization, a division of labor, or the application of new technologies that allow a fixed input to yield a larger output. See, Robert B. Eklund, Jr. and Robert D. Tollison, *Microeconomics: Private Markets and Public Choice, Sixth Edition* (Addison Wesley Longman, Inc., 2000), 32-33. Historian Douglass North further explains economic growth in the context of early national America. He argues that economic growth must begin with a successful trade in exports, because initially domestic markets are small and scattered. An expanding external market will therefore encourage general economic growth by increasing the number of producers and consumers participating in exchange. This growth provides for an "increase in the size of the domestic market, growth in money income, and the spread of specialization and division of labor," which encourages future growth and development. Douglass C. North, *The Economic Growth of the United States, 1790-1860* (New York: W.W. Norton & Company, 1966), 1-3. National and economic development also requires an explanation. My use of "development" in this thesis defers to historian and cultural theorist Raymond Williams' description of developed land as that which has been utilized or harvested for its natural resources. These resources are then used to benefit the ends of a particular society. The actual development of a place might imply the construction of buildings, roads, storage facilities, or other features that help facilitate economic and social connection or even agricultural plots that yield sustenance for society. Raymond Williams, *Keywords: A Vocabulary of Culture and Society, Revised Edition* (New York: Oxford University Press, 1976, 1983), 102-104. Development is also a process that yields things, as Jane Jacob asserts, rather than representing a mere collection of things. Jane Jacobs, *The Nature of Economies* (New York: Vintage Books, 2000), 31-33. Economic development can therefore be explained as the process of creating products from resources based on a society's definition of value. These products are then exchanged in national or international markets. When development increases along with the volume of exchange an economy grows.

expansion of markets and the organization of landscapes.

The rise of a manufacturing economy implied a certain type of development that is most visible in the actions and efforts of individual manufactures. One such individual was Eleuthère Irénée du Pont, a gunpowder manufacturer and founder and proprietor of the E.I. du Pont de Nemours & Company. This study engages the first two decades of the DuPont Company (1800-1820), and argues that manufacturers lobbied for productive economic growth and development during the early republic.⁷ The DuPont Company in particular believed manufactures supported independence and prosperity through domestic production and increased economic exchange. Their actions also contributed to economic expansion through the creation of new markets for their powder. Ultimately, the growth they advocated was physical as well. America's emerging industrial economy was the outcome of productive activity by DuPont and other industrialists whose actions were "responsible for urban and regional development."⁸ In constructing a working factory environment, DuPont effectually organized the social and economic lives of its workers and influenced the landscape around them.

While there is a fairly rich literature dealing with the DuPont Company, the historiography remains dedicated to studies of the family's life, corporate methods, working-class culture, and technological know-how.⁹ Rarely do studies engage the company's wider economic position or regional influence in early America. This study

⁷ In my discussion of the company, I have chosen to use the current spelling of "DuPont." When referring to the family, however, the name will be written as "du Pont."

⁸ Michael Storper and Richard Walker, *The Capitalist Imperative: Territory, Technology, and Industrial Growth* (Cambridge: Blackwell, 1989), 8.

⁹ For general works on the DuPont Company's history, see William H.A. Carr, *The du Ponts of Delaware: A Fantastic Dynasty* (New York: Dodd, Mead & Company, 1964); William S. Dutton, *Du Pont: Autobiography of a Scientific Enterprise* (New York: Scribner, 1952); Adrian Kinnane, *DuPont: From the Banks of the Brandywine to Miracles of Science* (E.I. du Pont de Nemours & Company, 2002); Pap A. Ndiaye, *Nylon and Bombs: DuPont and the March of Modern America*, trans. Elborg Forster (Baltimore: The Johns Hopkins University Press, 2007).

analyzes the way early American culture guided and influenced DuPont's growth and success. It also examines the company's efforts to promote manufactures, create markets, and shape landscapes in local, regional, and national arenas. As in other parts of the world, the development of industrial capitalism, and the wider acceptance of domestic manufacturers and large-scale industry in the United States accelerated the emergence of factory towns, milling villages, and long-term urban growth.¹⁰ DuPont played an instrumental role in these developments and helped determine their specifically American characteristics.

Accordingly, DuPont's promotion and defense of manufactures and their necessity for national development is this thesis' first chapter. The second chapter considers how the company created powder markets both through the acquisition of agents and participation in political and economic networks of exchange. The third chapter examines how regions and locations fuel innovation and how industry and high-technology businesses can then organize and shape built environments. Overall, the study analyzes the role of individual producers and highlights their participation in a culture that determined economic relations and shaped national development.

¹⁰ Storper and Walker, *The Capitalist Imperative*, 6.

CHAPTER 1

“OF THE FINEST QUALITY”: PROMOTING AND DEFENDING DOMESTIC MANUFACTURES IN EARLY NATIONAL AMERICA

Capitalism, Culture, and Industrialists

In the 1830s, while on his now famous tour through the United States, Alexis de Tocqueville reflected on what caused many Americans to follow industrial callings. Democracy, he argued, was the impetus for such a life calling. He believed that democracy, and its American manifestation in this case, led men to “prefer one kind of labor to another,” and specifically, “while it diverts them from agriculture, it encourages their taste for commerce and manufactures.”¹ Without a traditional aristocracy or assurance of position, rich men in democracies were always searching for new sources of wealth. It is telling that in Tocqueville’s 1830s, they found this source in trade and manufactures. Fifty years earlier, America’s society and economy were predominately agricultural, with many of a republican mindset fearing the social decay and decline in virtue that inevitably accompanied large-scale manufactures.² But in Tocqueville’s America, larger industrial enterprises were increasingly common, and such fears were scarce. In short succession, the country witnessed the arrival and proliferation of steamboats, trains, canals, and the electrical telegraph. As one historian has remarked, the early republic “was a crucial, if not the crucial, period in the development of that trademark characteristic of American society and economy, modern capitalism.”³ Yet, the

¹ *Democracy in America*, Vol. 2, ed. Phillips Bradley and trans. Henry Reeve (New York: Vintage Books, 1990), 154.

² Drew McCoy, *The Elusive Republic: Political Economy in Jeffersonian America* (Chapel Hill: The University of North Carolina Press, 1980).

³ Paul Gilje, “The Rise of Capitalism in the Early American Republic,” in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul Gilje (Madison: Madison House, 1997), 1.

emergence of a capitalist economy in early America, and specifically the rise of larger scale industrial capitalism, was not predetermined.⁴ Rather, following America's independence from Great Britain, it was not entirely clear how, or in what form, the economy would proceed. These observations have led historians to analyze how and why industrialization emerged when it did, and its effects on the national economy.

Recently, a number of historians have engaged these questions by viewing capitalist production and industrial growth as a cultural phenomenon. Though "capitalism" is a complex term, it usually refers to an economic system of relatively free exchange, private ownership of property and goods, a commoditization of the labor force, and is characterized by the investment of "capital" or resources in an enterprise with the expectation of receiving a gain in return. Additionally, this system stresses hard work and delayed gratification for individuals.⁵ For Joyce Appleby, capitalism as an economic system is contingent on time, place, laws, and customs. Beginning in England with the "convergence of agricultural improvements, global explorations, and scientific advances," capitalism came into the world embedded in a culture's expressions and actions.⁶ Appleby argues that changes in knowledge, technology, and behavior fostered economic expansion and gave rise to a new way of organizing markets. This emerging

⁴ My use of the terms "industry," "industrialism," and "industrialization," throughout this work requires some clarification. According to Raymond Williams' helpful explanation of key social science and humanities terms, there are "two main senses" of industry: "the human quality of sustained action or effort; [and] an institution or set of institutions for production and trade." My use conforms to the later definition, and more specifically with the word's nineteenth century association to the application of technical inventions to organized production on a large-scale as distinct from both traditional agricultural production and small-scale craft and artisan manufactures. Raymond Williams, *Keywords: A Vocabulary of Culture and Society, Revised Edition* (New York: Oxford University Press, 1976, 1983), 165-168.

⁵ This definition is largely drawn from: Joyce Appleby, *The Relentless Revolution: A History of Capitalism* (New York: W.W. Norton & Co., 2010), 6-7; and Paul Gilje, "The Rise of Capitalism in the Early American Republic," in *Wages of Independence*, 7. Williams observes that "capitalist" began to refer to those who controlled the means of production. "Capitalism" can also designate an entire society, or the features of a society, where a capitalist economic system predominates. Williams, *Keywords*, 50-52.

⁶ Appleby, *The Relentless Revolution*, 21.

capitalist system arose from the practiced cultural behaviors of a people who “acquired the power to bend political and social institutions to their demands.”⁷ They did this by privately investing in the economy, encouraging disciplined work and ingenuity of new technologies to enhance productivity, and ultimately by reorganizing the political and social systems to empower a moneyed aristocracy or bourgeoisie in Western Europe and the United States.

Similarly, in his comparative analysis of industrialization in Britain and Germany, Richard Biernacki recognizes that practices and techniques are arranged by cultural definitions, with culture as a driver of actions. The vectors of influence run from culture to economic arrangement, rather than vice-versa. For example, in England, where a market economy developed before labor was commoditized, finished manufactured goods became the measure of a worker’s worth. Alternatively, in Germany, where the manufacturing of commodities such as wool developed prior to market demand, workers were compensated based on the time and labor they expended on the production process. For Biernacki, the commoditization of labor and the emergence of capitalism took shape differently according to the cultural assumptions of Englishmen and Germans. In each country, culture was a “positive shaper rather than an accompaniment or passive resource for institutions.”⁸ In Biernacki’s and Appleby’s analyses, culture is a definitive force of market production and exchange.

How might an examination of cultures of capitalism help explain industrialization in the early American republic? For one, it suggests that, at least for England, capitalism and market relations preceded industrialization. It can be argued that this was the case in

⁷ Appleby, *The Relentless Revolution*, 118.

⁸ Richard Biernacki, *The Fabrication of Labor: Germany and Britain, 1640-1914* (Berkeley: University of California Press, 1995), 475.

America as well, and that capitalist behavior and market organization defined the beginnings of industrial production. One way this can be observed is by taking into consideration historians' assertions that individuals are the practicing embodiment of their culture. As Appleby argues in an earlier essay, European demand for American grains brought ordinary men into the Atlantic trade world, and enhanced the value of their harvests.⁹ By involving themselves in this productive economy; by choosing to invest in houses, property, public works, and cities; and by accumulating wealth through production and trade early Americans mimicked the capitalistic behaviors of their English counterparts. Once independent and free to express themselves, many Americans—both urban and rural—noticeably became involved in national and international production and commodity trade.¹⁰ This led to economic growth through the

⁹ Joyce Appleby, "Commercial Farming and the 'Agrarian Myth' in the Early Republic," *The Journal of American History*, 68, No. 4 (March, 1982): 833-849.

¹⁰ American historians have offered several explanations for how and when capitalist production and expanded markets took root in America. While it is widely understood that agriculture and industry existed in America since the early days of colonization, the contention has been on when exactly and how it became capitalist, or investment and market oriented, in nature. As mentioned, historian Joyce Appleby is particularly concerned with the specific developments that allowed capitalism to take root. For her, a market revolution of sorts took place in England long before the early nineteenth century, and it occurred through individual participation and action. The English and Netherlands' agricultural revolutions increased output, freed up labor, and opened the countryside to commercial relations. Before the American Revolution, Appleby, and a number of scholars have argued that the colonists were becoming more rather than less British. This ultimately exceeded their desires for independence and greater participation in the world's marketplaces. Following the Constitution's ratification, Republican notions of liberty extended to the economy and stressed the idea that individuals could improve themselves through profitable exchange in a market society. See especially, Joyce Appleby, *Capitalism and a New Social Order: The Republican Vision of the 1790s* (New York: New York University Press, 1984). Historians Christopher Clark and Cathy Matson both see capitalism taking root during this time, and in similar ways. In his analysis of capitalism's origins in rural Massachusetts, Clark notes that "people did not just respond to things, they made them happen." In short time, Massachusetts' rural west went from an economy dominated by independent farmers, to one participating in a national marketplace. See, Christopher Clark, *The Roots of Rural Capitalism: Western Massachusetts, 1780-1860* (Ithaca: Cornell University Press, 1990), 8. Matson also recognizes the release of economic energy following the nation's political organization and stabilization of revenue. See, Cathy Matson, "Capitalizing Hope: Economic Thought and the Early National Economy," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul Gilje (Madison: Madison House, 1997). William Cronon, however, locates the origins of this economy in a far earlier period. If events after the Revolution finally spelled the triumph of capitalism, its habits and actions had a long history dating back to early English settlements in the New World. See, William Cronon,

exportation of raw materials and ultimately to investments in domestic manufactures that could process materials locally for sale in both domestic and international markets. All this is to highlight two points about the emergence of industrialization in early America. First, manufactures and industrialization came about primarily through cultural behaviors and actions of individuals participating in an expanding national and international economy.¹¹ Second, those arguments for a market revolution that “created ourselves and most of the world we know” have been exaggerated.¹² Instead, by analyzing the actions of individual producers and entrepreneurs to create and defend their products, expand markets, and shape their environments, it is clear that their cultural efforts, attitudes, and behaviors stimulated American industrialization. America created a “Market Revolution,” not the other way around.

The origins and actions of one firm, E.I. du Pont de Nemours & Company, a gunpowder manufacture just outside Wilmington, Delaware, and its proprietor Eleuthère Irénée du Pont, provide an excellent case study for understanding America’s industrial

Changes in the Land: Indians, Colonists, and the Ecology of New England (New York: Hill and Wang, 1983).

¹¹A number of historians have recently drawn attention to the important economic role of individuals in the early republic. Lawrence Peskin notes that while much has been said about the industrial revolution, little has been said about industrial revolutionaries. For him this suggests what has been a preoccupation with forces rather than humans when explaining economic change. Lawrence Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry* (Baltimore: The Johns Hopkins University Press, 2003), 1. Jonathan Prude also suggests that “the coming of industrial order—and of factories—happened because specific people acted for specific reasons.” Jonathan Prude, “Capitalism, Industrialization, and the Factory in Post-Revolutionary America,” in *Wages of Independence*, 91. Steven Watts is also concerned with the individual’s role in the economy, but he is also interested in process. In his analysis, the shift from republicanism to liberal capitalism came about due to the “cultural hegemony” of an influential socio-political group. He uses “cultural hegemony” to refer to “the way by which dominant class values, organization, and definitions of reality seem to attract ‘spontaneous’ loyalty rather than simply being imposed on society through brute force.” Steven Watts, *The Republic Reborn: War and the Making of Liberal America, 1790-1820* (Baltimore: The Johns Hopkins University Press, 1987), Introduction. Though I partially agree with Watts, my use of culture here is less a part of elite society and “spontaneous loyalty,” and is instead expressed through the behaviors and actions of commoners and elites alike that, through their participation and decisions, drive economies in particular directions.

¹² Charles Sellers, *The Market Revolution: Jacksonian America, 1815-1846* (New York: Oxford University Press, 1991), 5.

beginnings. The DuPont story is useful for several reasons. First, the company's location in a growing industrial region and innovative community made it a direct participant in the physical growth of industry and the encouragement of economic advancement. Second, by acquiring sales agents and successfully marketing powder to a number of states, the firm bolstered hopes that American industries could supply domestic consumption. Finally, the du Pont family's actions and beliefs highlight the nation's shifting political economy from one based heavily on agriculture and post-revolutionary free-trade to a post-War of 1812 embrace of large-scale manufactures and mercantilist protections.

In 1800, E.I. du Pont, along with his father (French Physiocrat and economist Pierre Samuel du Pont de Nemours) brother, and their families, emigrated from France to America. The family's motivation was to speculate on western lands and develop a profitable commercial carrying business between France and the West Indies.¹³ When shortly after settling in America their commercial enterprise DuPont de Nemours Father, Sons & Company failed, the family was forced to rely on what had originally been a supplemental plan: the manufacture of gunpowder. The family hoped that E.I. du Pont's considerable skill in manufacturing powder, along with the government's need for it, would provide a "positive certainty of great profits."¹⁴ Shortly after initiating operations, these hopes were realized. Production, sales, and profits generally increased—with a few down periods—over the next several decades, as the company's reputation, output, and physical footprint grew. Its proprietor, E.I. du Pont, however, faced a number of issues

¹³ Mack Thompson, "Causes and Circumstances of the Du Pont Family's Emigration," *French Historical Studies*, 6, No. 1 (Spring, 1969), 67-77.

¹⁴ Pierre Samuel du Pont de Nemours to Jacques Bidermann, New York, December 1, 1800, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1799-1802*, Vol. 5, trans. B. G. du Pont (Newark: University of Delaware Press, 1924), 191-192.

and challenges while working to achieve these results. These included not only the hardships involved in transferring French techniques and processes to America, in manufacturing the powder itself, and in overcoming the general scarcity of wage labor due to the availability of inexpensive land, but also the struggle to protect trade secrets and ward off labor piracy while maintaining creative control over the company and building trust in its products. E.I. du Pont was a significant promoter of manufactures in the early republic, and his active participation in a community of manufactures, producers, and economists should not be ignored. Together his struggles and promotional endeavors highlight the individual industrialist's role as a cultural actor striving to participate in and shape a growing market economy.

One way to answer questions, such as those posed at the outset of this chapter, about the composition and direction of the United States' early national economy is to look at individual actors within a culture. E.I. du Pont and other industrialists established manufacturing operations and helped influence perceptions of how those industries were received. In a society pursuing economic development and expressing an increasingly capitalistic mentality, small and large manufactures and agricultural producers alike expanded markets, equated industrial growth with national prosperity, and secured legislation that recognized the legitimacy of their businesses. While Tocqueville was astute in associating industrial growth and democracy, there is more to the story. Democracy did not alone stimulate manufacturers to increasingly expand production, technology, and markets; rather they expanded as part of a culture that rewarded individual efforts. Yet their lives were not merely culturally determined, it still took distinct political, religious, and economic realities to motivate their actions. The

eighteenth-century Atlantic world's developing market culture compelled individuals to seek new identities, and participate in larger economic activity. In the United States, where democracy, nationalism, and conceptions of freedom helped stimulate this activity, it took individuals and businesses, like E.I. du Pont de Nemours & Company, behaving in specific ways to secure the growth of industry, its means of exchange, and the rules of economic participation.

From Free Markets to Neo-Mercantilism: Economic Sentiments
at the Turn of the Nineteenth Century

When the du Pont family arrived in America at the beginning of the nineteenth century they entered a nation engaged in a dynamic debate about how to define and determine its economic future. Between the 1780s and 1820s, America transitioned from a nation espousing principles of free-trade and in search of international markets for its agricultural produce to one advancing commercial protections and emphasizing internal developments as well as national economic growth in the agricultural, commercial, and manufacturing sectors. In hindsight this transition seems dramatic, as much of the country's population during this period continued to be employed in agriculture and live in rural communities. Additionally, many influential public thinkers and officials such as Benjamin Franklin and Thomas Jefferson spoke of the virtues of agriculture and rebuked the vices and moral decay associated with large manufactures.¹⁵ Yet, during the years in

¹⁵ In 1760, Franklin imagined that Americans would for centuries find employment in agriculture, thereby helping to free them “effectually from [their] fears of American manufactures.” Franklin believed that manufactures promoted the growth of a landless poor who had to work for others at low wages. See Chapter One epigraph in David R. Meyer, *The Roots of American Industrialization* (Baltimore: The Johns Hopkins University Press, 2003), 1. Several years later, Jefferson echoed this sentiment by referring to those who labor in the earth as “the chosen people of God.” Furthermore, manufactures and other

question, industrial pursuits and large-scale manufactures occupied an increasingly visible economic role. Especially along the eastern seaboard in the mid-Atlantic and Northeast, new industries emerged and began to employ a moderate percent of the nation's population alongside a consistently growing agricultural sector.¹⁶ Proprietors and firms such as DuPont were instrumental in facilitating these economic changes. As one scholar asserts, ordinary people's desire to consume motivated their industriousness and productivity and forged the "political, legal, and social milieu" that liberated entrepreneurial and commercial dynamism across the eastern United States.¹⁷ Throughout this transitional period, the nation's emerging capitalist culture composed of productive individuals stimulated the economic changes that were taking place. To better understand DuPont's role as a contributor to these changes, it is helpful to begin by depicting America's early economic climate and analyzing the motivations for change that resulted in an expanding domestic economy.

Following the Revolution, American foreign policy under the Articles of Confederation acted to open international markets and advance policies of commercial freedom. This initially took the form of discrimination against British mercantilist practices embodied in Thomas Jefferson's efforts as a foreign minister to create a commercial treaty with France that counteracted Britain's continued control of the market for many American raw materials. Since post-colonial America remained a predominantly agricultural nation producing an abundance of foodstuffs and valuable

endeavors that required subservience to a business owner or boss would "suffocate the germ of virtue," and restrict individual freedoms. For Jefferson's sentiments, see McCoy, *The Elusive Republic*, 12.

¹⁶ Between 1810 and 1840 the percentage of the American population employed by manufactures rose from 3.2 percent to 8.7 percent. During the same period, the percentage of population employed by agriculture decreased slightly from 72.3 percent to 67.2 percent. Meyer, *Roots of American Industrialization*, 3.

¹⁷ Meyer, *Roots of American Industrialization*, 10.

cash crops such as cotton, tobacco, and wheat, the maintenance of foreign trade and the creation of markets was critical for the economy's success. France "held the key" to America's commercial problem because it provided markets for American produce in exchange for French "manufactures, oils, wines, tropical produce, and other articles."¹⁸ It was believed that the French trade offered a way for Americans to escape their commercial dependence on Britain by opening new avenues for exchange, despite the fact that it merely shifted dependence from one nation to another.¹⁹ Jefferson's support for a Franco-American treaty achieved little more than advancing a mercantilist policy that ultimately failed when French nationalists also abandoned their own prospects of free trade following the onset of the French Revolution.

In 1789, following the ratification of the Constitution, James Madison continued Jefferson's policies from his position in the House of Representatives. Madison also pursued a policy of commercial discrimination against the British by supporting a universal tonnage duty on merchant vessels of countries with whom America had treaties and higher duties on those—namely the British—with whom they did not.²⁰ This policy was eventually rejected by the Senate and ensured, for the time-being, that neither Jefferson nor Madison were successful in dismantling Britain's supremacy over American trade.

¹⁸ Merrill D. Peterson, "Thomas Jefferson and Commercial Policy, 1783-1793," *The William and Mary Quarterly*, Third Series, 22, No. 4 (Oct., 1965), 595.

¹⁹ Without entirely acknowledging this shifting economic dependence, Jefferson seemed content with this strategy, as Peterson notes, because the advantages of direct trade with France were not only good from an economic standpoint, but from a moral and political one as well. For Jefferson, the plan offered a "means of curbing British power and of multiplying ties of interest and affection with the only nation that deserved, or was likely to justify, American friendship." Peterson, "Thomas Jefferson and Commercial Policy," 600.

²⁰ For Jefferson's struggles in securing a Franco-American treaty see, Peterson, "Thomas Jefferson and Commercial Policy," 603-604. And for a discussion of Madison's desires to discriminate against British trade see, Stanley Elkins and Eric McKittrick, *The Age of Federalism: The Early American Republic, 1788-1800* (New York: Oxford University Press, 1993), 88-89.

In his role as the Secretary of Treasury, Alexander Hamilton presented an opposing view to Madison's and Jefferson's that also looked to the international arena for a way to develop American commerce and secure economic independence. Unlike Madison and Jefferson, who were most concerned with the productive sectors of the American economy represented by individual landowners and agriculturalists, Hamilton believed that the merchant class performed the most creative role in the nation's economy. He therefore set out to create a political economy that centered on the merchant class' wide variety of "knowledge, experience, and ideas."²¹ Hamilton imagined a dynamic and active central government that needed stable revenue to properly oversee national affairs. Under his system, revenue would come from a series of duties on imported goods. Since ninety-percent of America's imports during this time came from Great Britain, any disruption of trade with that nation would destroy his entire system.²² The importance of maintaining amiable relations with Great Britain was essential to Hamilton's plan and directly contradicted the policies presented by Jefferson and Madison. The two opposing sides represent the nation's early political split over how to shape the national economy. Whereas Hamilton sought to maintain close commercial relations with Great Britain and model America's fiscal policy on a system of funded debt to support the national government, Jefferson and Madison actively labored to break America's economic dependence on Britain and establish alternative outlets for the country's agricultural produce.

²¹ Elkins and McKittrick, *The Age of Federalism*, 116.

²² Elkins and McKittrick, *The Age of Federalism*, 124. John Nelson provides a brief and cogent description of Hamilton's political economy by suggesting that Hamilton sought to secure national stability and independence through a strong central government, the "central government through debt service, debt service through a particular fiscal program, the fiscal program through tariff revenues, [and] tariff revenues through trade with Great Britain." John R. Nelson, Jr., *Liberty and Property: Political Economy and Policymaking in the New Nation, 1789-1812* (Baltimore: Johns Hopkins University Press, 1987), 32.

The Madisonian and Jeffersonian political economy ostensibly gave most support to the domestic production of goods as well as individual farmers and proprietors. While Jefferson and Madison's early commercial policies may have failed, the spirit and motivation behind them gripped the nation following the pivotal election of 1800. The divisions formed in the earlier opposition between the Hamiltonian and Jeffersonian political and economic camps came to the foreground in this election with each group believing that "victory for their side was essential to the nation's survival."²³ The election of Thomas Jefferson to the presidency cemented the presence of a new economic culture in the nation's highest offices. Jefferson's earlier search for "a national system of political economy capable of advancing the interests of the American republic," was now in a position to energize the nation's economy.²⁴ Over the next thirty or so years, America's political culture highlighted the national economic importance of yeoman farmers, laborers, and a multitude of independent producers. The advancement of Jefferson's productive, agrarian, and market based system over Hamilton's financial and merchant-led commercial one also acknowledged the rising fortunes of a particular type of capitalist economy that valued producers ahead of financial middlemen and those providing transportation services.²⁵

Yet, even the triumph of the Jeffersonian system does not alone explain how or why

²³ Sean Wilentz, *The Rise of American Democracy: Jefferson to Lincoln* (New York: W.W. Norton & Company, 2005), 90.

²⁴ Peterson, "Thomas Jefferson and Commercial Policy," 609.

²⁵ Jefferson's political economy and the type of capitalism he supported in America drew heavily from contemporary European ideas about the productiveness of agriculture. David McNally confirms this by arguing that classical political economy represented a social and economic theory of agrarian capitalism. Furthermore, he asserts that pre-Ricardian economists in Europe displayed a bias in favor of the agrarian, not the commercial or industrial classes. David McNally, *Political Economy and the Rise of Capitalism: A Reinterpretation* (Berkeley: University of California Press, 1988), xii-xiv. In contrast, Hamilton supported this later system by suggesting that merchants and banks should control the nation's wealth. Again, Joyce Appleby has explained the Hamiltonian and Jeffersonian debate—the conflict between the Republicans and Federalists—as a struggle between "two different elaborations of capitalistic development in America." Appleby, "Commercial Farming," 836.

Americans began to support domestic manufactures and large scale industries. But, as historians have recently argued, the acknowledged economic importance of individual producers and the growth of commercial agriculture were important prerequisites for the advancement of American manufactures.²⁶ In addition to this, a number of policies passed during Jefferson's administration, and those of his successors, as well as the actions of individuals and the advocacy societies they formed generated support for industrial production and resulted in what can best be described as a neo-mercantilistic political economy.²⁷ The Embargo of 1807 and the subsequent Non-Intercourse Acts were implemented with the hope that foreign nations would entreat fairly with American when they realized the importance of its trade. Instead, these policies merely helped propel the country into war with Britain. In time, the United States' failure to secure favorable trading rights with Britain and other nations led a popular desire to focus instead on internal economic development and growth.

In 1815, President James Madison called for the creation of a new national bank, a tariff to protect American manufactures, and support for improvements in transportation infrastructure such as roads and canals. Congress agreed to all of these measures. Even

²⁶ Appleby notes that Jefferson's economic policies were not specifically anti-commercial, but entailed a "commitment to growth through the unimpeded exertions of individuals whose access to economic opportunity was both protected and facilitated by government." Appleby, "Commercial Farming," 849. In other words, Jefferson believed that individual producers were the heart of the economy and that government action and policies could facilitate their access to domestic and international marketplaces for their goods. Furthermore, in his account of the early republic, David Meyer suggests commercial agriculture helped enable the rise of manufactures. He argues that the agricultural and industrial transformations occurring across the American landscape reinforced one another. Specifically, in the Pennsylvania area, he concludes that the region's prosperous agriculture looked to other regions of the country for markets and by doing so provided a model for emerging manufactures. Meyer, *The Roots of American Industrialization*, 4-6.

²⁷ Lawrence Peskin refers to America's early nineteenth century economy as neomercantilistic, but is careful to point out that it differed in key ways from the classical mercantilist doctrine. Most importantly, he argues, it differed because Americans did not view international trade as the bedrock of the economy, and instead they entertained "the possibility of a more self-sustained national market." Lawrence Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry* (Baltimore: The Johns Hopkins University Press, 2004), 6.

Jefferson and Madison agreed that an export economy left America dependent on a Europe that could not be relied upon. Ultimately, Jefferson's Republican Party shifted their support from the exportation of productive agriculture to encourage national prosperity through subsidies to commerce, manufactures, and internal improvements.²⁸ These ambitions culminated in Henry Clay's "American System" that successfully increased the tariff in 1824, and generally proposed "a national transportation network that would make the United States economically independent of Europe and geographically interdependent within itself."²⁹ All these prospects ensured that America's economic development had adopted a decisively nationalist agenda that not only promoted agricultural production, but also ensured legal and financial protections for nascent manufactures and commercial industries. By adding these protections, America in the 1820s began to resemble a conglomeration of both Hamilton's strong central government with revenue collecting abilities, and the productive spirit of Jefferson's individualist market participants. Additionally, Clay's system helped usher in a collection of economic policies that were essentially neo-mercantilist, using tariffs to promote production and exports and discourage imports. Not everyone, however, favored the government's active role in the economy. Senator and Vice-President John Calhoun, though also favoring economic growth, believed that independent producers should be free to find markets without the assistance or hindrance of the federal government.³⁰ Yet, despite protests by Calhoun and others largely located in the South, the protective policies of the early 1820s emerged as a strong political option during a contentious age

²⁸ Paul E. Johnson, *The Early American Republic, 1789-1829* (New York: Oxford University Press, 2007), 138.

²⁹ Johnson, *The Early American Republic*, 140.

³⁰ Lacy K. Ford, "Republican Ideology in a Slave Society: The Political Economy of John C. Calhoun," *The Journal of Southern History* 54, no. 3 (Aug., 1988), 422.

of American development that highlighted the state's role in directing the economy.

The Economic State: Physiocracy and Du Pont's French Background

The du Ponts arrived in America fairly early on in the progression of these economic debates. Despite coming from another country and society, the family had for some time participated in similar economic discussions in France. Additionally, much as the United States came to rely on an increasingly powerful central government to ensure economic growth and protection, the du Pont's hailed from a French society where they lobbied for a strong government that would support and direct economic activity. Beginning in the sixteenth century, states became central economic actors in the European economy, and while in France, the du Ponts—especially the patriarch Pierre Samuel du Pont de Nemours—participated extensively in political and economic discussion and policy formation at the national level.³¹ As a follower of the Physiocratic school, P. S. du Pont helped erect and disseminate a complex science of wealth that constituted the first modern school of economics.³² Physiocracy meant the rule of nature, and the conviction that agriculture was the only source of national wealth resulted in support for policies that removed restrictions on the sale of grain and an overall freeing of trade. Generally, Physiocracy's defense of economic individualism, absolute land ownership, legal uniformity, and a national market where human labor could be bought and sold

³¹ Historian Immanuel Wallerstein expounds the view that “the development of strong states in core areas of the European world was an essential component of the development of modern capitalism.” This observation mirrors a conviction held by the Physiocrats in France and later preached by the du Ponts and other advocates for a self-sufficient economy in the United States. Immanuel Wallerstein, *The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (San Diego: Academic Press, Inc., 1974), 134.

³² The school's founder François Quesnay developed his theories based on the actual situations of the French economy during the mid-to-late eighteenth century. See Elizabeth Fox-Genovese, *The Origins of Physiocracy: Economic Revolution and Social Order in Eighteenth-Century France* (Ithaca: Cornell University Press, 1976).

demonstrated early support for a capitalist economy.³³

Despite an emphasis on the radical liberalization of the French economy, the Physiocrats were a conservative body that supported the monarchy and state power. They believed that individual economic activity would have a positive consequence at the macro-economic level—the collective interest was the sum of individual interests.³⁴ In total, through the promotion of free trade and the modernization of agriculture they hoped to restore the French kingdom's legitimate political authority. Thomas Jefferson and other Americans championed their methods and envisioned them as a potential avenue for the new nation's political economy. The intended results of the Physiocrats' measures offered a new direction for the United States; an economy that would support national strength and development, but also needed federal and state government support for its promotion. In essence, this philosophy advocated agricultural and productive growth, but to achieve it, the government's strength and support was necessary. This was the philosophy the du Pont's carried with them to the United States in 1800, and it was already present in many respects in the new social order supported by the Jeffersonian Republicans.

E.I. du Pont's own background in France convinced him of the importance of productive industry and its need for government support. His experience also positioned him for manufacturing success in America. Before the French Revolution, E.I du Pont learned the skills and techniques of powder making at the state-run gunpowder mills at Essonne outside of Paris. He trained under the famed French chemist Antoine Lavoisier

³³ Fox-Genovese, *The Origins of Physiocracy*, 28.

³⁴ Yves Charbit, "The Political Failure of an Economic Theory: Physiocracy," *Population*, Vol. 57 (June, 2002), 877.

who had engineered new techniques to improve the quality of powder.³⁵ It was these techniques that Irénée took with him to the United States a decade later. But even more important is the relationship between industrial production and the state that he observed while a student at Essonne. Because he matured in a society where the government involved itself heavily in the administration and development of scientific industries, du Pont was never entirely able to diminish the necessity of this relationship. Furthermore, the Physiocratic principles espoused by his father stressed this relationship as well. Only a strong central government could protect an individual's right to produce and freely participate in economic exchange. In the United States, E.I. du Pont continued to exercise these ideals as he actively sought government approval for his powder manufactory, labored to obtain government business, and petitioned for policies to support industry.

³⁵ For a description of E.I. du Pont's career in France, see Carr, *The du Ponts of Delaware*. Another good depiction can be found in, Gavin Weightman, *The Industrial Revolutionaries: The Making of The Modern World, 1776-1914* (New York: Grove Press, 2007), 80-89. Additionally, Darwin Stapleton argues that du Pont's training at Essonne was important for his later success in America for a number of reasons. First, he speculates that the quality control E.I. du Pont studied in France was unknown in America. Furthermore, Irénée did not only receive training in France, but later returned for advice, equipment, and plans from the institution that succeeded Essonne after the French Revolution.



Figure 1: Portrait of E.I. du Pont (standing) studying with Antoine Lavoisier (sitting). This depiction would have the viewer believe that du Pont trained intimately with Lavoisier, but Darwin Stapleton suggests that this was probably not the case. The powder works at Essonne were large and catered to a number of students. It is also relevant that much of du Pont's training was to prepare him as a powder administrator and not as a powder worker per se. See Darwin Stapleton, "Élève des Poudres," 231. Source: E. I. du Pont & Lavoisier, painting by Wright, Portrait File, PF_20090605_201.tif, Hagley Museum and Library.

Industrial Boosters and National Prosperity

Within a few short years of the Constitution's ratification, praise for manufactures and innovative, labor-saving machinery appeared in various areas of the country. "It must

afford great pleasure to the friends of American manufactures,” one newspaper read, “to see the rapid improvements which have, within these few years, been made in machinery within the United States.”³⁶ Praising individuals who defied the odds against mechanical inventions, this description of Oliver Evans’ new carding machine is an early example of the growing enthusiasm for manufactures particularly in the mid-Atlantic and Northeast. This news report further asserted that Evans’ machine, when in use, enabled individual proprietors to “excel Europe in the manufactory of cards.”³⁷ Indeed, this was important news to the friends of domestic manufactures who hoped machines like Evans’ would fuel the new American economy. That the country could best European manufactures appealed to post-revolutionary hopes and desires for independence, opportunity, and freedom. As one historian observes, “social equality and personal autonomy had an economic dimension” in the early republic, and because of this, “Americans seemed determined to avoid pecuniary dependence on others.”³⁸ Though the desire for economic independence was a growing sentiment for many, domestic manufactures and other industries still had to be made safe and viable for those wishing to invest in or establish new enterprises. In the republic’s nascent years this became the task of individual industrialists, economic boosters, and supporters of manufactures.

Historians have recently equated the emergence of domestic manufactures with the nation’s early political economy and republican identity. For one historian, nationalism was a strong motivator for economic growth. Specifically, the American Revolution and

³⁶ “From the Delaware Gazette, of the 17th Inst.,” *National Gazette*, Vol. 1, Issue 42 (Philadelphia, Pennsylvania), Early American Newspaper Series 1-3, 1690-1922, 166.

³⁷ Ibid.

³⁸ Watts, *The Republic Reborn*, 5. For more on economic independence in the early republic see: Merrill D. Peterson, “Thomas Jefferson and Commercial Policy, 1783-1793,” *The William and Mary Quarterly*, Third Series, 22, No. 4 (Oct., 1965): 584-610. More telling of the sentiments that ultimately gripped the nation and stimulated economic growth is: Appleby, *Capitalism and a New Social Order*, especially Chapters 2-4.

subsequent independence “opened up new vistas that ultimately accelerated and reshaped developments underway.”³⁹ These new projects were perhaps assisted, another historian argues, by policies and market relations. Protective policies, like increased tariffs and Jefferson’s 1807 Embargo, ostensibly offered assistance to domestic manufactures. In the 1810s and after, it was hoped that the American System and other measures would develop the economy through government spending on public works, manufacturing technology and consumer incentives.⁴⁰ Lawrence Peskin’s *Manufacturing Revolution* most thoroughly analyzes how a number of these factors fostered industrialization in the early republic. Manufacturing promoters stressed the harmony of manufactures with commerce and agriculture, therefore making them seem a natural and unthreatening addition to the economic sector. Most importantly, however, Peskin’s argument lends credence to arguments which emphasize the importance of the cultural backgrounds stimulating both the economy and manufactures in particular. The key to the market and industrial revolutions, and the enthusiasm for economic growth, was less the new technologies and transportations that expanded market transactions, but rather “a series of decisions made by individuals yearning to become part of the larger markets as consumers and producers.”⁴¹ The desires and actions of individual producers and consumers were ultimately responsible for demonstrating the necessity of manufactures and making them an essential part of the early American economy.

³⁹ Gilje, “The Rise of Capitalism,” 7.

⁴⁰ Matson, “Capitalizing Hope,” 127. Matson also draws attention to an important caveat. Besides areas of the Northeast and mid-Atlantic, a substantial portion of Americans, set back from waterways, continued to produce largely for local exchange and household use. Development in the early republic, therefore, remained uneven. In another policy discussion, Economist C. Knick Harley, stretching his analysis to the 1850s, is strongly convinced that tariffs stimulated American industrialization, and that manufactures depended on protection. See, C Knick Harley, “The Antebellum American Tariff: Food Exports and Manufacturing,” *Explorations in Economic History* 29, (1992): 375-400.

⁴¹ Peskin, *Manufacturing Revolution*, 3.

As previously noted, E.I. du Pont was one individual who did much to promote manufactures and stress their importance for an independent economy and for national development. Early in his company's tenure, he often did this through correspondence with family members and influential figures and through the promotion of his own products. Later, he toiled to defend individual rights to innovation, and vigilantly opposed labor piracy and industrial espionage—which he believed harmed honest and skilled manufacturers. In his writings and actions, he constantly linked the success of quality manufactures, like his own, to national development and the public good. Though from France, and not the United States, du Pont shared the country's distaste for England—and its economic dominance—and, furthermore he adapted quickly to America's productive mindset. He became committed to the importance of capital in the establishment of manufactures and in its use for national development and the public good. Though an immigrant, he was an essential part of America's industrial development. Upon settling in the country, he seemed entirely in tune with the words of his father who wrote, "A great capital is needed to accomplish all the good that can be done—to reach every family and make it profitable to itself and helpful to others."⁴² By earning a great capital, he, and other producers like him, could aid American development while advancing independence and the public good in the new nation.

Once the DuPont Company erected its mills and began delivering powder, E.I. du Pont advertised his manufacture and its product as an essential contributor to economic development. Commodities are never simply material entities; they must be assigned a cultural value based on relative scarcity and desirability. The demand for most

⁴² Pierre Samuel du Pont de Nemours to Dr. Du Pont at Rotterdam, New York, August 4, 1800, in *Life of Eleuthère Irénée du Pont*, Vol. V, 148-149.

commodities can therefore be manipulated by consumer perceptions and advertising. Because of this, du Pont's promotional language reveals how he turned his gunpowder into a sought after commodity. He did so by depicting domestic manufactures, like his own, as useful industries important to the nation's identity. He sought to capitalize on sentiments of national strength and pride by suggesting that domestic products were not only better, but they helped reinforce economic stability and material independence as well. A company advertisement in New York State championed DuPont powder as superior "in point of strength, quickness, and cleanness" to the best imported powders. It then linked the quality of home manufactures to national identity in suggesting that "to every true American it must be a satisfactory prospect to see some of the home manufactures already superior to those of the old world."⁴³ Another advertisement, this one composed by a company agent in Philadelphia, Archibald McCall, also noted the powder's domestic origins and compared it favorably to European brands.⁴⁴ The company, and E.I. du Pont in his private correspondence, continued to use this type of laudatory language when promoting its powder and manufactures in general.

Aside from his own manufacture, E.I. du Pont wrote increasingly about the significance of manufacturing for national strength and prosperity. In an 1808 letter, du Pont encouraged prominent Philadelphian James Mease's idea to publish a periodical on agriculture, art, and manufacturing. The work would be highly useful, du Pont asserted, being "fully convinced that the country is more ripe for manufacturing than people generally think."⁴⁵ In his mind, a work like Mease's would further encourage industry.

⁴³ Victor du Pont, "Riflemen, Attention! Gunpowder of the First Quality," New York, November 1, 1806

⁴⁴ "Gunpowder," *Aurora General Advertiser*, January 31, 1805, Issue 4395 (Philadelphia, Pennsylvania), 4.

⁴⁵ E.I. du Pont to James Mease, Eleutherian Mills, January 21, 1808, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 17. This letter arrived several years in advance of Mease's ultimate publication of *The Picture of*

Also, between 1808 and 1810, du Pont endeavored to bolster the number of merino sheep—a famous Spanish breed—in America and use their wool to start a cloth manufactory run by his brother Victor. The merino’s fine wool, du Pont reasoned, would not only give his own company a great advantage but would also benefit the entire country. Cloth manufactures could compete directly with the English trade, potentially damage their commerce, and strengthen America’s economic independence.⁴⁶ It was again on the subject of merino sheep, and specifically a desire to secure their passage to the United States, that du Pont wrote to departing president Thomas Jefferson about the country’s growing interest in manufactures. “The establishment of manufactures upon which every eye almost seems to be turned in the present moment,” du Pont wrote, was “a matter of the first magnitude for the prosperity and independence of [America].”⁴⁷ Once more wealth and prosperity were evoked. For du Pont and some others writing at the time, manufactures were an absolutely essential part of the growing nation’s economy, freedom, and longevity.

E.I. du Pont’s efforts to promote manufactures and connect them to national prosperity, independence, and development offer an example of how individuals acted to establish industries and ensure their growth. Others joined du Pont in equating manufactures with national prosperity. An 1810 column in the *Weekly Aurora*, borrowing from news venues around the country, observed that “It is becoming an axiom with our wisest politicians, that the expansion of American manufactures is essential to our

Philadelphia: Giving an Account of Its Origin, Increase and Improvements in Arts, Sciences, Manufactures, Commerce and Revenue (Philadelphia: D. and T. Kite, 1811).

⁴⁶ E.I. du Pont to P.S. du Pont de Nemours, Eleutherian Mills, October 1, 1808, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 99-102; and E.I. du Pont to P.S. du Pont de Nemours, January 28, 1809, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 145.

⁴⁷ E.I. du Pont to President Jefferson, February 11, 1809, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 148-150.

national independence.”⁴⁸ Swept by the same “merino mania” that motivated du Pont, agriculturalists and manufactures were both included in this prosperous vision. Wool was perhaps a perfect item to rally around as it offered potential benefits to multiple economic sectors. In Boston, the arrival of merino sheep gave both farmers and industrialists “an opportunity which may never again occur.”⁴⁹ Overall, it was not just manufactures but an industrious spirit and “producer critique” in the words of Lawrence Peskin that pushed du Pont and others to advocate support for manufactures and tie their growth to national prosperity.⁵⁰ As du Pont firmly explained, “Every day’s work of adding the value of industry to the cost of raw material creates a new value incomparably surer than the profits of commerce.”⁵¹ These arguments, equating industry with national prosperity, were used to both justify economic growth and, if their language is taken at face value, to drive further innovation and compel other producers to participate in a burgeoning field of exchange.

Piracy and Legitimacy

As an actual manufacture busy fashioning commodities from raw materials, the DuPont Company faced a number of challenges that help illuminate the difficulty of establishing industries in the early United States. Manufacturers in antebellum America faced a number of specific issues concerning the promotion of their products and defense of their nascent industries. As national marketplaces rapidly emerged and the spread of

⁴⁸ “From the Albany Register: Merino Wool,” *Weekly Aurora*, June 26, 1801, Issue 2 (Philadelphia, Pennsylvania), Early American Newspapers Series 1-3, 1690-1922, 15.

⁴⁹ “From the Boston Chronicle,” *Weekly Aurora*, Issue 2, 15.

⁵⁰ Lawrence Peskin, “How the Republicans Learned to Love Manufacturing: The First Parties and the ‘New Economy,’” *Journal of the Early Republic*, 22, No. 2 (Summer, 2002), 262.

⁵¹ E.I. du Pont to P.S. du Pont de Nemours, June 10, 1807, in *Life of Eleuthère Irénée du Pont*, Vol. VII, 306-307.

news and knowledge increased, producers entered emerging marketplaces where they faced a variety of competition.

Ironically, as “free” exchange and forms of transparency became staples for markets, so too did industrial protection, secrecy, and violent competition. Though patents and copyright systems were in place thanks to the Constitution’s intellectual property clause—Article One, Section Eight—manufactures and inventors still responded in new ways to ward off espionage and piracy. E.I. du Pont specifically faced challenges to his creative control and intellectual property from both outside and within his company. In a time when the Embargo of 1807 and the War of 1812 stimulated inventive activity due to a paucity of raw materials and supplies from abroad, and in the period of economic contraction that followed the war’s end, E.I. du Pont and other manufactures had to ward off threats and challenges to their businesses and ensure that manufactures remained a viable and important part of the new economy.⁵²

Since skilled workers were scarce and labor generally expensive in the new nation, finding dedicated and trustworthy workers was an important step for new manufactures. One of the first tasks E.I. du Pont set himself to, after choosing a site for his manufacture, was finding skilled employees. Initially, he wrote to acquaintances in France hoping they might send him some workmen. French workers would be valuable to him as they were culturally familiar and would provide stability—as opposed to American workers who developed a sense of independence resulting from the high price of labor.⁵³ This seems to belie du Pont’s commitment to national development, and in a way it does. His

⁵² B. Zorina Khan and Kenneth L. Sokoloff, “History Lessons: The Early Development of Intellectual Property Institutions in the United States,” *The Journal of Economic Perspectives*, 15, No. 3 (Summer, 2001), 239.

⁵³ E.I. du Pont to Mr. Robin, Commissioner of Powders at Essone, New York, January 25, 1802, in *Life of Eleuthère Irénée du Pont*, Vol. V, 360.

uneasiness as a new immigrant during his first few years in America often made him wary of those around him while simultaneously hoping to contribute to their national well-being, and thereby asserting his place as a citizen. Yet, even after acquiring a head workman from France, du Pont was reluctant to trust a fellow countryman. This piece of evidence favors the notion that du Pont was more worried about his own well-being than the country's in general. To argue the reverse, however, du Pont's fear of saboteurs in the workplace and employee betrayal attests to the unique skills and abilities he believed he offered the country. This ambiguity can be observed in his later efforts to import foreign laborers—rather than employing Americans—and yet offer them housing, accident insurance, and a healthy environment for their families.

One example in particular speaks to du Pont's strong desire to safeguard his talents and knowledge. Before arriving at the Eleutherian Mills, Charles F. Parent, a French powder worker who agreed to venture to America and work for the DuPont Company, was made to sign an agreement with his new employers. This agreement ensured that once Parent's contract with the company expired, he could not "work in America either personally or by giving information to any other powder manufactory."⁵⁴ But, early in his tenure Parent's behavior increasingly worried du Pont. Parent was miserable in America, and generally seemed disinterested in the company. To avoid the possibility that he might share valuable information with others out of frustration with his employers, E.I. du Pont had Parent briefly jailed before providing him with the capital to open his own mills in New Orleans where he would be far enough away from the company to no longer pose a

⁵⁴ "Agreement with Parent," in *Life of Eleuthère Irénée du Pont*, Vol. VI, 185-186.

threat.⁵⁵ Du Pont's handling of the Parent situation underscores the apprehension that his ideas and methods might be utilized by others. This fear was magnified because du Pont believed himself a unique producer in America. His anxiety is, therefore, ultimately interesting because, whereas many of his ideas, methods, and equipment came from France, it was the quintessential threat that Parent, another Frenchman, might compete with him in the marketplace. To avoid this, du Pont essentially shut Parent up, before neutralizing his threat and shipping him away entirely.

Another example, highlighting the threat of labor piracy and du Pont's efforts to combat it, occurred in early 1809. In this case, a man named Charles Munns who represented a group in Richmond, Virginia that hoped to open a rival powder mill opened communications with several du Pont workmen at a neighboring inn and attempted to lure them away from the company. Since workers held "special knowledge" of company procedures and equipment, they posed a considerable threat to the company if they were won over by others.⁵⁶ When Munns was discovered, he fled to Philadelphia where E.I. du Pont caught up with him, gave him a "thrashing," and had him thrown into jail. In a letter to his father, du Pont expressed that this affair was a very good one, because now, "no one [would] come for a long time to meddle with [their] affairs or to make trouble in [their] mills."⁵⁷ Several years after this occurred, Munns sued du Pont for abuse. In a decision labeled "Important to Manufactures," the jury found du Pont not guilty, and believed he had probable cause in his accusations against Munns, as well as in his treatment toward him. (In a prior verdict, du Pont had been fined fifteen dollars for the

⁵⁵ William H.A. Carr, *The du Ponts of Delaware: A Fantastic Dynasty* (New York: Dodd, Mead & Company, 1964), 73-74.

⁵⁶ George H. Gibson, "Labor Piracy on the Brandywine," *Labor History*, 8, No. 2 (Spring, 1967), 176.

⁵⁷ E.I. du Pont to P.S. du Pont de Nemours, January 22, 1809, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 134-135.

assault against Munns).⁵⁸ What is important here is that once again du Pont's behavior in maintaining secrecy and keeping strangers outside of his mills was ruled justifiable.

A separate situation, occurring only slightly after the Munns case, saw a different individual attempt to infiltrate the DuPont Company mills. In this instance, a Dr. Thomas Ewell, who desired to open a gunpowder mill near Washington, reached out to E.I. du Pont to join him in the endeavor. Though the exchange began cordially, Ewell grew frustrated when du Pont declined joining him and refused to assist him by not providing skilled laborers and production methods. Ewell's subsequent threats prompted du Pont to publish a pamphlet titled "Villany Detected" that chronicled their exchange. Du Pont called the credentials of Ewell into question and projected himself as the legitimate producer. Ewell's attempts to seduce DuPont workers with extremely high wages and to record company machinery in operation further upset du Pont. Ewell was nothing but a charlatan, he charged, or "another eccentric adventurer," who "thought he might at once become a great manufacturer."⁵⁹

But Ewell's actions and those by others who engaged in labor piracy and industrial espionage posed serious risks to honest producers according to du Pont, and he set out to justify himself to the public. He explained that the knowledge and skill gained by the company over time was private property on which the company's survival depended.⁶⁰ That Ewell's enterprise did not succeed suggests perhaps that du Pont's pamphlet was effective, or at the very least that he was correct in his assessment of Ewell's acumen and

⁵⁸ "Law Decision, Important to Manufactures," Archives of Useful Knowledge, a Work Devoted to Commerce, Manufactures, Rural..., July 1, 1811, 2, No. 1, American Periodicals Series Online (Accessed: Nov. 15, 2009), 66-75.

⁵⁹ E.I. du Pont de Nemours & Company, Wilmington, Delaware, "Villany Detected" (Wilmington: Wilson, 1812), 1.

⁶⁰ E.I.DP&C., "Villany Detected," 9.

that the man possessed little or none of the skills du Pont believed his firm offered. Furthermore, just slightly before this encounter, the state of Delaware passed a law firmly supporting du Pont's arguments. In 1811, the state legislature passed a law to encourage the establishment of manufactures within the state. Section Four of the law specifically addresses the problems du Pont faced by instituting a fine on anyone that "shall contract with, entice, or persuade or endeavor to seduce or encourage any artificer or workman."⁶¹ A victory for du Pont, he believed this law legitimized his production and criminalized those who threatened the security and survival of what he recognized as his efforts to maintain an "honest" manufacture.⁶²

The main point here is that manufactures were often new and fragile endeavors that needed the efforts of individuals, and appeals to the larger community, to persevere through the early republic's changing economic climate. When in 1804 E.I. du Pont applied to the Secretary of State for a fourteen-year patent on his new graining machine that "proved a perfect success," he did so as the market for his business was starting to grow.⁶³ For du Pont, receiving this patent was an "ample reward for the pains that [he had] taken," to obtain a strong reputation for his powder.⁶⁴ Similarly, as others hoped to duplicate his success, he had to fight off competitors and "pirates" that sought to steal

⁶¹ Delaware Senate and House of Representatives, "An Act to Encourage the Establishment of Certain Manufactories Within this State," *Laws of the State of Delaware, Vol. IV* (Wilmington: M. Bradford & R. Porter, 1816), 399-400.

⁶² Of course it was easy for du Pont to feel that his own manufacture was the truly legitimate producer because no observable competitor shared his foreign-sourced knowledge. Du Pont's techniques were wholly "honest" or without theft only in his own mind, because much of his equipment and information was borrowed from those who freely shared it in France, rather than safeguarding it from use by others. He did, however, make improvements in many techniques and machinery once in America, and it is perhaps these improvements and his own labors to establish a new business that he felt to be the honest efforts that others, who wanted him to readily handover his ideas, were trying to steal and therefore needed institutional protections.

⁶³ B. Zorina Khan and Kenneth L. Sokoloff make the connection between access to markets and patent activity in: Zorina Khan and Sokoloff, "History Lessons," 240.

⁶⁴ E.I. du Pont to the Secretary of State, undated, probably in late 1804, in *Life of Eleuthère Irénée du Pont*, Vol. VII, 31-35.

ideas, machinery, and his employees. That his actions, according to one author, helped secure the Delaware legislature's passage of the 1811 law encouraging manufactures can be understood as a success for a certain type of production.⁶⁵ This law, and others including extended patents, copyrights, and trademarks, ensured that "honest" producers or legitimized industries would receive protection going forward and that pirating labor and stealing secrets was equitable to the theft or appropriation of one's private property. Du Pont's actions were vindicated by the Munns case and through the Delaware legislature's new law. They also helped ensure, that at least for the time being, certain forms of industrial protection and security were necessary for the development of new manufactures, and that their survival required that government policy and action secure for them the room to grow and succeed.

⁶⁵ Gibson, "Labor Piracy," 179.

CHAPTER 2

DUPONT AND AMERICA'S EARLY ECONOMIC FRONTIER

“Too Big to Fail?”

In November of 2008, General Motors' chairman Rick Wagoner made a public plea for federal funding to save the sinking company. Saddled with plummeting shares and the impending reality of bankruptcy, Wagoner stressed the urgency of immediate assistance. At stake was the livelihood of subsidiary industries, communities, and thousands of workers who depended on the company for survival.¹ This plight was not General Motors' alone however, as several prominent financial institutions appealed for federal dollars in the closing months of 2008 and early 2009. During that period, nine large banks, including Bank of America and Citigroup, automakers, and federal lending programs became the targeted recipients of seven billion dollars in federal bailout money.² The pretense that these institutions and industries were “too big to fail” putatively justified the awarding of this substantial financial package. The sum's subsequent dispersal among its numerous beneficiaries generated debate over which groups were deserving of this money, prompting one journalist to ask “What does it actually mean for an institution to be ‘too big to fail?’”³

Nearly two centuries earlier, a group of Delaware industrialists gathered together to also appeal for a type of federal aid. Calling themselves the Society of the State of Delaware for the Promotion of American Manufactures, they petitioned Congress to support their fledgling enterprises. American manufacturing establishments were rapidly

¹ Bill Vlasic, “G.M., Once a Powerhouse, Pleads for Bailout,” *The New York Times*, 12 November 2008, B1.

² Edmund L. Andrews and Stephen Labaton, “Bailout Plan: \$2.5 Trillion and a Strong U.S. Hand,” *The New York Times*, 11 February 2009, A1.

³ Catherine Rampell, “Defining ‘Too Big to Fail,’” *The New York Times*, 20 August 2009.

declining they argued, and foreign manufacturers were threatening to overstock markets and crush domestic competition.⁴ Like General Motors' Wagoner, they equated their welfare with the country's at large. Their prosperity funded public and private improvements, employed idle hands, and encouraged the immigration of skilled laborers. If their manufactories were not supported, "it is impossible to conjecture when (if ever) they [could] be reasonably expected to recover."⁵

Though the historical circumstance and scale of these cases are considerably different—the sheer magnitude and range of people tied to the failing twenty-first century financial institutions could not be equaled by America's entire population in the early nineteenth century—the proposed solution was similar. While both groups demanded government assistance, only one was under the pretense that they were too big to fail. In nineteenth-century Delaware, manufacturers pleading for federal assistance were instead too fragile to survive without it. The scale of aid and the desired support significantly differed. While twenty-first century institutions begged for direct financial assistance in the form of federal money, nineteenth-century manufacturers beseeched the government for policies favoring domestic industries. Specifically, they desired the passage of mercantilist policies including: the establishment of a permanent tariff, a revision of Revenue Laws designed to ascertain the actual value of imported goods, and the repeal of drawbacks—a tax placed on the re-exportation of foreign goods—placed on gunpowder and other productions.⁶ These policies aimed to ensure equal competition between domestic and foreign producers and therefore differ from the monetary bailout desired by

⁴ *Society of the State of Delaware for the Promotion of American Manufactures*, Wilmington Delaware, 1817. Early American Imprints, Series 2, no. 42157, 2.

⁵ *Society of the State of Delaware*, 1-2.

⁶ *Society of the State of Delaware*, 6.

twenty-first century businesses and financial institutions. The public advantage to aiding these industries was considered apparent. Depicted in nationalistic terms, the prosperity of domestic manufactures was “a positive creation of so much wealth to the country,” and to neglect their upkeep was not unlike leaving “a farm uncultivated, or a mine unwrought.”⁷ The need for federal assistance in both situations was tied to the vitality of communities, states, and the entire nation. To let these industries fail, in other words, would hinder local and national development.

Whether these manufactures were as important as they claimed is a topic for historical investigation, but this conception must have originated somewhere. Published in Wilmington, the industries referred to by the Society were largely located along the Brandywine and Christina Rivers in northern Delaware [see Figure 2]. The rivers’ access to the sea, abundant water power, and proximity to urban centers and rural hinterlands made them ideal for the establishment of water powered mills for manufacturing.⁸ Did these natural advantages facilitate business relationships and allow manufacturers to connect with a greater network of markets? Or was it the extensive scale and production of essential manufactures such as cotton, wool, paper, and iron that convinced the Society’s members of the importance of their survival? Presumably it was both.⁹

⁷ *Society of the State of Delaware*, 7.

⁸ Carol E. Hoffecker, *Brandywine Village: The Story of a Milling Community* (Wilmington, DE: Old Brandywine Village Inc., 1974), 19.

⁹ *Society of the State of Delaware*, 1; Hoffecker, 27.



Figure 2: Map depicting the Brandywine and Christina Rivers, Wilmington, Delaware, and their proximity to Philadelphia. Source: http://en.wikipedia.org/wiki/File:Christina_brandywine.png (Accessed on November 30, 2009).

In the Society's petition to Congress, they noted that several industries were laboring under difficulties and in need of government support. One of these industries was E.I. du Pont's gunpowder manufactory along the Brandywine. In addition to being a staunch promoter of domestic manufactures, du Pont was also the Society's President. During the war of 1812 the company's sales increased from \$86,000 (in 1810) to \$292,000 (in 1814) at the height of the war.¹⁰ After the war's end, company sales declined (though on average they never dropped to pre-war levels). It was in these transitioning post-war years that E.I. du Pont and the rest of The Society of the State of Delaware for the

¹⁰ Nina Lorraine Edwards, "The Bookkeeping Records and Methods of E.I. du Pont de Nemours and Company, 1801-1834" (M.A. thesis, University of Western Ontario, 1966), Appendix A, 125.

Promotion of American Manufactures petitioned the government for aid.

To understand the Society's perception that their manufactures were too important to fail, DuPont presents an illuminating case study. The DuPont Company illustrates the interconnectedness of early American enterprises and the importance of urban, rural, and federal assistance in the growth of industry. Its early acquisition of federal support and its use of company agents created an economic network binding the company's welfare to institutions and individuals across the new nation. Additionally, public and private customers came to rely on DuPont's high quality powder for numerous endeavors—fueling the company's growth and status. With the completion of the Eleutherian Mills along the Brandywine, the DuPont Company quickly generated a wide-ranging clientele in neighboring cities and rural settlements. From the outset, they also received encouragement and contracts from the federal government. Their local investments, governmental relationships, and economic interconnectedness throughout the growing nation—in the company's relatively short existence—combined to convince E. I. du Pont in 1817 that it was in the government's best interest to pass legislation ensuring the survival of his enterprise, as well as others in Delaware.

A great deal of research has documented the DuPont Company's early history. Much of it deals with the company's establishment and initial struggles while painting a detailed portrait of its internal activity. Historians often neglect DuPont's place in the emerging national economy. To remedy this, the current study utilizes the company's early business records and correspondence primarily with federal officials and agents engaged in buying, selling, and promoting DuPont powder. These agents resided in port cities and rural settlements and were charged with disposing and transporting the

company's gunpowder, tying them to a national and international trading network.¹¹ Though using familiar source material from DuPont's records, this vantage point allows for an external view of the company's dealings by focusing on demand for its products from individuals, agents, and government officials. The company's employment of agents in cities and towns throughout the country bound their fortune to local and regional marketplaces. Concurrently, federal officials, agents, and retail customers came to rely on DuPont powder, connecting them to the mills along the Brandywine. This combined public and private reliance convinced the company of its importance, and the dangers associated with failure. Furthermore, their far-reaching business network motivated E. I. du Pont's request for federal aid on the grounds that his manufactory and others like it were essential to the country's development and welfare. Beginning with the company's emerging relations with federal officials and venturing into their use of agents in cities and regional markets, this study illustrates the interconnected role of manufactures in the early national economy, and highlights their growing importance on the development of places.

¹¹ Hoffecker, 26-27.

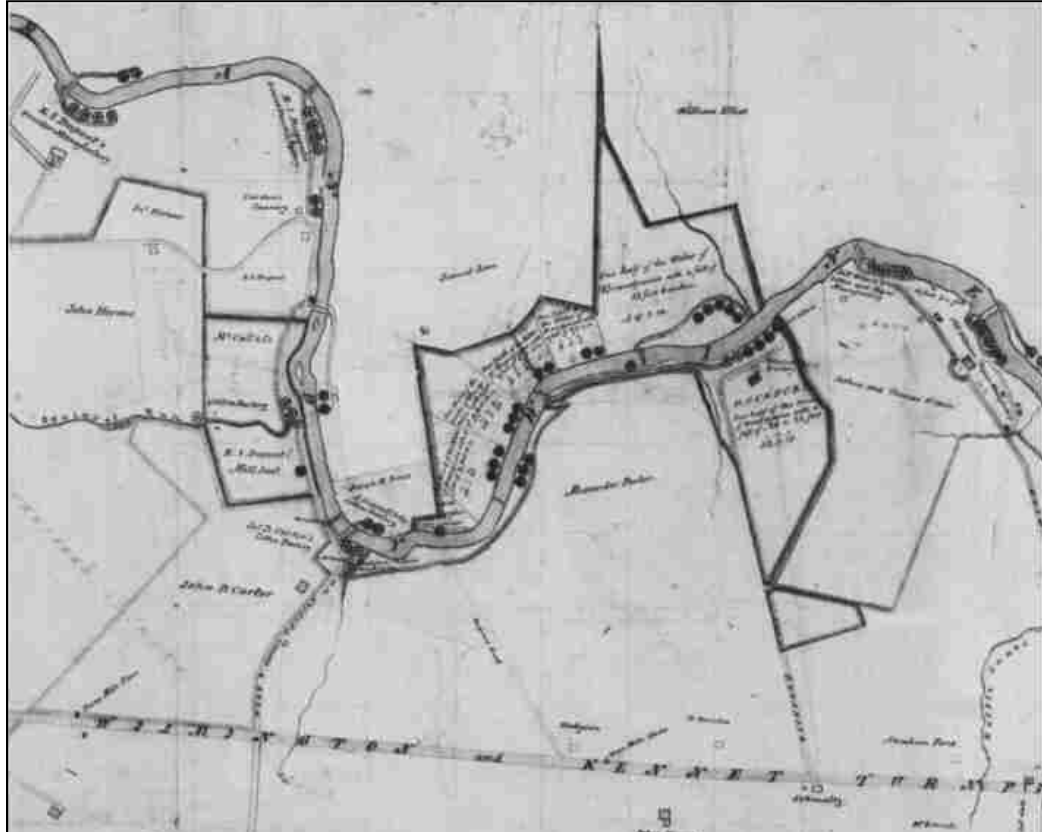


Figure 3: An 1822 map depicting the location of the Eleutherian Mills, DuPont's first powder mills, along the Brandywine River. The additional plots represent other milling sites including those constructed by DuPont. Source: Norman Wilkinson, "Brandywine Borrowings from European Technology" *Technology and Culture*, No. 1 (Winter, 1963).

“This Feeling of Deep Interest for your Country”:

DuPont and Federal Support

Before immigrating to the United States, the du Pont family established personal relationships with a number of prominent Americans. These early relations initiated lasting communication with the American government that directly benefitted the Company’s founding. Serving as Minister to the Court of Louis XVI prior to the French Revolution, Pierre Samuel du Pont, E.I.’s father, made the acquaintance of Thomas Jefferson, who was serving as an American foreign minister in France. The two men

became comrades in support of free-trade and their admiration for one another continued until du Pont's death.¹² When P.S. du Pont arrived in America, he brought his son's desire to open a powder manufactory to Jefferson's attention. In an 1800 letter to Jefferson, du Pont boldly asserted that powder was "indispensable to the defense of nations," and that his son's would "send bullets a fifth farther than English or Dutch bullets travel." The letter concludes by appealing to Jefferson not to grant a government contract for powder before testing DuPont's.¹³ A year later, in another letter to Jefferson, du Pont rightly predicted that their powder would be needed for both national defense in the prevention of war, and in the business of the country—consisting of hunting, the opening of mountains and canals, and for public works.¹⁴ According to du Pont, his son's powder was an essential investment for Jefferson's government, assuring defense and development, two necessities for the growing nation.

Jefferson either agreed with du Pont or decided to appease his old friend, because he met with Pierre Samuel's son E.I. du Pont and encouraged him to open his proposed gunpowder mill. It is unclear if the du Ponts would have been convinced of their eventual success without assurances of government support. As the building of the powder mills ensued, Jefferson boosted E.I.'s confidence further by telling him that the United States Army and Navy had been informed to purchase DuPont powders "whenever their wants may call for them."¹⁵ These statements encouraged E.I. that the government would provide stable business and support for his enterprise.

¹² *Correspondence between Thomas Jefferson and Pierre Samuel du Pont de Nemours 1798-1817*, xiii-xx.

¹³ P. S. du Pont to Thomas Jefferson, December 17, 1800, *Correspondence between Thomas Jefferson and Pierre Samuel du Pont de Nemours 1798-1817*, 28

¹⁴ P.S. du Pont de Nemours to Thomas Jefferson, December 17, 1801, *Correspondence between Thomas Jefferson and Pierre Samuel du Pont de Nemours 1798-1817*, 35.

¹⁵ Quoted in Leonard Mosley, *Blood Relations: The Rise & Fall of the du Ponts of Delaware* (New York: Atheneum, 1980), 26.



Figure 4: The 1801 meeting between E.I. du Pont and Thomas Jefferson, where Jefferson is said to have encouraged du Pont to establish a gunpowder manufactory. Image Source: DuPont: From the Banks of the Brandywine to the Miracles of Science (Wilmington: E.I. du Pont de Nemours & Company, 2002), 2.

In the DuPont Company's early years, the government acted as a supplier of raw materials for the production of gunpowder, and as a stable customer and promoter of the enterprise. By purchasing powder or sending business elsewhere, the government tied the company to the developing nation's welfare and facilitated the dispersal of DuPont powder throughout the country. This public support for a private endeavor assured the company of its importance in the growing economy. Furthermore, the federal government, through its assistance, helped DuPont locate and create a domestic marketplace for manufactures in the early republic.

In several circumstances, the federal government provided DuPont with all the necessary materials to manufacture new powder and remanufacture old. The production

of gunpowder requires three key materials: sulfur, charcoal, and potassium nitrate, referred to as saltpeter at the time. Saltpeter was the key ingredient, and in the company's founding years it was obtainable only from British-controlled India.¹⁶ The saltpeter was sold to governments as a product to be stored for future military needs. For this reason, it was essential that DuPont establish a relationship with the government to gain access to this necessary resource. Though it soon found other suppliers of saltpeter, the Company's early government contracts relied on saltpeter stored in the Philadelphia Magazine. In 1809, E.I. du Pont's business partner Peter Bauduy, a French American who invested in the company, wrote to Callender Irvine, the Superintendent of Military Stores in Philadelphia, asking if the War Department still planned to furnish DuPont with the saltpeter necessary for manufacturing fifty-thousand pounds of powder.¹⁷

During these years federal officials also asked the company to judge samples of saltpeter from domestic sources to ascertain whether it could be used in powder production. Writing to the Secretary of War Henry Dearborn, E.I. du Pont noted that a sample of Kentucky saltpeter that he had been sent was "very fine and pure." He closed this communication by asserting that he had "no doubt that Kentucky and the upper parts of Louisiana will offer the United States great resources in Saltpeter if [its] importation [received] any encouragement."¹⁸ This letter is important for two reasons. First it depicts the company's and the government's desire to find domestic sources of saltpeter, and their dependence on one another in doing so. And secondly, it was written within two years of the Louisiana Purchase, and can be read as an entrepreneurial endorsement of western exploration and settlement. In locating this mutually important resource, the

¹⁶ Kinnane, 12.

¹⁷ Peter Bauduy to Callender Irvine, May 1809.

¹⁸ E.I. du Pont to Henry Dearborn, March 14 1805.

company and the government both supported its marketability. Furthermore, this highlights the role that private industry played in encouraging public action—realized here through the development of western markets.

From the moment DuPont opened its mills in 1804 the company tirelessly advertised their manufactory to federal officials and promoted their mutual interests. In a March, 1805 letter to Secretary of War Dearborn, E.I. du Pont announced that the company was ready to receive a government order for the remanufacture of thirty or forty thousand pounds of old powder. Several of DuPont's initial government contracts involved the remanufacture of already existing powder.¹⁹ In addition to providing business, jobs of this nature implied a measure of trust that the company's end product would produce beneficial results. In May of the same year, Dearborn arranged for Callender Irvine to furnish DuPont with twenty-five tons of powder to be remanufactured and instructions on protecting the finished powder from the elements.²⁰ Dearborn's satisfaction with DuPont was evident. In subsequent years, the government ran tests on DuPont powder, sent additional powder for remanufacture, and even asked the company for charcoal to secure the state magazine in Philadelphia.²¹

In its first years of production, DuPont gained a reputation with federal officials who began to equate its achievements and abilities with its family name. Through correspondence with Dearborn and Irvine, the company continuously promoted the superior quality and strength of its powder. In doing so, they tied the federal

¹⁹ E.I. du Pont, manuscript letter to Henry Dearborn, 14 March 1805, E.I. du Pont de Nemours & Co. Records, Longwood Manuscripts Group 5, Series A, Box 1, Hagley Museum and Library, Wilmington, DE.

²⁰ Callender Irvine, manuscript letter to E.I. du Pont de Nemours & Co., 31 May 1805, E.I. du Pont de Nemours & Co. Records, Longwood Manuscripts Group 5, Series A, Box 3, Hagley Museum and Library, Wilmington, DE. From this point forward, letters directed to the company will be cited as to EIDP&CO.

²¹ Henry Dearborn, manuscript letter to EIDP&CO, 4 January 1807, EIDP&CO. Records, Longwood Manuscripts Group 5, Series A, Box 4, HML; Callender Irvine, manuscript letter to EIDP&CO., Nov. 26, 1805, EIDP&CO. Records, Longwood Manuscripts Group 5, Series A, Box 3, HML.

government's fortune to their own and highlighted the company's growing importance. Midway through 1807, E.I. du Pont addressed a letter to General Dearborn lamenting the company's inability to oblige a request for both shooting and cannon powder. Attempting to save face, du Pont promised that the company would "procure some soon and...have the honor to send it." Trying to further evade this disappointment, he quickly directed Dearborn's attention to a recent test of powder in New York. DuPont powder preformed admirably and displayed a considerable advantage over imported British and Dutch powders. His product's clear superiority prompted du Pont to proclaim that "we have always found [our own powder] stronger than any one of the same description imported in this country."²² Months later, again writing to Dearborn, du Pont expressed frustration at prejudices directed against his company. Believing these judgments were negatively affecting the company's reputation, du Pont cautioned that "if the government thinks it can procure for itself better powder we certainly cannot complain of it, but we dare say that better powder is not to be found either in America or in Europe."²³ He further indicated that attacks against the company disadvantaged them and the government. It would be better for both parties, du Pont reasoned, for the government to place more confidence in his manufacture. As far as he was concerned, they benefitted in the purchase of DuPont powder as much as the company profited from selling it. Increasing orders for new and remanufactured powder must have validated du Pont's reasoning and his consistent assertions of his powder's superiority.²⁴

²² E.I. du Pont, manuscript letter to Henry Dearborn, 21 May 1807, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 1. HML.

²³ E.I. du Pont, manuscript letter to Henry Dearborn, 26 October 1807, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 1, HML.

²⁴ E.I. du Pont, manuscript letter to Henry Dearborn 12 October 1808, and Peter Bauduy, manuscript letter to Callender Irvine, May 1809, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 1, HML.

Another striking example of the government's trust in and use of DuPont powder came in their willingness to employ it in diplomacy. In 1807, General John Mason, the nation's Superintendent of Indian Trade, asked DuPont for samples of their powder to send to several Indian tribes. The Indians were "good judges of the article" according to Mason, and it was his official objective to "serve them faithfully and well." Mason believed DuPont powder would please the Indians and he placed an order for "forty quarter casks of [their] best rifle powder."²⁵ He assured DuPont, that if they agreed to supply powder for native tribes, they would be called upon to do so often. This assurance of future business was a direct result of the Company's expanding relationship with the federal government. Once again, DuPont facilitated federal business and profited from it. Their growing importance as a supplier of elite powder boosted their reputation and secured federal support that would only increase during the War of 1812.

The timing of the company's foundation was ideal as the United States benefited from an extended period of economic growth during the 1790s until the Embargo in 1807. Additionally, it was also fortuitous timing for a manufacture of military supplies. Though one historian notes that this period witnessed a disruption in the close association between economic and military might, DuPont may have been the exception.²⁶ In 1805, the United States Government tested DuPont powder and found it superior to both domestic and English-made powders. This caused Secretary of War Henry Dearborn to announce in a public statement that, in the future, DuPont would receive all the

²⁵ John Mason, manuscript letter to EIDP&CO. December 2, 1807, EIDP&CO. Records, Longwood Manuscripts Group 5, Series A, Box 4, HML.

²⁶ Paul A. C. Koistinen, *Beating Plowshares into Swords: The Political Economy of American Warfare, 1606-1865* (Lawrence: University of Kansas Press, 1996), 44-45.

government's business.²⁷ E. I. du Pont's enthusiasm over this statement was probably tempered by the reality that "between 1805 and 1809 Government purchases from [DuPont] amounted to less than \$30,000 of a total of approximately \$244,000" the company took in.²⁸ Regardless, the government's endorsement certainly helped DuPont obtain a quick reputation and credibility that was crucial to its early business networking and growth. The government proved its loyalty in the War of 1812 when it relied heavily on the company's powder and more than doubled their production (and sales).²⁹

Economic policy at the national level also assisted the DuPont Company in its founding years. Political attitudes began to shift in the new nation as Jefferson's Republican Party assumed leadership of the Executive and Legislature. As one historian notes, and this analysis of DuPont helps confirm, in the years leading to the War of 1812 the Republican and Federalist Parties appeared to switch positions on the issue of manufacturing and the role of the federal government in the economy.³⁰ Long understood as champions of agrarianism and the self-sufficient yeoman farmers, historians have recently highlighted Republican efforts to promote the productivity of both agriculture and manufactures.³¹ After taking office, the new Republican administration appeased manufacturers by repealing an excise tax placed on them and by prohibiting the

²⁷ Edwards, 12.

²⁸ Edwards, 12.

²⁹ Edwards, Appendix A, 125.

³⁰ Lawrence A. Peskin, "How Republicans Learned to Love Manufacturing: The First Parties and the 'New Economy,'" *Journal of the Early Republic*, 22, No.2 (Summer, 2002): 235.

³¹ Steven Watts, *The Republic Reborn: War and the Making of Liberal America, 1790-1820* (Baltimore: The Johns Hopkins University Press, 1987), 19-21. Also for the former view, see Joyce Appleby, *Capitalism and a New Social Order: The Republican Vision of the 1790s* (New York: New York University Press, 1984); and Drew R. McCoy, *The Elusive Republic: Political Economy in Jeffersonian America* (Chapel Hill: The University of North Carolina Press, 1980). For the latter interpretation, see Peskin, 236; and John R. Nelson Jr., *Liberty and Property: Political Economy and Policymaking in the New Nation, 1789-1812* (Baltimore: The Johns Hopkins University Press, 1987), 150-161.

importation of several important British goods.³² These policies, as well as the Embargo of 1807, directly supported domestic manufacturers and aided their nascent development. Though powder was not specified as one of these British productions, this favorable attitude toward manufacturers created an environment where new enterprises could survive and flourish. The DuPont Company, one of many new manufactures opening for business in the first decade of the nineteenth century, benefitted from federal patronage and policies.

It was certainly the case that the federal government was beginning to rely on the DuPont Company for its powder needs. The company however, equally relied on the government's business. Location played a role in this mutual reliance. Dearborn and Irvine, two primary government correspondents in the Company's early years, resided in the federal capital, Washington D.C., and the nation's previous capital and current corporate center, Philadelphia, respectively. The DuPont powder mills were just over one hundred miles from Washington and a mere thirty-five miles or so from Philadelphia. Furthermore, Baltimore, a growing eastern port and population center was positioned between Washington and Wilmington, a short seventy miles away. In the census of 1810, Delaware was listed behind Maryland and Pennsylvania as the third largest producer of gunpowder in the nation.³³ This might seem insignificant except for the fact that DuPont was the only manufacturer in Delaware, whereas the leading states had nine and twenty producers respectively. Located between these other producers and in close proximity to several developing urban centers, DuPont used the federal government's assistance to create and sustain a market for its powder.

³² Nelson, 153.

³³ Edwards, 13.

Two other factors, however, were of great importance in the DuPont Company's initial growth and networking. Its relationship with the government grew more intimate as the two increasingly relied on one another. Additionally, recognition of the superiority of DuPont powder traveled quickly and new customers sought to acquire it. This section has provided an account of the Company's relationship with the federal government, and how DuPont gathered sales and support from Republican officials. The next section considers how the company's use of agents allowed them to create an economic network that disseminated their powder across the national landscape.

“To Send Them by Way of”: The Creation of Powder Markets

In their founding years, the DuPont Company employed and increasingly gained new powder agents to sell and distribute their product across the American landscape. Concurrently, during the first two decades of the nineteenth century, other industrial and business networks were forming, connecting manufacturers, laborers, and goods with one another and the growing nation. Writing about the rise of machinist networks in the early republic, David Meyer describes them as “unifying mechanisms” where technical and market knowledge connected individuals and firms.³⁴ The DuPont Company created a similar network that connected their industry to individuals across the national landscape. Their system relied on the buying and selling of goods, rather than the exchange of knowledge and skill. The company, utilizing their adjacency to several urban centers, assembled a number of agents in developing cities and towns that acted as entrepôts and

³⁴ David R. Meyer, *Networked Machinists: High-Technology Industries in Antebellum America* (Baltimore: The Johns Hopkins University Press, 2006), 1-2.

salesmen of DuPont powder. These agents actively created markets in their regions and communicated local demands back to the company. With a growing reputation, government patronage, and on-the-ground local agents, the company's product quickly spread across America's republican landscape. Not limited to a local marketplace, the company benefitted from geographic advantages and successfully expanded their sales and distribution to the mid-Atlantic region and greater eastern states. By establishing this interconnected business network, the company linked its stability to local economies throughout the nation. As their network expanded, and people and places increasingly relied on their powder, DuPont solidified its importance as an essential manufacturer in the early American economy.

Laboring to complete construction of their powder mills in the first years of the nineteenth century, DuPont actively searched out and created private markets through which to sell their powder. By placing sales agents throughout the country, the company amplified demand for their powder and positioned themselves to build markets in urban and rural locations. Meyer has observed that local economies shifted from an internal focus to greater market integration during the 1790s and early 1800s. To facilitate the opening of markets on a national scale, manufacturers producing custom goods began requiring close contact between buyer and seller.³⁵ To reiterate, DuPont achieved this by contracting with agents to promote its powder and operate as regional entrepôts in distant market centers and peripheries. From their Eleutherian Mills site just outside Wilmington, the company manufactured their product, arranged for its transportation, loaded it on ships or wagons, and sent it to agents and other customers. Upon receiving

³⁵ David R. Meyer, *The Roots of American Industrialization* (Baltimore: The Johns Hopkins University Press, 2003), 59.

powder, company agents promoted it, arranged for its sale, and disseminated it through local markets. Ultimately, these agents supported the company's expansion and reputation by creating new, private markets that linked the company to local economies throughout the nation.

One of the company's first powder agents was the Baltimore merchant Isaac McKim. In 1802, E.I. du Pont visited France to collect materials and machinery for building his powder works. After acquiring the necessary equipment, du Pont forwarded it to America, specifically to Baltimore, where McKim readily received "three barrels of machinery" and began making arrangements for its transfer to Wilmington.³⁶ Once DuPont began manufacturing powder at the Brandywine mill site, McKim wrote to the company regarding the scarcity of powder in his region. The supply of good gunpowder was deficient in Baltimore, he stated, and DuPont could expect to find available markets in the area. "I think there is every appearance of the articles [powder] being in demand and scarce for sometime to come," and if the company had available supplies, McKim was sure he could sell it.³⁷ In this manner the company procured one of its first private markets for gunpowder. In outlining the favorable conditions for powder sales in the Baltimore area, McKim secured supplies of DuPont powder and assumed the role of supplier for the region. Though McKim's relations with DuPont began before the completion of the mills, it was not long before the Company established regular correspondence with other agents across the American landscape.

In another example, the Company created a new market for its powder by acquiring

³⁶ Isaac McKim, manuscript letter to E.I. du Pont, July 30 1802, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

³⁷ Isaac McKim, manuscript letter to EIDP&CO, March 15 1804 and July 12 1804, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

an agent in Chestertown, Maryland. In 1804, John Chew wrote to the company that he received directions from three merchants of the area to procure DuPont powder. If the powder's quality was approved, Chew had no doubt that "it [would] be demanded in the lower part of this peninsula," and he would aid in selling it.³⁸ Chestertown was located on Maryland's eastern peninsula and was accessible by water. From this vantage point a year later, Chew confirmed what McKim had earlier observed, there existed a scarcity of British and domestic powder in Maryland. He encouraged DuPont to continue supplying him, noting that if their powder did not find an immediate market, its sale could be considerably extended into neighboring counties. In his next letter to the company, Chew confirmed that he adopted this strategy by sending samples of powder to a village sixteen miles distant.³⁹ Determined to sell the powder, Chew and other agents acted as peripheral outlets that the company entrusted to scout out markets and distribute its productions.

Though many of DuPont's initial agents and correspondents were located relatively close to Wilmington, in places such as Philadelphia, Baltimore, New Castle, and Maryland's eastern peninsula, the company very quickly procured agents throughout the new nation. Agents such as Boston's John Hancock utilized the transportation resources of a large urban center to transfer DuPont powder to more geographically distant locations. In a letter to the company, Hancock described his ability to export large quantities of powder should he be provided with it. Furthermore, his location in a port city like Boston allowed him to receive powder on a steady basis and encourage its

³⁸ John Chew, manuscript letter to Peter Bauduy, October 5 1804 and November 2 1804, EIDP&CO. Records, Longwood Manuscript, Series A, Box 3, HML.

³⁹ John Chew, manuscript letter to EIDP&CO, November 1 1805 and December 3 1805, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

continued sale.⁴⁰ Agents in upstate New York created new markets for DuPont powder in Albany, the growing state capital. When Victor du Pont, E.I.'s brother, passed through Albany, he secured a new agent in John D.P. Done & Co. Shortly after Victor's trip, Done & Co. wrote to DuPont about their desire to keep a supply of powder "for the Western part of [their] state."⁴¹ In the same letter, they advised that the DuPont Company could send future supplies through a Captain Marren who provided regular service to Albany. As in Boston, Albany's location along a major waterway—in this case the Hudson River—allowed for consistent communication by water during much of the year.

Cities provided additional opportunities for the sale of powder by luring customers from outside their borders. In several cases, existing markets within growing urban centers facilitated the opening of neighboring markets. In Rhode Island, where two cities competed for prominence, the appearance of DuPont powder in Newport fostered demand for an agent in nearby Providence. In 1805, Asa Ames rode thirty miles to Newport to purchase powder from a DuPont agent there. Writing to the company, he noted the necessity of undertaking this hardship because there was no agent currently serving his own city.⁴² To remedy this, Ames recommended several trusted merchants who could carry DuPont powder to Providence, where he would gladly purchase it. By illustrating this scenario, Ames highlights the role cities played in housing merchants and attracting customers from surrounding regions. Furthermore, through his merchant recommendations Ames acted as a local representative for the company and facilitated

⁴⁰ John Hancock, manuscript letter to EIDP&CO. September 27 1806, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, HML.

⁴¹ John D.P. Done & Co., manuscript letter to EIDP&CO., April 3 1806, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

⁴² Asa Ames, manuscript letter to EIDP&CO., November 22 1805, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

the creation of a new market in Providence. Less than a year later, John Whipple became DuPont's powder agent in Providence, and wrote to the company that sales were "beyond what [he] could have expected" despite regional prejudices against domestic powders.⁴³ This last example also illustrates how DuPont powder helped American's lose their sense of industrial inferiority. By learning to trust and purchase domestic products—such as DuPont's—over foreign ones, American's began shifting their allegiance to their own manufactures, and in doing so they directly supported the growth of a national economy.

Agents served an equally important role in emerging settlements and peripheral country regions. In Reading and Pittsburgh, two developing centers in rural Pennsylvania that organized western trade and supplied settlers and farmers, DuPont agents sent samples of and sold company powder to neighboring regions. In November of 1805, George Kein petitioned the company to serve as its lone agent in Reading. "I have sent samples of your powder to my friends of the country," he conveyed in a letter to the company. Shortly after, Kein became Readings' sole powder agent, and endeavored to sell the quantity he had received.⁴⁴ A similar situation transpired a year earlier when DuPont obtained Joseph Barker as its agent in the emerging city of Pittsburgh. After receiving a stock of the company's powder, Barker sent samples to merchants in adjacent towns from twenty to fifty miles away.⁴⁵ In doing so, he not only established a distribution center for DuPont powder in a relatively peripheral settlement, he also sought out new customers in even more remote areas. By gathering agents in smaller

⁴³ John Whipple, manuscript letter to EIDP&CO., August 11 1806, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

⁴⁴ George D.B. Kein, manuscript letter to EIDP&CO., November 28, 1805, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

⁴⁵ Joseph Barker, manuscript letter to M. Bauduy, August 14 1804, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box 3, HML.

settlements, the company established new markets and dispersed its powder outside the reach and realm of traditional urban centers like Boston, New York, and Philadelphia.

Correspondence between the company and Mitchell and Sheppard, one of its principal agents in Baltimore, illustrates the process by which agents secured new markets and distributed DuPont powder. In March of 1805, Mitchell and Sheppard sold forty-four casks—the standard shipping container—of DuPont powder to three customers. The casks were divided accordingly: twenty-two went to an S. Shaulding, eleven to an A. Richardson, and eleven to a Robert Hough. These three buyers, as Mitchell and Sheppard indicated, were “considerable dealers in the article,” and if the powder met their approbation, could be counted on for future orders.⁴⁶ This letter depicts the extensive network DuPont powder traveled across before arriving in a final destination for use. After leaving the company’s mills, powder transferred to the hands of agents who sold it to customers who often resided a considerable distance from the agent’s establishment, and in many cases, these customers distributed the powder elsewhere or to customers of their own. Rather than being shipped to a single location for a specific use, DuPont powder was disseminated across the developing nation by agents working in urban centers and rural settlements.

⁴⁶ Mitchell and Sheppard, manuscript letter to P. Bauduy, March 18 1805, EIDP&CO. Records, Longwood Manuscript Group 5, Series A, Box, 3, HML.

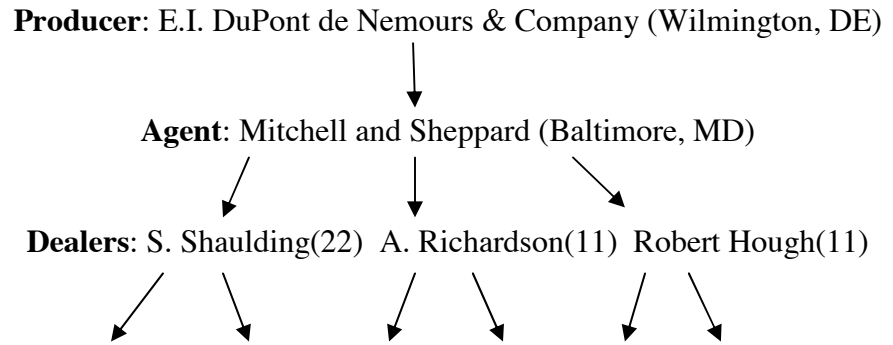


Figure 5: Representing the diffusion of DuPont powder through several intermediaries. Beginning with the company, the powder was shipped to agents who then sold it to powder dealers for further sales.

DuPont’s growing network of agents and sales, combined with a burgeoning demand for their powder, solidified the company’s importance in the national economy. With established markets throughout the eastern coast and countryside, customers began relying on DuPont powder for a number of uses as agents profited from its sale. As the company developed, the number of agents selling its powder increased, and new markets sustained new customers. Rapidly, the DuPont manufactory became a stable and reliable source for quality domestic powder throughout the country. To do so, the company utilized urban services for transportation and communication. One historian, describing the urbanization of Philadelphia and Delaware, categorizes Wilmington as a processing town, a transport town, and at times an organizer of trade and commerce.⁴⁷ For the DuPont Company, the city served all these needs. Once the powder left the Wilmington area however, agents carried and sold it in a variety of places including cities and emerging settlements. The company’s strong presence in America’s early economy convinced them, and others, of the potential for and necessity of domestic manufacturers.

⁴⁷ James T. Lemon, “Urbanization and the Development of Eighteenth-Century Southeastern Pennsylvania and Adjacent Delaware,” *The William and Mary Quarterly* 24, No. 4 (October, 1967), 535.

Frontiers and Development

As they often do today, industrialists in the nineteenth century actively created and discovered new markets for their products and utilized government support in establishing and maintaining success. Though the scale of modern industry differs quantitatively from the nineteenth century's, early manufacturers still could justifiably argue the private and public value of their survival. After all, the company's powder was utilized for national defense, diplomatic relations, and eventually in western migration and development. The market revolution that historians recognize as emerging after the War of 1812 was developing at least a decade earlier in some important ways such as the growth of domestic markets and industrial production.⁴⁸ By linking their interests with the federal government's and employing agents to disseminate their powder to remote regions, the DuPont Company created institutional networks. The number of agents they employed rose steadily in the first several years of production as demand increased and they provided for new markets. Though production and sales dropped after the War of 1812, the company was already established enough to compose a legitimate argument asserting their importance.

In the summer of 1804, E.I. du Pont was assured of the government's commitment to his enterprise, meanwhile his agent in Philadelphia was already scouting markets for saltpetre.⁴⁹ In 1813, when the company was inundated with war orders from the government, rather than appease investors, E.I. du Pont diverted company profits to the

⁴⁸ For a discussion of the post-1812 market revolution: Charles Sellers, *The Market Revolution: Jacksonian America, 1815-1846* (New York: Oxford University Press, 1991), 3-5.

⁴⁹ Archibald McCall, manuscript invoice to E.I. du Pont, July 21 1804, EIDP&CO. Records, Longwood Manuscript Group 5, Series B, Box 17, HML.

construction of a new powder mill site on neighboring land.⁵⁰ The acquisition of the Hagley powder yard in 1813 is a testament to the faith E.I. du Pont placed in the company's longevity. Not long afterward, as he presided over the Society of the State of Delaware pleading for government aid, du Pont's intuition proved correct. The company continued to survive and prosper, all the while adding to their footprint on the Brandywine shoreline.

In 1808, E.I. du Pont ventured to rural western Virginia to inquire about available supplies of saltpetre. In letters of introduction, War Department official John Roberts asked that du Pont be given "all the aid and assistance" in procuring this resource.⁵¹ Occurring while the country was saddled with the Embargo Act of 1807, banning trade between the United States and other nations, it is clear that du Pont, with the government's blessing and support, was searching for alternative supplies. With the Embargo in place, the company was forced to abandon its traditional English and Indian sources of this essential raw material and inquire instead about its availability within the United States. Increasingly, they turned to the west where "vast repositories of [the] material," were being discovered and mined in the mountains and caves of Kentucky and Tennessee [see Figure 6].⁵² Again, the availability of these resources was made possible by a growing national state and policies that necessitated the gathering of raw materials and the development of western mining sites and economies.

⁵⁰ William H.A. Carr, *The du Ponts of Delaware* (New York: Dodd, Mead & Company, 1964), 90.

⁵¹ John Roberts, manuscript letter to John Harvost and Thomas Kinkeade, August 10 & 16 1808, EIDP&CO. Records, Longwood Manuscripts Group 5, Series C, Box 49.

⁵² "From the NY Columbian, Gypsum," *The Enquirer*, October 25, 1811 (Richmond, Virginia), [Early American Newspaper Series III, 1690-1922], 4. Also see "Report of the Secretary of Treasury on Manufactures," *National Intelligencer*, May 14, 1810 (Washington DC), [Early American Newspaper Series III, 1690-1922], 1, for the presence of saltpetre in Kentucky and Virginia.

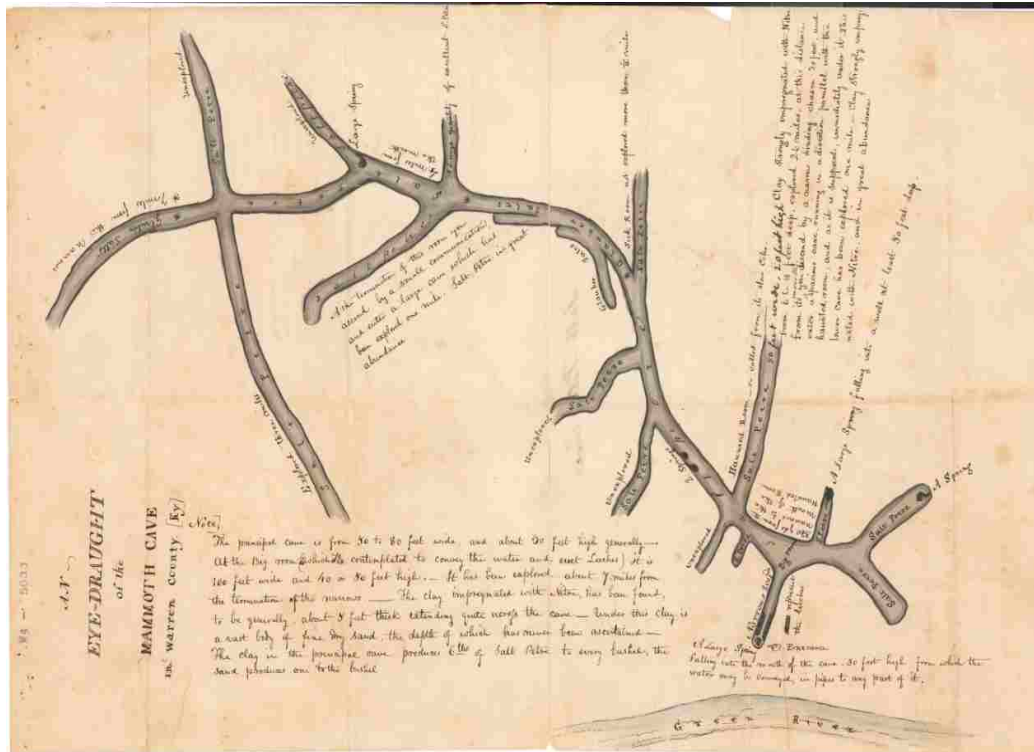


Figure 6: A nineteenth century map depicting the layout and corridors of Kentucky’s Mammoth Cave, now a national park, owned by Lexington, Kentucky saltpetre dealer Charles Wilkins. During the early 1800s, and probably beginning after E.I. du Pont travelled through Kentucky and West Virginia, Wilkins sold saltpetre to the company. Places like Mammoth Cave were important sources of domestic raw materials. Additionally, the company’s business, and that of others undoubtedly played a role in the marketing of these materials and therefore the development of their mining locations. The details on the map highlight the availability and abundance of saltpetre in this particular location. One caption reads: “[The cave] has been explored about 7 miles from the termination of the narrows. The clay impregnated with Nitre has been found to be generally about 5 feet thick extending quite across the cave. Under this clay is a vast body of fine dry sand, the depth of which has never been ascertained. The clay in the principal cave produces 6lbs of saltpetre to every bushel, the sand produces one to the bushel.” Source: Map, An Eye-Draught of the Mammoth Cave in Warren County [Ky], n.d., Winterthur Manuscripts, W4-5033.jpg, Hagley Museum and Library.

Intimately connected to the federal government through mutual interests, the DuPont Company persevered through the financially precarious beginnings of American industrialization. In subsequent fragile moments, when the company felt compelled to justify their importance to obtain federal aid, they presented a strong case and referred to

the creation of an economic network that spanned the entire nation. Additionally, by supplying government needs the company solidified itself as an important participant in the early American economy.

CHAPTER 3

LOCATION AND CREATION: THE MID-ATLANTIC, WILMINGTON, AND DUPONT'S WORKING ENVIRONMENT

Innovative Spaces and Creating Places

Brilliant ideas, innovations, and technological achievements are often recognized as the fruit of individual genius inventors, influential industries, or powerful organizations. Thomas Edison, in particular, is synonymous with invention. The Rockefeller, Vanderbilt, and Carnegie families are all renowned for industrial power and wealth. Today, high technology companies such as Apple are noteworthy for the ubiquitous iPod and iPhone, while others like Google dominate internet email and search technology. The same notoriety applies to the DuPont Company and family. Their legacy as an American gunpowder company and international chemical corporation is over two centuries old. One journalist has referred to the family itself as “unique,” noting that though “a number of families have been as rich...the du Ponts have conserved their wealth, adding to it generation after generation.”¹ Even the company’s founder, Eleuthère Irénée (E.I.) du Pont, espoused his ingenuity and skill. Writing to his father during the company’s first full year of production, he touted that his “powder is not only infinitely better than any other made in this country, but it is several degrees above that imported from England.”² But, while it may seem clear that individuals and groups provide the creativity, ingenuity, and know-how to foster new ideas, products, and companies, it is also revealing to consider that innovation takes place in certain geographic communities and spaces.

¹ William H.A. Carr, *The du Ponts of Delaware: A Fantastic Dynasty* (New York: Dodd, Mead & Company, 1964), 1-2.

² E.I. du Pont to P.S. du Pont de Nemours, October 12, 1804, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1804-1807*, Volume 7, trans. B.G. du Pont (Newark: University of Delaware Press, 1925), 12.

In a recent blog post previewing his new book, the New York-based journalist Steven Johnson has analyzed creative places. His *Where Good Ideas Come From: The Natural History of Innovation* focuses on the cultural and natural systems that spawn creativity. For Johnson, this book “tries to grapple with the question of why certain environments seem to be disproportionately skilled at generating and sharing good ideas.” He offers several wide-ranging examples, including the information networks of the web, the Enlightenment-era postal system, public spaces in metropolitan cities, and the notebooks of great thinkers.³ In his earlier work, *The Ghost Map*, Johnson provides a more in-depth and historically specific example of an innovative environment. This work recounts a deadly cholera outbreak in mid-nineteenth-century London that led to the discovery of the disease’s waterborne nature.⁴ In the city’s dense and dirty urban environment, a neighboring surgeon and a local priest cooperated to locate the epidemic’s original source in a Broad Street water pump. They did this by creating a map charting the daily patterns of neighborhood residents and therefore determined that those who died all shared their water from the same source. For Johnson, John Snow and Henry Whitehead’s triumphant discovery resulted from their amateurism—as far as their knowledge of cholera was concerned. They were able to locate the disease’s source through engaged observation and an “intimate knowledge of the community.”⁵ London’s enormous size, dense living, and unique communities brought about the essential variables for a new and innovative approach to the cholera virus.

Aside from amateur ingenuity, background projects—secondary and tertiary projects

³ Steven Johnson, “Where Good Ideas Come From,” Stevenberlinjohnson.com, entry posted June 7, 2010, <http://www.stevenberlinjohnson.com/2010/06/where-good-ideas-come-from.html> (accessed June 8, 2010).

⁴ Steven Johnson, *The Ghost Map: The Story of London’s Most Terrifying Epidemic—and How It Changed Science, Cities, and the Modern World* (New York: Riverhead Books, 2006).

⁵ Johnson, *The Ghost Map*, 202.

engaged in to supplement or augment a primary enterprise—also perform a valuable role in the formation of good ideas. Urban theorist Jane Jacobs has particularly observed the innovative and economic benefit that come from such projects.⁶ In *The Economy of Cities*, Jacob provides the example of Mrs. Ida Rosenthal, a seamstress from New York who began manufacturing brassieres. Dissatisfied with the way her custom dresses hung on customers, Rosenthal “began experimenting with improvements to underclothing and the result was the first brassiere.” Soon Rosenthal devoted herself to manufacturing, selling, and distributing brassieres full-time.⁷ It is assumed from this that the diverse and dense urban marketplaces of New York City were ideal for the success of this particular background project. Without a diversified customer base, willing to purchase custom dresses and concerned about the “right” fit, Rosenthal’s brassiere business would likely not have grown as it did. Again specific environments, and in these cases, those that facilitate amateur designs and background projects, are responsible for the eventual success of new ideas and companies.

Something else, however, can be learned from both Johnson’s and Jacob’s examples. The individuals and groups who benefit from creative environments also have a role in shaping those environments. In the examples already mentioned, Snow and Whitehead’s revelations about cholera helped discredit miasmatists and supported the construction of a

⁶ It is worth noting that the DuPont gunpowder manufactory, as previously discussed, was itself a background or secondary plan. That this plan ultimately succeeded lends support to the importance Johnson and Jacobs accord to background plans as a source of innovation. See Chapter VII, “The Eighth Plan,” in Carr, *The du Ponts of Delaware*; and Pierre Samuel du Pont de Nemours to Jacques Bidermann, New York, December 1, 1800, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1799-1802*, Vol. 5, trans. B.G. du Pont (Newark: University of Delaware Press, 1924), 191-192. In another example, Robert Fulton’s development of an operating steamboat and the marketing of it to passengers in the first decade of the nineteenth century was also a background plan. According to Kirkpatrick Sale, Fulton spent much of his time trying to perfect canal technology and submarines for the English, French, and United States’ governments before turning his attention to steamboats. See, Kirkpatrick Sale, *The Fire of His Genius: Robert Fulton and the American Dream* (New York: The Free Press, 2001), Chapters IV and V.

⁷ Jane Jacobs, *The Economy of Cities* (New York: Random House, 1969), 51.

system of sewer lines and new public health standards, while Rosenthal created a new industry that undoubtedly generated similar businesses elsewhere and left behind a physical footprint.⁸

A number of scholarly works have engaged the ways individuals and groups constructed urban and economic environments. In America's early national era specifically, the period when the DuPont Company emerged and matured, several historians have analyzed the individual and collective bodies responsible for increased property values, urban growth, public projects, and entrepreneurial establishments. For John Lauritz Larson, the years after the American Revolution compelled George Washington and other founders to promote "internal improvements," or the building of canals, roads, highways, and bridges. George Washington in particular, personally believed the ability to navigate the country's numerous river systems and waterways was of the utmost importance. Certainly his desire to "bind the wilderness communities to the union by chains of commercial interest" was shared by other commercial and development boosters, at least at the regional or local levels.⁹ In Philadelphia, a vibrant culture of coastal merchants and businessmen, before and after the Revolution, not only developed much of the city's wharves and waterfronts, but also "[linked] the city's hinterland with its overseas market."¹⁰ Similarly, by the 1830s in Philadelphia, corporations and corporate power influenced the city proper as well as "its contiguous suburbs and an increasingly populous and productive hinterland stretching from northern

⁸ Johnson, *The Ghost Map*, 205-208.

⁹ John Lauritz Larson, "'Wisdom Enough to Improve Them': Government, Liberty, and Inland Waterways in the Rising American Empire," in Ronald Hoffman and Peter J. Albert Ed. *Launching the "Extended Republic" The Federalist Era* (Charlottesville: University of Virginia Press, 1996), 230.

¹⁰ Thomas M. Doerflinger, *A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia* (Chapel Hill: University of North Carolina Press, 1986), 76.

Delaware to central Pennsylvania.”¹¹ Enterprising individuals, influential “societies”, and government bodies, all helped construct and shape early America’s environment.¹²

Scholars have also explicitly equated the ways that environments both help energize innovation and are themselves the products of innovators and innovations. Geographer Allan Pred most significantly has explained the phenomena in contemplation here: How do creative environments influence the individuals that inhabit them? And how do individuals produce and change spaces through which to exercise their interests and desires? Pred suggests that the relationship between people and their environments is dialectical, with individuals acting as both objects and subjects.¹³ Depicting humans as creators of their environments, Pred claims that “whether place refers to a village or a metropolis, an agricultural area or an urban-industrial complex, it always represents a human product.”¹⁴ Yet, humans are also subject to their own territorial creations. This is most evident in the presence of certain dominant institutions or projects that control social environments. These dominant projects “usually structure daily paths by taking time-allocation and scheduling precedence over both other institutional projects and projects undertaken alone outside of any institutional context.”¹⁵ The structures, institutions, and transportation networks erected by humans, therefore, create a type of path-dependency that regulates their movements and behaviors and that of others.

¹¹ Andrew M. Schockett, *Founding Corporate Power in Early National Philadelphia* (Illinois: Northern Illinois University Press, 2007), 9.

¹² For other works dealing with the individual, collective, economic, and cultural construction of environments in antebellum America, see especially: Elizabeth Blackmar, *Manhattan for Rent, 1785-1850* (Ithaca: Cornell University Press, 1989); for a discussion of the nineteenth and early twentieth centuries, William Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York: W.W. Norton & Company, 1991); and Carol Sheriff, *The Artificial River: The Erie Canal and the Paradox of Progress, 1817-1862* (New York: Hill and Wang, 1996).

¹³ Allan Pred, “Place as Historically Contingent Process: Structuration and the Time-Geography of Becoming Places,” *Annals of the Association of American Geographers* 74, No. 2 (June, 1984): 280.

¹⁴ Pred, “Place as Historically Contingent Process,” 279.

¹⁵ Pred, “Place as Historically Contingent Process,” 282.

This overview of innovative spaces, environments, and the development of places relates to the establishment of DuPont's powder manufactory in the early nineteenth century: an important part of DuPont's legacy stems from its construction of a working and social environment. Today, the Hagley Museum and Library preserves the remnants of DuPont's material environment and the techniques of early American powder production and water-powered milling. Not far away, the family's Winterthur estate and Longwood Gardens remain picturesque on the landscape and serve as premier tourist attractions. Yet, despite E.I. du Pont and his descendants' innovative thinking, practical management, and vigorous defense of their business, they could not conjure gunpowder out of thin air, nor could they succeed in creating a powerful company without the support and use of the environments around them. Though the location of factories, office buildings, and homes continues to be important in today's world, it was critical for new industries in early America when weather patterns were less discernible, communication slower, raw material availability was often subject to distant trade, and transportation was less reliable, available through few outlets and only at certain times of the year. Additionally, for mills running on waterpower, finding a constant water source and properly manipulating it to provide energy for several waterwheels made selecting the right location even more essential.

In analyzing the DuPont Company's first two decades, it is clear that the family's emigration to America and the company's establishment along the Brandywine facilitated the development of a strong and lasting powder manufactory and chemical company. Their contribution toward economic growth and their place within a manufacturing community resulted both from what they did and where they were. Likeminded industries

and manufactories occupied the landscape around them and neighboring cities competed for international and internal trade while cultivating vast hinterlands. Individuals across the mid-Atlantic and eastern seaboard encouraged the company, offered professional services, and maintained close friendships. Still the diverse and economically competitive region where the company chose to locate did not spell success alone. Rather, they had to vigorously transform and expand their industrial production site, gain capital to further develop it, and utilize surrounding resources for power, production, and livelihood. In constructing their “working environment,” the company faced numerous natural and industrial challenges that threatened to temporarily halt production or end it all together.¹⁶ All the while, they developed new manufacturing sites for gunpowder production, expanded into wool production, raised livestock, and engaged in agricultural pursuits. Early on, the company created a community for its powder workmen and their families and during the War of 1812 the du Pont family gathered together a militia and helped train soldiers to protect their mills and others located along the Brandywine. Industrial and entrepreneurial growth and environmental development formed in a cyclical relationship with one another; as the environment stimulated creativity, that creativity reciprocated by shaping and determining the future environment.

This chapter analyzes the geographical factors that influenced the DuPont Company and how it simultaneously constructed a working environment during its first two decades. The first section considers the economic and structural developments occurring in the Wilmington and mid-Atlantic region. The account further argues that the region’s geography, built environment, and creative activity offered a model environment for the

¹⁶ The term “working environment” is borrowed from Arthur F. McEvoy, “Working Environments: An Ecological Approach to Industrial Health and Safety,” *Technology and Culture* 36, No. 2 (April, 1995): S145-S173.

company's gunpowder manufacture. This was particularly the case due to Wilmington's industrial community and quick access to national and international marketplaces. The second section focuses on the company's efforts to select an exemplary location for the manufacture and their construction of a working environment on the site. Again, the two sections work together to show how environment, development, and activity shape the nature of new innovations and further constructions. Such developments then proceed to organize and influence the world around them. In the DuPont Company's founding years, Wilmington, Delaware's geography was fitting for the establishment of new manufactures, and the city's entrenched residents actively promoted commerce and industry. On deciding to settle there, the company and family helped develop the landscape around the city and became energetic and influential contributors to its community of producers.

Environment and Society in Wilmington and the Mid-Atlantic

In the spring of 1802, E.I. du Pont purchased a plot of land adjacent to the Brandywine Creek a few miles outside the nucleus of Wilmington, Delaware. In short time, the site became home to both du Pont's family and his reputable and rapidly growing gunpowder manufactory. DuPont's presence along the Brandywine, however, was not the only development taking place in Delaware or the greater mid-Atlantic region during this time. Rather, the region—including Delaware, Pennsylvania, Maryland, and parts of New York and Virginia—was dynamically growing, changing, and diversifying. By 1800, population numbers in the region's key cities, Baltimore, New York, and

Philadelphia, all surpassed those of any other city in the nation.¹⁷ Furthermore, these cities' links to their extensive hinterlands tied together a great portion of the United States' growing national economy.

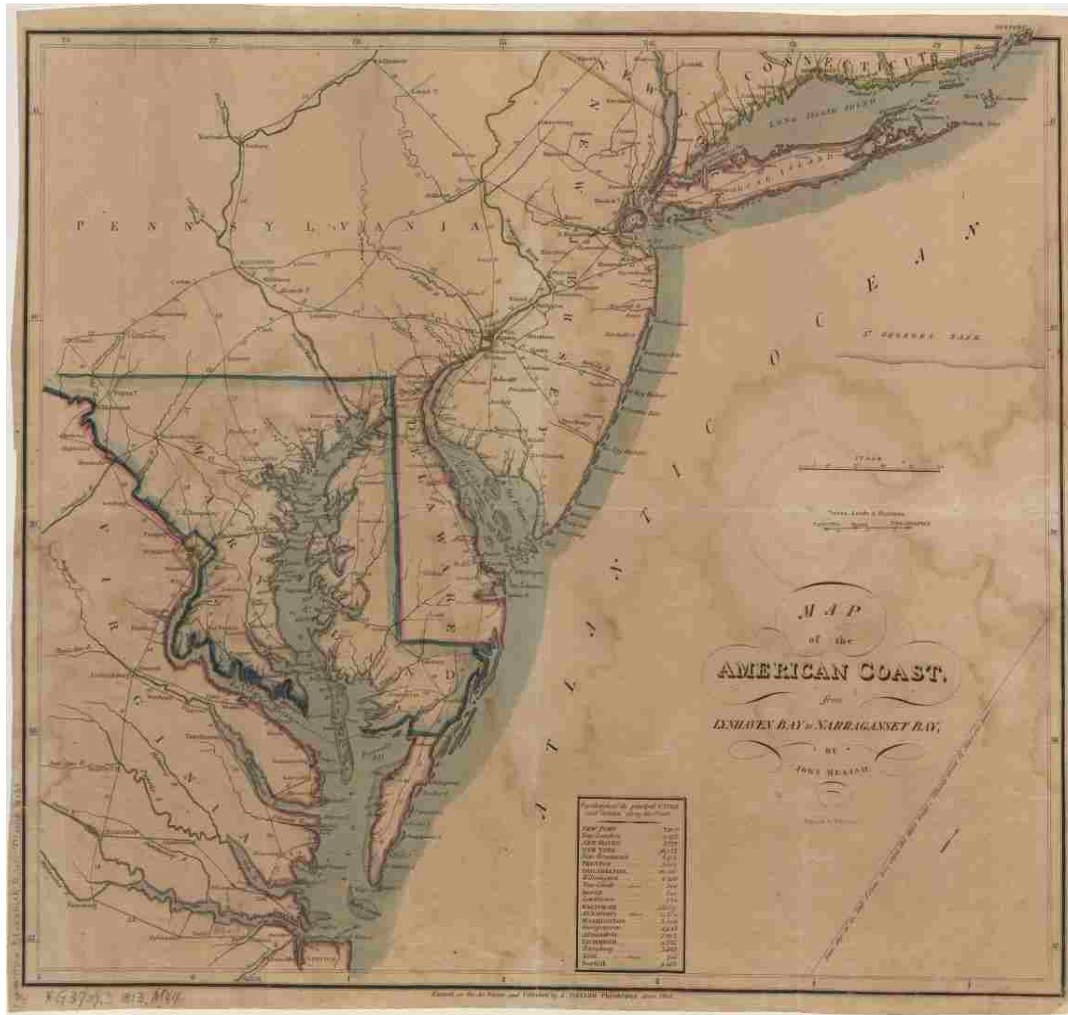


Figure 7: Map of the American coast and mid-Atlantic region circa 1813. Depicted are the states of Delaware, Maryland, New Jersey, Pennsylvania, and parts of New York and Virginia. Also included in the lower center is a listing of the populations for the principal cities along the coast. Wilmington’s population is listed at 4, 416 persons. Source: Map of the American coast from Lynhaven Bay to Narraganset Bay/ by John Melish; engraved by H.S Tanner, 1813, Imprints Department, mapAmericanCoast181300001.tif, Hagley Museum and Library.

¹⁷ The four largest American cities and their populations at the turn-of-the-century were: New York, 60,515; Philadelphia, 41,220; Baltimore, 26,514; and Boston, 24,937. See, Allan Pred, “Manufacturing in the American Mercantile City: 1800-1840,” *Annals of the Association of American Geographers* 56, No. 2 (June, 1966), 310.

These and other factors influenced E.I. du Pont's decision to establish his powder manufactory in New Castle County, Delaware, and they helped shape the company's early success. This geography that offered a beneficial and resource rich landscape for the company's use, was complemented by a competitive economic culture hopeful of improving domestic production, markets, communication, and transportation. DuPont's beginnings in this time and place energized and secured the company's fortunes as it began and strengthened its operations.

In the early nineteenth century, Delaware State, and the city of Wilmington in particular, quietly expanded in the shadow of Maryland and Pennsylvania, its larger neighbors. In 1809, Wilmington's growth required that the city reestablish its charter to facilitate an increased population and size. The opening words to its new charter remarked that, the previous document, composed in 1739, "hath from the increased population of [the] borough...been found incompetent to the good government and well-being of the same."¹⁸ Because of its size, Wilmington could no longer rely on old governing systems. Instead, its urban growth, concentrated between the Brandywine Creek and Christina River—much the way Philadelphia was situated between the Delaware and Schuylkill Rivers—hinted at the emergence of a multi-use landscape attractive to merchants, manufactures, and farmers. One historian suggests that Wilmington at this moment "was as much a central place as a processing center."¹⁹ Ultimately, due to its geographically advantageous position between two rivers, close proximity to the much larger Delaware River and Bay, and central location between

¹⁸ "An Act to Alter and Re-establish the Charter of the Borough of Wilmington," *Delaware Laws, Statutes, etc., 1809*, passed at Dover, January 31, 1809, Wilmington, Jones, 1809, Early American Imprints, Series 2, no. 50936, 3.

¹⁹ James T. Lemon, "Urbanization and the Development of Eighteenth-Century Southeastern Pennsylvania and Adjacent Delaware," *The William and Mary Quarterly*, Third Series, 24, No. 4 (Oct., 1967), 526.

Philadelphia and Baltimore—both larger merchant towns—Wilmington, perhaps somewhat uniquely for a smaller city, was able to develop a diversified economy and community as it entered the nineteenth century

Yet, economic diversity aside, Wilmington remained best known for its mills and manufactures. Unlike neighboring Philadelphia and Baltimore, Wilmington's economy was based largely on production and processing. This was the case, in part, because in the first decades of the nineteenth century, manufactures only existed outside of the country's most populous cities. According to Allan Pred, manufacturing was characterized predominately by "rural dispersion rather than concentration in major urban centers."²⁰ Pred notes that shortages in capital, technology, transportation, and the cost of labor, often conspired to situate manufactures outside the city. In addition to these reasons, the populous cities on America's eastern seaboard tended not to focus on manufactures because they had already established themselves as shipping centers and marketplaces. When manufactures did exist in these cities, they were either of a smaller scale or were located along the city's urban edge where waterpower and land was available. In Wilmington, however, manufacturing grew up alongside the city and therefore became an intimate part of its development. Once again its location between Philadelphia and Baltimore meant, especially by the beginning of the nineteenth century, that Wilmington did not have to be a shipping or trading powerhouse. Rather, its location in between these two cities secured Wilmington's role as an essential processor for the immense hinterlands of other marketplaces and a key networking site between them.

²⁰ Pred, "Manufacturing in the American Mercantile City," 307.

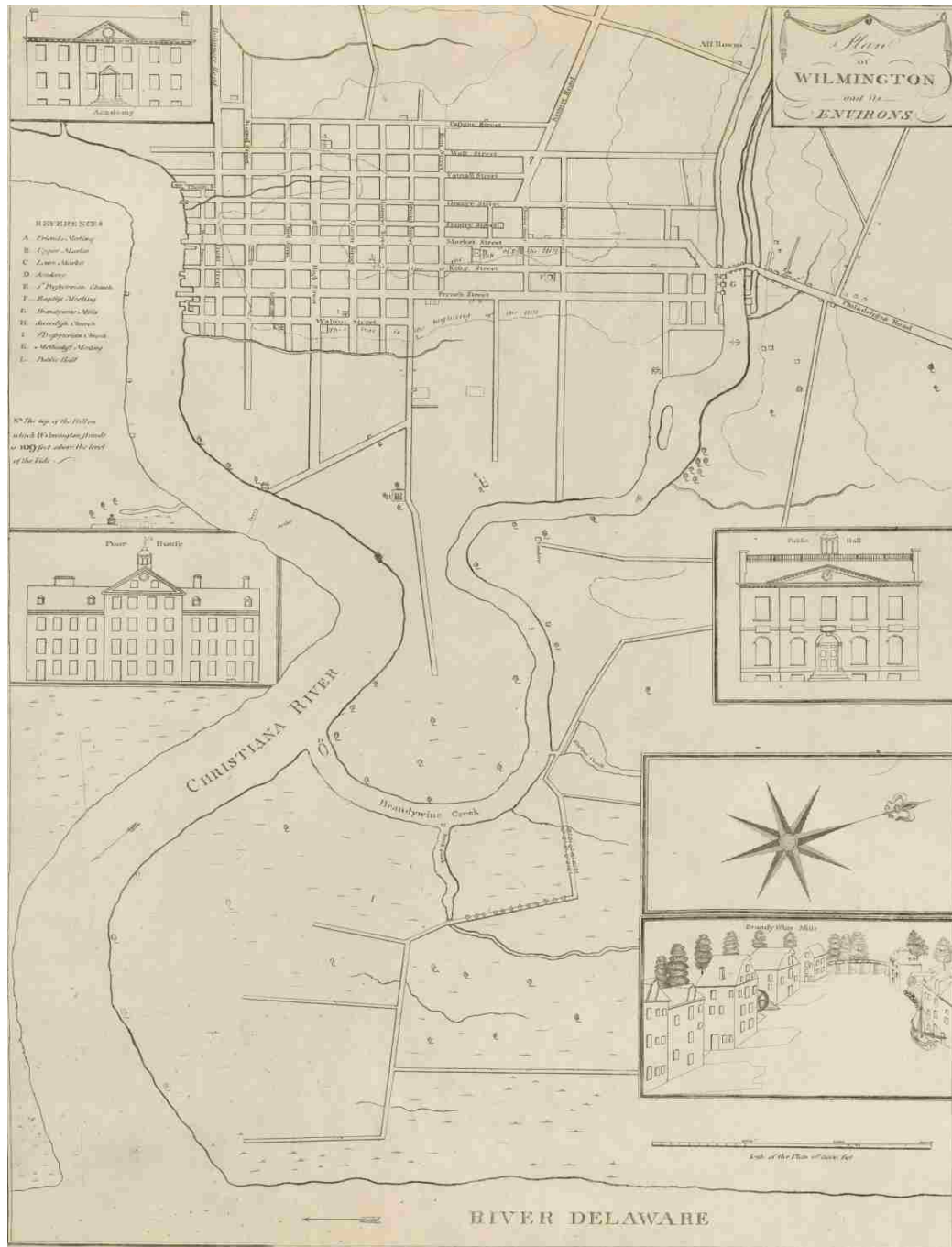


Figure 8: Wilmington, 1804. Map depicting Wilmington situated between the Brandywine and Christina Rivers. At the bottom left, the Christina River flows in to the Delaware River. At the Bridge crossing the Brandywine Creek, in the map's upper left, is the location of the Brandywine Mills where the route becomes a road leading to Philadelphia, Pennsylvania. In the upper center, Kennet Road leads out of the city and runs almost parallel to the Brandywine. Adjacent to this road, and four or five miles outside Wilmington, is the location of DuPont's Eleutherian Mills. Source: Plan of Wilmington and its Environs, Wilmington, DE, maps, map1804wilmington09731.tif, Hagley Museum and Library.

The availability of waterpower was of additional importance for attracting aspiring manufacturers and facilitating milling operations in the Wilmington area. In the early national United States, before the wide use of coal, steam, and oil, water served as the most reliable energy source for early industrialists. Reliance on water-powered wheels to operate manufacturing machinery determined where milling communities emerged and where industrialists could locate production facilities. A modern historian recognized this while observing that in America, “manufacturing districts were rural and depended upon the new country’s as yet unexploited resources of water power.”²¹ Not all manufacturing districts remained rural, even if they began that way. From its initial establishment, Wilmington possessed the necessary waterpower, and shortly thereafter the technological know-how, to fuel the operation of industrial mills.

In the late eighteenth and early nineteenth centuries, numerous authors commented on Wilmington industrialists’ reliance on the city’s adjacent rivers, and specifically on the Brandywine Creek’s powerful falls and current. Originating in a large river basin in Southeastern Pennsylvania, the Brandywine Creek is forty miles long with a three-hundred foot decent. For one observer, the river’s features made for “a fine stream...well adapted to water works.” Furthermore, to fully attest to the Brandywine’s attractiveness to industrial producers, the same author counted ninety-nine distinct water powered facilities along the creek, with none extending beyond nine miles from the city.²² Though manufacturers had to acquire riparian rights to secure this water power, Wilmington’s location between the Brandywine, Christina, and Delaware rivers ensured there would be

²¹ Anthony F.C. Wallace, *Rockdale: The Growth of an American Village in the early Industrial Revolution* (New York: Knopf, 1978), 5.

²² “Wilmington, Delaware, and its Vicinity,” *Niles’ Weekly Register*, October 7, 1815, 9, 214, American Periodicals Series Online, 93-95.

a great deal of productive space available. Undoubtedly, this played a role in luring new manufactures to the city and its surrounding environs.

Wilmington's maturation as a productive city, due in part to its geography, made it an attractive place for new manufactures to settle. But the city's culture and past were also influential in shaping its industrious spirit. In the 1730s, a few enterprising individuals constructed several of the country's first merchant mills alongside the Brandywine Creek just as the city was coming into being. Known simply as the "Brandywine Mills," this collection of mostly flour mills gained a national reputation, and according to one author, contributed greatly to the city's growth and "kept it from the atrophy that other towns suffered under the commercial shadow of Philadelphia."²³ Joseph Scott, a contemporary geographer observing Maryland and Delaware in the early nineteenth century, remarked that the Brandywine Mills, with the exception of those within the vicinity of Baltimore, were the most valuable collection of mills in the United States. They consisted of 12 mills for grinding flour and a single saw mill. Additionally, Scott noticed the mill's prodigious production, mentioning that "they grind annually about 300,000 bushels of wheat and Indian Corn; but if they were constantly supplied with grain, they would grind 400,000 bushels."²⁴ Based on these remarks, the mills were so efficient as to outpace available raw materials.

By the time the du Pont's arrived in Wilmington, they settled in an economically active place extending beyond the influential presence of the Brandywine Mills. The city's proximity to the Brandywine and Christina, as well as its two-mile distance from

²³ Lemon, "Urbanization and Development," 526.

²⁴ Joseph Scott, *A Geographic Description of the States of Maryland and Delaware: Also of the Counties, Towns, Rivers, Bays, and Islands* (Philadelphia: Kimber, Conrad & Co., 1807), Early American Imprints Series, Series II, Shaw-Shoemaker (1801-1819), 170.

the Delaware River, meant that shipping and transportation also preformed a vital role in its economy. For the State of Delaware, Wilmington functioned as an important point of entry and was the only state port that carried on trade with foreign nations.²⁵ The city was also an important stocking port for vessels traveling from Philadelphia down the Delaware River.²⁶ The significance of shipping as a livelihood for some Wilmington citizens is recognizable in their outrage over a 1799 Philadelphia quarantine act. The act made it mandatory for any incoming ship, bound for the Port of Philadelphia, to first stop at the Philadelphia Lazaretto before proceeding to unload any of its passengers or cargo. This created an uproar among Wilmington merchants who argued that Philadelphia, under cover of protecting itself from infectious disease, was “aiming at a monopoly of the trade of the Delaware.”²⁷ Their response to the act was economic and political. Philadelphia’s attempt to govern Delaware’s economy by routing trade through its own filters was perceived as “inimical to the trade of [Delaware], and a violation both of its Federal, and Sovereign Rights.” For frustrated Wilmington merchants, “the disguise of a quarantine law,” did not conceal “the views of commercial interest.”²⁸ With their interests in jeopardy, the city’s merchant community joined together and resisted their larger and more influential neighbor. The manifestation of their disagreement in the form of a petition attests to the act’s potential threat to their interests and those of the city in general. Though it may metaphorically have stood in Philadelphia’s shadow, Wilmington’s merchants, along with its manufactures, were instrumental in the city’s economic stability and growth.

²⁵ Scott, *A Geographic Description*, 179.

²⁶ Scott, *A Geographic Description*, 177.

²⁷ Wilmington, Delaware Merchants, “At an Adjourned Meeting of the Merchants,” (Wilmington: J. Wilson, 1801), Early American Imprints Series, Series II, Shaw-Shoemaker (1801-1819), 1.

²⁸ Wilmington, Delaware Merchants, “At an Adjourned Meeting,” 2.

Together, Wilmington’s manufacturers, merchants, and artisans largely cooperated to form an economic community and culture motivated to create new and better market goods and determined to promote the city’s welfare, develop its internal and surrounding infrastructures, and attract new producers and citizens. The manufacturing community sought to achieve these goals in part through improvements in new machinery that promised to enhance productivity through a division of labor that allowed workers to focus on distinct sections of the production process. Improvements in flour processing brought on by private investment and inventions along the Brandywine helped strengthen their already well developed reputation. In 1791, when Oliver Evans introduced his new automated grist mill—a mill for grinding grain into flour—that was several stories tall and largely operated without manual labor, using conveyor belts and pulley elevators, it caused one local to remark in the *General Advertiser* that “to such perfection are our grist and merchant mills brought, by the assistance of [this automated mill], that we may say...that they are not equaled in the world.”²⁹ Later, in 1817, a writer in *Niles’ Weekly Register* had a similar attitude about the practical application of new technologies at the Gilpin’s paper mills. In this case, the introduction of new machines for manufacturing paper on an expanded scale was again calculated to save on labor as the mills now did the work of ten paper vats. Most applicable to Wilmington’s community of manufacturers was the writer’s final reflection that the Gilpin establishment, as part of the greater neighborhood, “will aid its improvement, and add to the valuable manufactories on the Brandywine.”³⁰ In this case, “improvement” refers to the gain in private wealth and

²⁹ “Wilmington, March 2,” *The General Advertiser and Political, Commercial, Agricultural and Literary Journal* [Philadelphia, Pennsylvania], March 14, 1791, Issue 141, 3.

³⁰ “Manufacture of Paper,” *Niles’ Weekly Register*, November 29, 1817, 13, 326, American Periodicals Series Online, 223.

public reputation that commentators believed these new designs and increased output would bring to the city and its surrounding region. For manufacturers, the success of specific inventors and industries in the Brandywine community was alluring.

Furthermore, producers were not satisfied with mechanical innovation and improvements to their own operations. Instead, in the early nineteenth century, they actively sought to boost economic opportunity for all by supporting public and private works that helped shape and develop the city and its region.

Following the American Revolution, influential groups and societies throughout the new nation actively promoted the development of necessary public infrastructure such as roads, canals, and bridges, to facilitate commercial and information exchange. Local and national governments greatly contributed to these efforts by providing stability and acting as organizing bodies for those with the means and desire to initiate internal projects. Wilmington's many industrialists and citizens were no exception to this. In 1806 for example, the Delaware Legislature passed an act incorporating a company to erect a bridge over the Brandywine Creek. Several Wilmington producers were appointed to execute this project, including Thomas Lea, James Canby, and William Poole, merchants who owned mills along the Brandywine.³¹ Two years later in 1808, the Legislature passed an act creating a company to construct a turnpike road from Wilmington to the Delaware and Pennsylvania state line. Once again the commission was composed of Wilmington merchants and millers, this time including Jacob Broom—the previous

³¹ Delaware Senate and House of Representatives, "An Act to Incorporate a Company for the Purpose of erecting a Stone Arched Bridge over the Brandywine Creek," *Laws of the State of Delaware, Vol. IV* (Wilmington: M. Bradford & R. Porter, 1816), 12-23.

owner of the DuPont's Eleutherian Mills site.³² In promoting and endorsing these projects, many manufacturers and merchants believed they would not only be improving communication between their own and neighboring towns, but also facilitating access to new resources and the opening of new marketplaces for their goods. This was the case with the proposed Chesapeake and Delaware Canal. Though not completed until 1829, work began on the canal following its incorporation in 1802. After a number of construction delays and insufficient revenue, the Canal Company's president and directors made one of several petitions to the United States Congress in 1809 for protection and aid. One of the company's directors was Joshua Gilpin, a Wilmington manufacturer and proprietor of the aforementioned paper mills. Gilpin, along with the company's president and other directors, argued that the canal was instrumental in linking together a key region of the nation's commerce, and also in unifying the country politically. If the canal was not completed, they suggested, the nation would "not only cease to increase in its agricultural, commercial, and manufacturing importance, but must sink below the level of its neighbors in its political consequence."³³ In its fragile early years of independence, America's political autonomy depended on its economic strength and viability. Additionally, the Canal Company's petition was suggestive of an active interstate competition that continued to animate the behaviors of local and regional economic boosters. To ensure that their areas could maintain a competitive edge, it was crucial for individuals from cities like Wilmington to create infrastructure, and facilitate

³² Delaware Senate and House of Representatives, "An Act to incorporate a company for making a turnpike road from the borough of Wilmington, to the line between this State and Pennsylvania," *Laws of the State of Delaware, Vol. IV* (Wilmington: M. Bradford & R. Porter, 1816), 196-214.

³³ U.S. Congress. Senate. *The Memorial and Petition of the President and Directors of the Chesapeake and Delaware Canal Company*, January 24, 1809, 10th Congress, 29, Washington, Weightman, 1809, Early American Imprints, Series 2, no. 18956, 5.

market activity. Ultimately, these improvements in transportation, shipping, and communication encouraged the development of specific places, regions, and the entire nation.

In the first decades of the nineteenth century, such efforts transformed Wilmington into a profitable location for the establishment of new industries and manufactories. Fortuitously located between two larger cities that organized the hinterlands and trade around them, Wilmington utilized neighboring resources and capitalized on its role as a manufacturing community. The city's advantageous geography, containing multiple rivers and abundant water power, and manufacturing tradition was attractive to new producers hoping to establish and grow their businesses. Together the natural and built environments spawned a community determined to promote its interests and achievements and develop its surroundings. While the citizens of Wilmington undoubtedly relied on neighboring cities for important resources and financial support, they also challenged the hegemony of those places. As one historian observed, "even though Wilmington had numerous tanneries, foundries, shipbuilding firms and the like, the men who owned these businesses saw themselves in competition with rivals in other cities rather than with one another."³⁴ Furthermore, the sheer number of milling sites along the Brandywine and Christina testified to Wilmington's productivity and importance. Yet, of all the industrial establishments and geographic improvements that materialized during this period, it was, as one contemporary declared, "those belonging to the Duponts [sic]" that were most worthy of attention, "as here a village has grown up

³⁴ Carol E. Hoffecker, *Wilmington, Delaware: Portrait of an Industrial City, 1830-1910* (University Press of Virginia, 1974), XV.

with in a few years.”³⁵ DuPont was able to construct this working “village” because industrialists, merchants, and the citizens of Wilmington, through private and public endeavors, constructed a networked environment and manufacturing community that harnessed natural resources and facilitated economic exchange. With an understanding of the natural advantages and occurrences that made Wilmington an ideal industrial city, this account now turns to the DuPont’s efforts to utilize this environment and further shape and develop it.

Creating a Working Environment: Selecting a Site and Industrial Organization

In April of 1802, E.I. du Pont departed from New York and passed through Bristol and Philadelphia, Pennsylvania on route to Wilmington, Delaware. Within days of arriving, Irénée completed the purchase of an eighty-acre wooded milling site owned by the Quaker and patriot Jacob Broom.³⁶ Several days before, his father, Pierre Samuel du Pont, congratulated him on the impending purchase. “We are very glad that you are satisfied with your purchase,” the elder du Pont exclaimed, “and that you will have help from [Mr. Broom] with your building.”³⁷ In the completing their acquisition of this land, the du Ponts also received a water dam, a millrace, the remnants of a milling building, and a wealth of trees and agricultural plots that already occupied the purchased acres. Due to the presence of these resources and structural “improvements,” this purchase

³⁵ “Wilmington, Delaware, and its Vicinity,” *Niles’ Weekly Register*, October 7, 1815, 9, 214, American Periodicals Series Online, 93.

³⁶ From personal expenses of E.I. du Pont, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1802-1804*, Vol. VI, trans. B.G. du Pont (Newark: University of Delaware Press, 1925), 18-19; and E.I. du Pont to Jacob Broom, March 30, 1802, *Life of Eleuthère Irénée du Pont*, 11.

³⁷ Pierre Samuel du Pont de Nemours to E.I. du Pont, New York, April 27, 1802, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1802-1804*, Vol. VI, trans. B.G. du Pont (Newark: University of Delaware Press, 1925), 31.

signified a crossroads for the DuPont Company, rather than a beginning. This future site of the Eleutherian Mills was only settled upon after a long search for the right environment in which to establish the company. Additionally, the site's ultimate selection began a new period of developing the internal and external landscape to accommodate the needs of a productive gunpowder manufactory. Building a productive landscape capable of turning out thousands of barrels of gunpowder every year required more than a dam, millrace, and a few milling buildings for stamping and mixing the powder. Instead, constructing and operating the necessary mills and buildings for manufacturing and storing the powder placed demands on the local and surrounding ecology while creating a workplace environment that structured the family and workers' daily lives and influenced the growth and concerns of an early American city. Overall, the DuPont's economic world and culture shaped the development of the land and governed its relationship with Wilmington and its surrounding environs.

Before the DuPont Company built a working environment for their powder manufactory, they had to secure a proper location for its development. In searching for the ideal place to establish the company, the natural features of different geographies played a crucial role. First and foremost, an abundant water source was needed to provide a year-round supply of waterpower. Additionally, the presence of other resources including wood and stones for building, access to waterways and ports for shipping, proximity to raw materials, and the accessibility of labor sources and marketplaces, were all important factors contributing to E.I. du Pont's decision of where to locate his manufacture. Initially, Washington City, the nation's new capital, was thought to be the most ideal location, as government business was considered essential to the new

company's survival. Yet, upon observing the Chesapeake region's potential for a powder manufactory firsthand, E.I. du Pont was appalled. Writing to his father while still in Georgetown, he remarked that "there is absolutely no opportunity in Maryland or Virginia near Federal City," rather "the country, the people, [were] all worthless." Almost as an afterthought at the end of the letter, Irénée mentioned that he would, "stay a day at Wilmington to see the Brandywine."³⁸ Of course this trip turned out to be fruitful, and resulted in several return trips, as du Pont found a favorable site in Broom's land. In addition to the Brandywine's available waterpower, the creek offered a communication channel directly into Wilmington, and through the city, a connection to the Delaware River's busy shipping thoroughfare. Furthermore, du Pont calculated that Broom's land would save money on the construction of the milling site itself because it contained sufficient quantities of wood.³⁹ This wood was such a necessary addition that the deal was almost cancelled when du Pont came to believe Broom was cutting down and removing the precious oak. He expressed this frustration in several letters to Peter Bauduy and his family, and did not relax about the issue until Broom assured him that he had not cut any of the oak, and instead only a small amount of chestnut used to construct a fence.⁴⁰ Ultimately, DuPont decided to purchase Broom's property due to its advantageous location and the presence of key natural resources.

Another factor that ensured the company's selection of Broom's Brandywine site was its proximity to urbanizing Wilmington. For du Pont, the site's location a few miles

³⁸ E.I. du Pont to P.S. du Pont de Nemours, Georgetown, September 19, 1801, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1799-1802*, Vol. V, trans. B.G. du Pont (Newark: University of Delaware Press, 1924), 280.

³⁹ E.I. du Pont to Peter Bauduy, New York, October 7, 1801, in *Life of Eleuthère Irénée du Pont*, Vol. V, 294-295.

⁴⁰ E.I. du Pont to Peter Bauduy, Philadelphia, January 2, 1802; and Peter Bauduy to E.I. du Pont, January 9, 1802, in *Life of Eleuthère Irénée du Pont*, Vol. V, 338-340.

outside the city was favorable both for its remoteness from the urban center and for its nearness to it. E.I. du Pont worried about cities' distractions when he suggested, while still searching for the proper site for his manufactory, that "this location need not be near a city," and "on the contrary the discipline that should control the workmen makes it desirable to be at some distance from cities," though he added that this was only true "provided there is proper facility for transportation by water."⁴¹ Another beneficial reason for maintaining a measureable distance from cities, especially those on America's east coast, was disease. Yellow fever was a recurring problem on the mid-Atlantic coast as E.I. du Pont's brother Victor reminded him. After the family settled along the Brandywine, Victor, who was still in New York, alerted his brother that "the papers say that the yellow fever is increasing in your neighborhood every day," and to "not go too often to the city."⁴² By keeping one's distance in the country, it was much easier to avoid the diseases and distractions often associated with cities or more densely populated environments.

The drawbacks to being within or too near a city were often outweighed, however, by the personal and economic opportunities they offered. In E.I. du Pont's case, not only did Wilmington provide an ideal environment for his powder mills and essential natural resources, it also housed numerous French émigrés that assisted the DuPont Company's early development. During the 1790s and early 1800s, Philadelphia and parts of Northern Delaware attracted a number of Frenchmen and French-speaking refugees from

⁴¹ E.I. du Pont, "The Location and Construction Necessary for Manufacture of Gunpowder," in *Life of Eleuthère Irénée du Pont*, Vol. V, 206.

⁴² Victor du Pont to E.I. du Pont, New York, October 26, 1802, in *Life of Eleuthère Irénée du Pont*, Vol. VI, 132.

upheavals in revolutionary France and the French colony Santo Domingo.⁴³ A number of these French immigrants settled in Wilmington and provided important cultural ties without which it is unclear that the company would have located and survived where it did. Two individuals, Peter Bauduy and William Hamon, were particularly helpful to the company's early establishment, both settled in America years earlier, learned to speak English, and were engaged in business around Wilmington. E.I. du Pont was not a native English speaker, and because of this the relationship he formed with these two men, both refugees from Santo Domingo, allowed him to navigate the laws, procedures, and relationships necessary to purchase land in Delaware. Du Pont's friendship with these men was another pull-factor that convinced him to settle along the Brandywine. Writing to Bauduy, who eventually invested heavily in the company and served a number of years as one of its proprietors, E.I. du Pont highlighted the advantages of settling near Wilmington. The city offered "the ease of making shipments," he explained, "and the pleasure of being near you and your family."⁴⁴ That both Bauduy and Hamon arranged the purchase of Broom's land with Hamon's name on the title further suggests that these cultural acquaintances assisted the company.⁴⁵ Overall, the advantages of being both near and slightly distant from the city made Broom's land on the Brandywine the ideal place for the company's founding.

After taking residence along the Brandywine, E.I. du Pont set about erecting several

⁴³ Catherine Hébert, "French Publications in Philadelphia in the Age of the French Revolution: A Bibliographic Essay," *Pennsylvania History* 58, No. 1 (January, 1991), 37.

⁴⁴ E.I. du Pont to Peter Bauduy, New York, November 30, 1801, in *Life of Eleuthère Irénée du Pont*, Vol. V, 314.

⁴⁵ E.I. du Pont to William Harmon, Wilmington, April 26, 1802, *Life of Eleuthère Irénée du Pont*, Vol. VI, 29-30. Non-citizens could not purchase land in Delaware during this time. This necessitated an arrangement where Broom's land was purchased by William Hamon and later turned over to E.I. du Pont. Some of the restrictions on what non-citizens could and could not purchase in the state are elaborated in, "An Act to enable aliens, in certain cases to purchase and hold lands, or other real estate with this State," *Laws of the State of Delaware*, Vol. IV (Wilmington: M. Bradford & R. Porter, 1816), 483-484.

mill buildings to begin producing gunpowder. Along with the mills, the DuPont Company employed several laborers to dig out millraces and construct additional buildings to dry and store completed powder. In early 1803, E.I. du Pont wrote to his father about the construction's progress, noting that they had "in three months built a large house and barn of stone and a large part of the refinery...the water course and the saw mill," but they still had to build "three mills, one or two other buildings...a new race for one of the mills," and "quarters for the men."⁴⁶ Clearly the mill site was a large project, as the process of producing gunpowder required multiple steps with the ingredients—saltpetre, sulfur, and charcoal—being mixed together, pressed, glazed to remove moisture, dried, and stored. Each one of these steps—and this is not a comprehensive list—required a separate building that occupied a distinct space at the mill site. The capital, planning, and labor expended to complete the mills was just the beginning. In churning out the first barrels of powder in May of 1804, the DuPont lands became a working environment once again.⁴⁷ In noting this, it must not be forgotten that the flowing water, dams, millraces, waterwheels, machinery, workmen, and employers were conspiring toward a shared end. The production of gunpowder from numerous compositional parts was the purpose that drove the company, the people, and the resources it used to obtain this goal.

But as driven as it was by production, DuPont's mills and working landscape served more than economic ends. One historian suggests that early American factories "were about organization as much as the length of work rosters or the roar of intricate

⁴⁶ E.I. du Pont to Du Pont de Nemours, Eleutherian Mills, February 7, 1803, in *Life of Eleuthère Irénée du Pont*, Vol. VI, 164-165.

⁴⁷ The "again" refers to Jacob Broom's previous cotton mill, although it was much smaller in scale, that occupied the land prior to the DuPont's arrival. For discussion about the first barrels of powder, see Victor du Pont to E.I. du Pont, New York, May 1, 1804, in *Life of Eleuthère Irénée du Pont*, Vol. VI, 306.

machines.”⁴⁸ This observation applies well in DuPont’s case as the Eleutherian Mills site not only organized and coordinated gunpowder production, but also the family’s lives and business duties, and the social and economic lives of those employed by the company. Whether as the recipient of bags of saltpetre or barrels of sulfur, such as those sent to the company by Victor du Pont in 1803, or as the site of a willow tree farm—used to make charcoal—or as a place for cultivating produce, the mills along the Brandywine operated as a central place that organized the lives of those who lived and worked there.⁴⁹ Much like the plantation landscape that organized the American South’s economy and social life, milling communities and large manufactories had the same influence on their surrounding populations. Before occupying the Brandywine location, E.I. du Pont asked Jacob Broom to prepare for his coming by plowing a clover field, planting corn and potatoes—two staple and multipurpose crops—and putting fences around the pasture lands. The sooner these preparations were made the better, because by the spring of 1803 the company already employed forty men that needed constant supervision and direction.⁵⁰ When by 1829 the company employed 127 men, and had 335 people living on company property, it was clear the DuPont mills were more than just a few productive buildings.⁵¹ Rather, in addition to the manufactory, with its own purpose to create powder and generate wealth, the site served the daily needs of workers and their families.

⁴⁸ Jonathan Prude, “Capitalism, Industrialization, and the Factory on Post-Revolutionary America,” in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul Gilje (Madison: Madison House, 1997), 87.

⁴⁹ For the saltpetre and sulfur, see Victor du Pont to E.I. du Pont, New York, May 13, 1803, in *Life of Eleuthère Irénée du Pont*, Vol. VI, 221-222; and for the willow trees used to make charcoal, see Roy M. Boatman, *The Agricultural Establishment at the Eleutherian Mills, 1802-1834* (Eleutherian Mills Historical Library, 1961), 16.

⁵⁰ E.I. du Pont to William Hamon, New York, May 17, 1802, and E.I. du Pont to Du Pont de Nemours, Philadelphia, June 12, 1803, in *Life of Eleuthère Irénée du Pont*, Vol. VI: 55, 236.

⁵¹ Margaret Mulrooney, “Labor at Home: The Domestic World of Workers at the du Pont Powder Mills, 1802-1902,” (PhD diss., College of William and Mary, 1996), 38.

Other significant ways the company organized their Brandywine landscape were through efforts to acquire new lands and expand their production, to construct housing for workers, and to maintain a balance between the living and working environment. After purchasing Broom's land, E.I. du Pont, as head of the company, consistently added new property to his initial holdings. Between 1810 and 1818 alone, the company made eight separate land purchases ranging in size from around twenty acres to several that were well over one hundred acres.⁵² Included in these purchases was Rumford Dawes' Brandywine property that became the Hagley Mills powder yard. This land was used for several purposes as portions were set aside for agricultural cultivation and as pasture for the company's growing collection of merino sheep. The company also used the land to provide housing for its workers. Many of the company's laborers were immigrants, and after training these workers in their safeguarded procedures, the company hoped to maintain their loyalty. One way they did so was by inviting the workers to live, along with their families, adjacent to the company's manufacturing mills. "Between 1806 and 1814," according to one historian, "four semi-detached stone houses and two detached houses...were added to the property." Located just above the powder yard, these homes provided accommodations for ten workmen and their families.⁵³ In 1810, the company's subsidiary textile manufactory, DuPont, Bauduy and Company, also added forty-five houses for mill operatives.⁵⁴ It is almost assured that many of the two company's workers, and proprietary families themselves, worked and lived on company property.

⁵² Roy M. Boatman, *The Agricultural Establishment at the Eleutherian Mills, 1802-1834* (Eleutherian Mills Historical Library, 1961), 12.

⁵³ Mulrooney, "Labor at Home," 192-193.

⁵⁴ Mulrooney, "Labor at Home," 194.



Figure 9: A map of the property owned by E.I. du Pont in 1826. The inscription notes that the land contains two hundred and eighty six acres with five perches. The larger house in the upper center is Eleutherian Mills, the du Pont family’s home. Below the house, and along the river, are several of the company’s first mills. On the left, and once again abutting the Brandywine, is the Hagley Mills site acquired in 1813. It is also apparent that large portions of the property are undeveloped or contain few permanent structures. This land was used for farming, pasture, and resource cultivation — such as the willow trees for charcoal production. Source: Lands Owned by E.I. du Pont, Fairlamb Survey, 1826, Longwood Manuscripts, Group 9, Series C, 20100616_fairlamb_0001.tif, Hagley Museum and Library.

With living quarters and workplace occupying a single landscape, the DuPont Company's manufactory operated as a small scale community. The site became an early company town or industrial village, where most employees lived in single-family dwelling units "built closely together, like urban houses."⁵⁵ Between 1809 and 1814 the company built a store where workers could purchase necessities.⁵⁶ Yet, it is not always helpful to think of Eleutherian Mills as a self-sustaining community with only limited contact to an outside world. Rather, E.I du Pont ensured that this would not be the case by locating his manufactory a short distance from Wilmington. His family and company workers were therefore able to maintain ties with other businesses, religious institutions, and personal relations residing in the city or along the Brandywine. During the War of 1812, the DuPont Company reinforced their commitment to national defense by responding to a warning that their powder mills were a likely British target. To counteract the potential threat, the company joined with neighboring Brandywine manufactures to organize a brigade of men and defend their surrounding territory.⁵⁷ This volunteer regiment, known as the Brandywine Rangers, was eventually disbanded after the Delaware State Legislature repealed a law exempting manufactures from militia duty. This frustrated E.I. du Pont as he believed the volunteers to be better organized and armed than the state militia.⁵⁸ Shortly thereafter, some of these volunteers likely joined neighboring militia forces at Camp DuPont where they formed a 3,600-person-strong

⁵⁵ Mulrooney, "Labor at Home," 201.

⁵⁶ Mulrooney, "Labor at Home," 194.

⁵⁷ In May of 1813, Madame de Pusy, E.I. du Pont's sister in law who was living in Philadelphia at the time, relayed a message from a General Moreau about the potential threat to the company. See Madame de Pusy to E.I. du Pont, Philadelphia, May 6, 1813, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1811-1814*, Vol. IX, trans. B.G. du Pont (Newark: University of Delaware Press, 1925) 92.

⁵⁸ E.I. du Pont to Callender Irvine, February 7, 1814, in *Life of Eleuthère Irénée du Pont*, Vol. IX, 172.

brigade.⁵⁹ These men were not only willing to defend their homes and neighbors', but did so voluntarily and as part of a larger community.

Though much went on socially for those who lived their lives on DuPont's Brandywine property, the workplace environment was perhaps the greatest way that the company organized and regulated the landscape.⁶⁰ While structures such as the powder yard gates marking the boundary between home life and work life, were commonplace in other factories or manufacturing villages, the DuPont Company utilized some unique designs. E.I. du Pont's family home was built on a hill overlooking the river and milling sites. Interestingly, once again blending family and work life, the house doubled as E.I.'s office space and had a balcony where he could oversee the mill workers.⁶¹ The company used other techniques to observe and regulate the workplace, especially after the mills were damaged following several explosive accidents between 1810 and 1820. The deadly 1818 explosion in particular was partially blamed on a negligent foreman. Because of this, E.I. du Pont "stipulated that at least one member of his family must personally oversee the yard at all times."⁶²

⁵⁹ "Cadwallder; Camp Dupont; Philadelphia," *Weekly Aurora*, December 6, 1814, Vol. 5, No. 32 (Philadelphia), 256.

⁶⁰ In "Labor at Home," Margaret Mulrooney describes some of the common social and workplace occurrences at the DuPont mills. Most of the single men who worked and lived on DuPont property were housed in dormitories, while families often received use of a house, garden, and cow pasture. This implies that those who lived on the property also engaged in some degree of agricultural labor and food production. At DuPont, workers lived in desegregated communities as the company seems to have assigned housing "more on the basis of family size" rather than on occupation, ethnicity, or religion. Mulrooney, "Labor at Home," 188. Also, in addition to the presence of a general store on the property, the company, along with E.I. du Pont's eldest daughter, helped establish a school for their workers' children. Furthermore, many Irish workers indulged in alcohol consumption and found various other ways to assert their independence at work and in the community. Mulrooney, "Labor at Home," 41-42.

⁶¹ Mulrooney, "Labor at Home," 193.

⁶² Mulrooney, "Labor at Home," 38-39.

Industrial Accidents along the Brandywine

Powder explosions and subsequent fires posed a threat to the milling site, and the company's entire property. E.I. du Pont acknowledged that such explosions were inevitable, so he composed a unique architectural plan for his mills with this hazard in mind. Instead of a single large mill or factory building, Irénée divided production between several smaller buildings. Furthermore, instead of a solid structure with four solid walls, he designed the mills with only three solid stone walls and a fourth wall, the one facing the river, made of flimsy wood. The roof was also built with wood and slanted to face the river.⁶³ Though not always successful in containing larger explosions, this design was certainly effective in some cases and lessened the degree of damage in others. As one newspaper account of an 1820 explosion at the company reveals, "the improved method adopted by Mr. DuPont...is successful." It goes on to describe that when one of the mills exploded, "the roof was thrown into the creek," but no person was hurt and the rest of the mills continued to operate "as if no explosion had taken place."⁶⁴ This "improved" mill design and the other particularities of DuPont's built-environment took into account the importance of workplace safety and organization.

⁶³ Adrian Kinnane, *DuPont: From the Banks of the Brandywine to the Miracles of Science* (Wilmington: E.I. du Pont de Nemours & Co., 2002), 12.

⁶⁴ "Mr. Dupont; Powder Mills; Thursday", *Alexandria Gazette & Daily Advertiser*, June 21, 1820, Vol. XX, No. 5821 (Alexandria), 3.

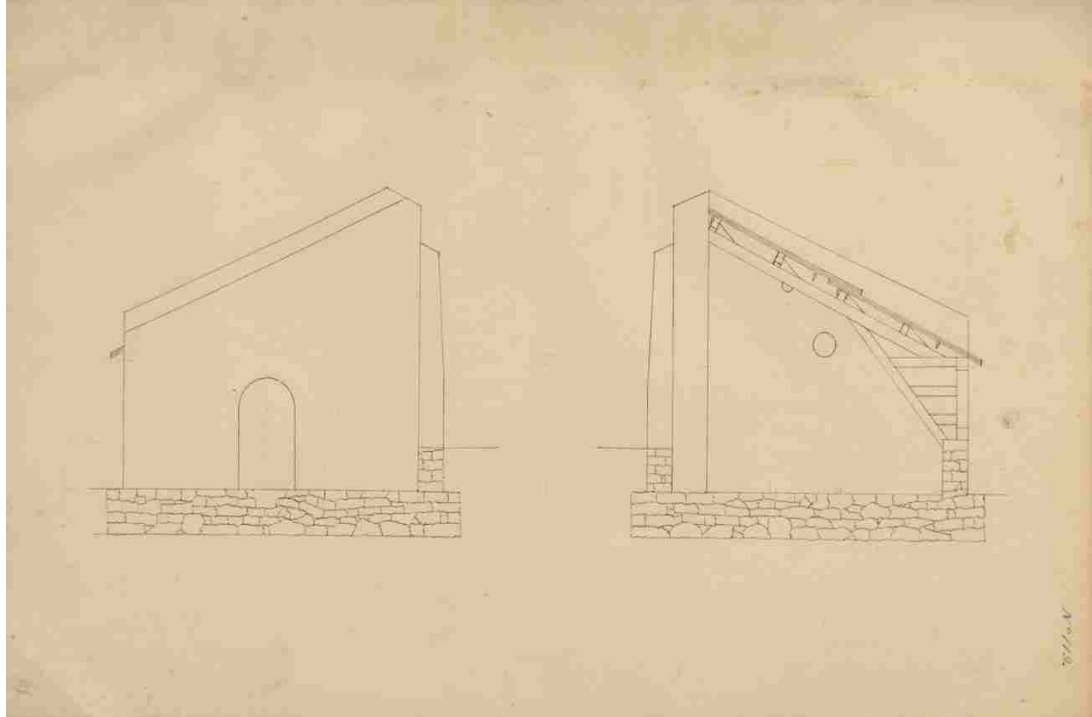


Figure 10: E.I. du Pont’s drawing and design for a rolling mill on his site. This drawing shows the slanted roof design meant to direct any potential explosion out over the water. Also in this picture are the three solid sides of the mill, with the roof and fourth side made from wood. Source: E.I. du Pont Drawings of Powder Mills and Machinery, No. 119, Roll Mills, n.d., Drawing, Gunpowder, Factories, dupontdrawing_11900001.tif, Hagley Museum and Library.

Explosion and workplace accidents were ever present in powder mills, and it was more of a question when not if another would happen. The ever present specter of industrial accidents highlighted the often cruel reality of many working environments. The historiography of industrial accidents has particularly emphasized the economic and social costs to both the industrialists and workers involved. This is understandable, as early nineteenth century reports concerning mill fires and explosions often mentioned the number killed and the cost of damages.⁶⁵ But more recently, historians including Jamie

⁶⁵ For an example of the estimated costs, following a fire that destroyed a grist mill and two homes, see: “The Destruction of Valuable Mills by Fire,” *Poulson’s American Daily Advertiser*, February 3, 1815, Vol. 44, No. 11921 (Philadelphia), 3.

Bronstein have shown that the early nineteenth century focus on workers' emotions and individual heroics kept contemporaries from asking how the workplace could be made safer or who should bear the cost of accidents.⁶⁶ Arthur McEvoy depicts the workplace as an ecological system with the worker's body at its core. Industrial accidents are, therefore, the ecological consequence of workplace organization and regulation.⁶⁷ Both authors offer strong analyses and are correct in many respects, except that, uncharacteristic for industrial producers in this period, DuPont tried to build safety into the workplace and offered compensation and aid to the families of those killed by workplace accidents.⁶⁸ What neither author mentions, however, is that industrial accidents often extended beyond the workplace itself and posed risks to workers' homes and families, neighboring towns, and the natural environment.

Accidents resulting in explosions at the DuPont gunpowder mills are well documented in both family correspondence and newspapers. Though many of the accounts present personal details and descriptions of company damage, they also describe the impact that accidents had on the landscape and on surrounding spectators. On the morning of March 19, 1818, the company was hit with its most devastating explosion to date and for some time to come. While E.I. du Pont was away in Philadelphia on business, a fire ripped through the upper powder yard destroying the pounding mill, powder magazine—where they stored finished powder—and several other buildings. At

⁶⁶ Jamie Bronstein, "Caught in the Machinery: The Cultural Meanings of Workplace Accidents in Victorian Britain and the United States," *Maryland Historical Magazine*, 96, No. 2 (Summer, 2001), 163.

⁶⁷ Arthur McEvoy, "Working Environments," S156.

⁶⁸ For intentions to provide pensions to workers' families following a 1815 explosion, see Antoine Bidermann to E.I. du Pont, Pittsburg, June 16, 1815, in *Life of Eleuthère Irénée du Pont from Contemporary Correspondence, 1814-1819*, Vol. X, trans. B.G. du Pont (Newark: University of Delaware Press, 1926), 94-95. Additionally, following the 1818 explosion, a Philadelphia fund "collected for the relief of the families which suffered at the explosion of the Brandywine," raised six hundred dollars to further secure the millworker's families. See, "Wilmington, 8th April, 1818," *American Watchmen*, April 25, 1818, Vol. 1, No. 81 (Wilmington), 4.

least thirty-five people were killed and several others were injured, including some family members of the workers. Descriptions of the dead were brutally honest. A relatively mild account of the incident explains that “The bodies of most of the deceased were blown into pieces and scattered at great distances from each other.”⁶⁹ E.I. du Pont’s wife Sophie and his brother-in-law Charles were both injured in the accident. The family’s house was also heavily damaged, as the “windows, floors, and roof...were blown off.”⁷⁰ Most interestingly, regarding the company’s connection with its environment, reporters also described damage to the natural surroundings. “The fences, trees, [were] all leveled to the ground,” one reporter remarked, and “some large hickories are twisted and broken as if struck by lightning.”⁷¹ Furthermore, the blast shocked Wilmington, as citizens poured out from their houses to discover the commotion’s source. It was initially feared that the city itself might have been damaged by the blast.⁷² So, while these explosions were undoubtedly devastating for the company on a number of levels, they were also an intimate part of its working environment. To produce their gunpowder, the company organized the soils and trees, the creek that powered their machinery, and the workers’ bodies who labored to create the powder. Additionally, because the possible magnitude and reach of an explosion was so great, and since the company was located only a short distance from the city, the families of workers, the

⁶⁹ “Chronicle,” *Niles’ Weekly Register*, April 4, 1818, Vol. 14, No. 344, American Periodicals Series Online, 103. For another good, general description of the explosion, see “Thursday, Powder Mills, Mr. Dupont; Brandywine; Wilmington,” *Village Record*, March 25, 1818, Vol. IX, No. 459 (West Chester, Pennsylvania), 3. For a partial list of those killed, see “The Explosion,” *American Watchman*, March 25, 1818, Vol. 1, No. 72 (Wilmington, Delaware), 3.

⁷⁰ “The Late Dreadful Explosion,” *City of Washington Gazette*, March 25, 1818, Vol. 3, No. 116 (Washington DC), 2.

⁷¹ Dupont’s Powder Mills,” *Washington Whig*, March 23, 1818, Vol. 3, No. 140 (Bridgeton, New Jersey), 3

⁷² “Dupont’s Powder Mills,” *Washington Whig*, March 23, 1818, 3. Some people as far away as Lancaster, Pennsylvania reportedly felt the explosion and believed it to be an earthquake. See, *Village Record*, March 25, 1818, 3.

owners who lived on site, and the citizens of Wilmington all shared the potential risks of an industrial accident.

In short, after selecting a site for their powder works along the Brandywine Creek in Northern Delaware, the DuPont Company quickly shaped the landscape around it. An advantageous location to inaugurate a new business, the company joined Wilmington's and the Brandywine region's active community of manufacturers, merchants, and skilled-laborers. On several hundred acres of land accumulated over a twenty-year period, the company erected dams on the creek, millraces, waterwheel powdered mills, stone quarries, family and worker housing, and engaged in both agriculture and silviculture on the land. The world they built along the Brandywine went far to organize the social and economic lives of those who worked and lived there. As the company continued to grow and abut against other manufactures and landowners along the Brandywine, it became more and more a part of Wilmington's extended landscape. Furthermore, the working environment was not contained by the site's imaginary property lines, fences, and gates. When explosions happened at the manufactory, they ravaged the lives of those who lived and worked at the mills, damaged non-human life, and threatened the security of neighboring lives and structures. As the company progressed into the future and grew economically, it increasingly shaped and organized a working environment whose influence extended beyond its enclosures and into other realms.

Urban Growth and Industry

In the early decades of the nineteenth century, Wilmington, Delaware's geography and society made it a beneficial place for industrial and agricultural production. One

historian noted that compared to other regions in Europe and the United States, no equivalent area rivaled that of the Northeastern United States for navigable or power producing rivers, and none were bordered by as fertile lands as those in the Delaware and Chesapeake regions.⁷³ Wilmington, in particular, was situated between two power-producing rivers and adjacent to the Delaware's navigable thoroughfare. Additionally, the community of manufactures, merchants, and agricultural producers in and around the city actively promoted their trades and facilitated public works to streamline transportation and improve development. In 1811, Delaware even passed a law to encourage and assist manufactures within the state. The law exempted artificers and workmen "concerned or employed as such in the manufacture of paper, iron, gun-powder, woolen yarn, woolen cloth," and others, from service in the state's militia. Additionally, it outlawed and issued penalties against attempts to seduce or lure workers away from their employers.⁷⁴ Though passed after the DuPont Company's establishment, but seemingly with their stability in mind, this law further attests to the general importance afforded to manufactures in the state. Ultimately, the state and city's geography, beneficial location between two growing metropolises, and economic community encouraged the du Ponts to locate their powder manufacture along the Brandywine Creek and begin creating a working environment.

After selecting their location, the DuPont Company proceeded to construct production and living facilities that organized the landscape around them. Because the property included employee and family housing, it operated as a small urban community

⁷³ Thomas C. Cochran, "Early Industrialization in the Delaware and Susquehanna River Areas: A Regional Analysis," *Social Science History*, 1, No. 3 (Spring, 1977), 288. Though this paper does not engage it, the Quaker culture and mentality is critical for a more holistic understanding of economic growth in this region.

⁷⁴ Delaware Senate and House of Representatives, "An Act to Encourage the Establishment of Certain Manufactories Within this State," *Laws of the State of Delaware, Vol. IV* (Wilmington: M. Bradford & R. Porter, 1816), 397-400.

ensconced in a rural hamlet outside of Wilmington. Over time, the manufacture, and those who lived there, became an important part of urbanizing Wilmington. As the company continued to grow physically, it abutted against other manufactures that lined the Brandywine. Along with its neighbors, the Eleutherian Mills formed a contiguous link of milling sites and settlements leading into Wilmington. Not long after establishing the company, E.I. du Pont became actively involved in city life. In early 1808 he purchased stock in the Wilmington Library Company and made annual payments for his family's use of the Wilmington Bridge.⁷⁵ Years later, in 1817, du Pont acted as president for the Society of the State of Delaware for the Promotion of Manufactures. Not only did this group meet in Wilmington, but many of its members were du Pont's neighboring manufacturers. Furthermore, the continued growth of his company ensured that the du Pont family would be influential in Wilmington for years to come.

This is all to say that the company's growth and built environment were a part of Wilmington's overall development. Certain environments and places often attract different types of creativity and innovation. Once they do, those innovators, activists, and industrialists participate in, build, or mold the environments around them. Wilmington's environment and society in the first decades of the nineteenth century were ideal for new manufactures. This was not only the case for DuPont, but for other entrepreneurs such as the Tatnall and Gilpin families, who improved flour grinding and paper making procedures respectively.⁷⁶ Close proximity and transportation to markets, waterpower,

⁷⁵ Jacob Broom to E.I. du Pont, Wilmington, January 8, 1808, and Edward Gilpin to E.I. du Pont, Wilmington, April 17, 1810, in *Life of Eleuthère Irénée du Pont*, Vol. VIII, 14 and 265-266.

⁷⁶ In 1817, Thomas Gilpin introduced America's first endless paper machine, based on English models, to his mills along the Brandywine. The machine revolutionized the industry and "forced other paper manufactures to mechanize their plants." Harold B. Hancock and Norman Wilkinson, "The Gilpins and Their Endless Papermaking Machine," *The Pennsylvania Magazine of History and Biography*, 81, No. 4 (Oct., 1957), 391. In the early 1700s, Joseph Tatnall's family established gristmills along the Brandywine

sources for finance and labor, and an industrious spirit all contributed to DuPont and these other manufacturers' stability and growth. That DuPont and other companies maintained a prominent place in and helped organize Wilmington's landscape over the past two-hundred years attests to the lasting influence of innovation on spatial growth. Though many factors supported urban growth in Wilmington, and the mid-Atlantic, during the early republic and into the nineteenth century, the presence and proliferation of industries like DuPont, and their organization of the built-environment, should be more thoroughly contemplated. Additionally, the congruence of factors that generate innovative environments can help historians understand the culture that fueled America's economic growth.

that soon anchored a contingent of active merchant mills in Wilmington. Hoffecker, *Wilmington, Delaware: Portrait of an Industrial City*, 5-6.

CONCLUSION

Walking the grounds of the Hagley Museum and Library on the urban edge of Wilmington, Delaware, one can enjoy the rustling sounds of the Brandywine River, take shade under a towering black walnut tree, or be startled by a scampering groundhog as it makes its way across a graveled road. Yet, interspersed throughout this idyllic rural scenery are a number of built structures that have occupied the immediate landscape for over two-hundred years as part of the DuPont Company's original powder mills. Stone buildings and working water mills, remnants of the Eleutherian Mills, have been carefully preserved to serve as educational tools and entertainment for the researchers, students, and visitors that venture to the museum each year. Ensclosed in this scenic and guarded environment is one of the country's best remaining relics of early American industrialization. Few places offer such a remarkably intact view of the working and living spaces of industrial laborers and entrepreneurial families. In a world where change occurs at a rapid pace, and where homes and factories are regularly destroyed or built anew, the Hagley Museum's grounds contain a number of structures that have survived the last two centuries. It is unlikely these structures would continue to persist had the DuPont Company not been motivated by a national economic culture that encouraged entrepreneurs to engage in institutional growth and development.

In the decades following the Revolution, Americans increasingly moved away from an international economy based on shipping and foreign markets for surplus agriculture to a more self-sufficient national economy. Individual entrepreneurs and companies utilized this national dialogue to promulgate the necessity and importance of domestic innovation and industrial production. An emerging trans-Atlantic industrial capitalist

culture spurred the actions of these individuals and manifested in their attempts to establish markets and exchange networks for domestically produced goods. The DuPont Company was a key participant in this nationalizing economy. Its proprietors vigorously defended the national importance of their gunpowder and sought to ascertain a reputation for unsurpassed quality. The company also employed a network of sales agents to disseminate its powder throughout the United States. Not to forget the role of the state, the federal government was active in offering vocal and material support for new manufacturers—as the DuPont case shows—and eventually in offering legislative support through the embargo and subsequent tariffs. Yet, despite the increased attention paid to domestic producers, industrial growth was only largely occurring in specific geographies. Places like Wilmington, Delaware were well suited for manufacturing and the city’s proximity to some of the nation’s more prominent commercial centers made it an early site of innovative and industrial activity.

This economic culture entailed a form a physical development that is visible in DuPont’s organization of the landscape around it. The company planned a working environment where workers and their families lived out their economic, and much of their social, lives. In doing so, DuPont erected an early industrial village that maintained important connections to Wilmington. As one author suggests, E.I. du Pont imagined his powder facilities and workers’ housing as “a kind of ‘middle landscape’ between the city and the wilderness.”¹ By highlighting the industrial village’s role as a middle territory between the city and wilderness, one might draw comparisons to modern discussions about the role of suburbs in urban growth. If twentieth-century suburbs and individual development sites were small-scale “nuclei in the penumbra” of their neighboring cities,

¹ Mulrooney, “Labor at Home,” 210.

that filled in over time, industrial villages and edge settlements had a similar relationship to America's early cities.² Industrial communities were instrumental in shaping America's built environment and urban layout. DuPont's working environment at the beginning of the nineteenth-century was one of several along the Brandywine that maintained important links to neighboring cities—especially Wilmington—and utilized their resources. DuPont's continued growth into the twentieth century has seen it become even more a part of Wilmington's everyday existence. The company's current headquarters are located in the city's downtown, while numerous industrial factory sites and family mansions remain in the surrounding area.

In 1872, with some temporal distance from America's initial period of industrialization, Elizabeth Montgomery, a Wilmington citizen, recalled an anecdote illustrating the innovative mentality that gripped a number of Americans at the turn of the eighteenth century. On the day train cars commenced running from Wilmington, a young Elizabeth encountered a man who excitedly explained that, years earlier, his father had met the mechanical innovator Oliver Evans who remarked that “the time was not far off when it would be only a day's journey from Philadelphia to Baltimore, and that carriages would be invented to go without horses.”³ Of course, the man's father thought this was preposterous and mocked Evans. Not only was Evans correct in his prediction, but the conviction he displayed was reminiscent of a growing attitude among antebellum

² Ernest M. Fisher, quoted in Greg Hise, *Magnetic Los Angeles: Planning the Twentieth Century Metropolis* (Baltimore: The Johns Hopkins University Press, 1997), 1. In a related observation, regarding the location of industrial settlements specifically, a pair of authors notes that industries often sprung up near larger metropolitan regions or medium-sized regional cities. They were part of a “knife-edge” phenomenon that explains regional growth as jetting out from an already existing center due to the availability of skilled labor and resource availability. This is applicable to industrial villages such as DuPont's because the company had similar reasons for locating its business near Wilmington, and its personal growth was part of the city and region's larger urban development. Michael Storper and Richard Walker, *The Capitalist Imperative: Territory, Technology, and Industrial Growth* (Cambridge: Blackwell Publishers, 1989), 75.

³ Elizabeth Montgomery, *Reminiscences of Wilmington* (Wilmington, Del., 1872), 15.

innovators and producers. America's capitalist culture motivated individuals to expand the scale of production, design new goods, and engineer speedy ways for these goods to travel and reach markets. Driven by this mindset, Evans' hope for future advancements was part of a widening sentiment that equated America's national development with economic growth and technological achievement.

Individual industries and entrepreneurs occupied a strong role at the forefront of a culture that linked industry to economic independence and national development. This thesis argues that, the DuPont Company, as one such individual producer, was active in efforts to fuse manufacturing with national prosperity. The company also helped to secure support for American industries, so that they might survive their fragile nascent years with stronger prospects for success. DuPont built its name and reputation so that in short time it became "synonymous with gunpowder."⁴ The company's founders also cultivated a close relationship with the federal government and sought to achieve economic protections for all manufactures by serving in the Society of the State of Delaware for the Promotion of American Manufactures. Through these efforts, the DuPont family and company, along with many others in the northern and middle states and parts of the south, helped secure tariffs and other protective measures, thereby turning America's political economy away from its earlier free-trade ideologies.⁵

⁴ Gavin Weightman, *The Industrial Revolutionaries: The Making of the Modern World, 1776-1914* (New York: Grove Press, 2007), 87.

⁵ Daniel Walker Howe addresses the popular acceptance of tariffs in the early nineteenth-century by region. He notes that New England needed to industrial due to poor soils and a short growing season, and the growth of textile mills in there encouraged protectionist sentiments. As, this paper argues, tariffs were of course important in the middle states as well where mills dotted the landscape especially outside Baltimore, Philadelphia, and Wilmington. Howe also suggests that the South did not support these tariffs because they diminished demand on southern cotton. There were, however, three "islands of protectionist sentiment" in the South, including: "the sugarcane growers in Louisiana, [Henry] Clay's hemp growers in Kentucky and Missouri, and the Appalachian valleys of eastern Tennessee and western North Carolina, where the predominately non-slaveholding population continued to hope for industrial development of their natural

DuPont's growth and the rise of other manufacturing companies highlighted the emergence of industrial capitalism in nineteenth-century America. The culture that propelled these groups linked industry to national prosperity and unleashed development in certain directions. As DuPont's story suggests, the company was active in assisting development nationally, regionally, and locally. By producing powder for the federal government and defending manufacturing, it aided national stability and economic independence. Regionally, DuPont created markets for its powder in neighboring urban centers thereby boosting shipping and commerce in those local economies. Additionally, its powder was used to blast rocky areas and form canals to open up internal navigation. Finally, DuPont's footprint, and that of other industrial institutions, was perhaps most profound on a local scale. The company's working environment organized the economic and social lives of workers and their families and transformed the natural world around it. Its growth added to Wilmington's, and as the company extended its landholdings and boundaries it became ever more a part of that city. This final point is continually relevant as the company maintains its headquarters in Wilmington and preserves its initial factory site in the form of the Hagley Museum and Library.

resources and water power." Therefore, support for tariff protections in the early nineteenth-century existed, at least partially, throughout much of the United States. Daniel Walker Howe, *What Hath God Wrought: The Transformation of America, 1815-1848* (New York: Oxford University Press, 2007), 272-273.

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True American

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Weekly Aurora

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1800-1820

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