

**Economic Creativity in A Slave Economy:  
Invention and Innovation in Slave Cities before the Civil War**

**John Majewski, Department of History, UC Santa Barbara**

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Abstract: Economic creativity—the ability to turn engineering, scientific, and artistic creativity into commodities to sell, rent, license, or otherwise use in the pursuit of profit—is an important element of capitalism. Using the location of particularly creative industries, exhibits at industrial fairs, and patenting rates, I compare economic creativity in slave cities and free-labor cities in the United States in the 1850s. The evidence shows that in per capita terms, slave cities trailed significantly in every measure of economic creativity. I argue that a combination of slavery, low rates of schooling and high illiteracy rates in slave cities limited the supply of economically creative entrepreneurs, while larger numbers of libraries and learned institutions in free-labor cities helped diffuse information and promote learning to expand economic creativity.

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## **Economic Creativity in A Slave Economy: Invention and Innovation before the Civil War**

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On August 1, 1838, the abolitionist William Lloyd Garrison addressed a predominantly Black audience at New York City's Broadway Tabernacle to mark the emancipation of 600,000 slaves in the British West Indies. Garrison used the occasion to mock proslavery arguments that predicted emancipation would lead to widespread violence. Proslavery newspapers, Garrison reported, had long held "as a self-evidence proposition, that bloodshed and ruin must be the inevitable consequence of letting the oppressed go at once." Garrison argued at length that in Antigua, where full emancipation had occurred in 1834, proved that freed slaves worked industriously without a hint of violence. Indeed, the freed people willingly worked late into the night, not only to support their families, but to give liberally "to a multitude of benevolent and moral associations." Garrison sarcastically promised that if the emancipation happened in the United States, the enslaved and their abolitionists allies "*will have our revenge*" in the form of peace and prosperity. Prosperity, though, meant far more than industrious workers; it included a broader expansion of entrepreneurship and education in slaveholding states that would create new opportunities and possibilities. For the former enslavers, Garrison predicted that emancipation would "wake up the entombed genius of invention, and the dormant spirit of enterprise—open to them new sources of affluence—multiply their branches of industry—erect manufactories, build rail-roads, dig canals—establish schools, academies, colleges, and all beneficent institutions—extend their commerce to the ends of the earth, and to an unimagined amount."<sup>1</sup>

Garrison’s invocation of the “genius of invention,” “spirit of enterprise,” and new “branches of industries” captures key elements of what we in the 21<sup>st</sup> century might call economic creativity. Creativity can be defined as the ability to imagine new and different possibilities, whether it is a painter experimenting with different brush techniques, an entrepreneur developing a profitable new business, a scientist making an important discovery, or an inventor solving a difficult technical problem. To be considered creative, acts of imagination must be novel and either useful or aesthetically pleasing. In capitalist economies, consumers (often with considerable prodding and persuasion from firms and entrepreneurs) typically determine what is useful and what is pleasing among new products and services. Capitalism, in fact, depends on entrepreneurs and businesses commercializing creativity, which can be defined as the act of turning creativity into commodities to sell, rent, license, or otherwise use in the pursuit of profit. Creativity in art, music, and storytelling are inherent in all societies and cultures, but the commodification of creativity in capitalism fosters an economic environment of constant innovation embodied in Joseph Schumpeter’s famous phrase “creative destruction.”<sup>2</sup> Schumpeter defined capitalism as an economic system that “incessantly revolutionizes the economic structure *from within*.”<sup>3</sup> Commercialized creativity—the ability of firms and entrepreneurs to envision inventions, innovations, and new forms of enterprise and organization—generates Schumpeter’s revolutionary change in capitalist economies.

Historians of the United States studying the emergence of capitalism have generally eschewed the concept of creativity, but the current literature implicitly highlights a stark contrast in the commercialization of creativity between free-labor and slave states. Historians focusing on the northern industrialization have uncovered a rich consumer culture that represented the confluence of mechanization and markets with fashion, art, and design. New goods ranging

from finely-woven carpets to rich mahogany veneers to mass-produced pianos helped define a growing middle-class. The new consumer culture included a vast print culture of richly illustrated books and periodicals, which was intimately connected to the expansion of commercial entertainments in theater and music.<sup>4</sup> The increasingly commercialization of creativity included a dramatic increase in patenting and other forms of inventive active activity, which laid the technological foundations for widespread industrialization and greater urbanization.<sup>5</sup> Scholars have also found considerable economic creativity among southern enslavers, who invested in railroads, developed new strains of cotton, improved the cotton gin, and pioneered sophisticated accounting techniques.<sup>6</sup> Economic creativity in the slave South, however, extended little beyond the plantation economy. Much of the region's manufacturing, such as commodity processing, usually had strong linkages to plantation agriculture.<sup>7</sup> Even enslaver capitalist who advocated for more industry often did so as a means to protect the long-term survival of slavery.<sup>8</sup> In contrast to accelerating structural changes evident in the Northeast, plantation agriculture represented a striking continuity in the slave South from the colonial period through the Civil War.

This article seeks to explicitly measure regional differences in economic creativity that the recent literature implicitly suggests. To do so, I compare commercialized creativity in the 1850s in slave cities and free-labor cities. Scholars have long identified cities as particularly robust generators of economic creativity. Cities often act as magnets for particularly talented and creative individuals who can collaborate with other innovators, sell to large and diverse markets, and find specialized suppliers and skilled workers.<sup>9</sup> Slave states had a substantially smaller urban population than free-labor states, but slave cities grew substantially in the 1850s to become significant commercial and manufacturing centers. Four of the twelve largest cities in

1860 were slave cities (Baltimore, New Orleans, St. Louis, and Louisville), while a number of smaller cities grew especially prominent in the Upper South.<sup>10</sup> There is no immediate reason to think that economic creativity in slave cities would differ markedly from free-labor states on per capita basis, at least in regards to the free population. We might expect to see especially high levels of economic creativity in the large slave cities of the border states, where slavery was relatively weak and where soils, climate, and crop types resembled nearby free-labor cities.

Different measures of economic creativity, however, unambiguously show that slavery impeded economic creativity even in these otherwise bustling urban environments. Slave cities trailed in most forms of manufacturing, but the gap was especially large in highly creative industries (such as publishing and musical instruments) that fused industrialization with art. Manufacturers in slave cities exhibited their wares at major industrial fairs at far lower per capita rates than those in free-labor cities. Slave cities had also generated far fewer inventions (measured through patenting rates) than free-labor cities, even after taking account city size and level of manufacturing output. The slave cities in the border states—Baltimore, Louisville, St. Louis—showed surprisingly little difference in economic creativity than the slave cities in the cotton South. The evidence, I argue, points to regional differences in education and literacy. The expansion of education in free-labor states increased the pool of creative workers and the demand for creative commodities, while the growth of public libraries and other learned institutions demonstrated a highly visible commitment to the circulation of knowledge and ideas. The combination of slavery and low levels of schooling constricted the supply of creative talent in the South, while enslavers made clear that learning and literacy were prerogatives of race and class. Linking patent records to the 1860 census shows that a shockingly low percentage of residents born in slave states became inventors, suggesting that the slave states failed to generate

economic creativity from within the regions. Widespread economic creativity was literally foreign to the slave states. The relatively low levels of commercialized creativity in the South help account for why the region remained, in the words of Franklin D. Roosevelt, “the Nation’s No. 1 economic problem” well into the twentieth century.<sup>11</sup>

### **Economic Creativity and the Emergence of the Parlor Industrial Complex**

In his 1854, book aptly entitled *Industry and Art*, the antislavery journalist Horace Greeley reviewed New York City’s Exhibition of All Nations, a world’s fair that followed in the footsteps of London’s Great Exhibition. Although Greeley was an enthusiastic supporter of the New York City exhibition, he expressed dismay that only politicians, diplomats, and military officers had speaking roles for the opening ceremony. “No Artist was there. No Mechanic. No Laborer,” he complained. Whereas the country celebrated “cassocks and soldier-cloths” and “the political fraud that prates of this or that speech in Congress,” the real heroes of the Republic were the “Inventor, Painter, Composer, or Poet.” Greeley invoked the word “genius” to describe heroic inventors and artists who merged science, engineering and art for a new industrial age. To emphasize the interdisciplinary nature of invention and innovation, Greeley defined “progress” as the use of mechanization to bring art to ordinary households. Through both “our discoveries in science” and the “the enormous increase of mechanical power consequent upon mechanical invention,” Greeley declared that “we have democratized the means and appliance of a higher life; that we have spread, far and wide, the civilizing influence of Art.”<sup>12</sup> Important critics took issue with union of art and industry, but it was commonplace for observers to celebrate the spread of art through relatively inexpensive manufactured goods. In 1848, *Godey’s Lady’s Book*, a periodical especially popular with middle-class consumers, noted that art not only consisted of “the composition of a fine picture” or “a noble piece of sculpture,” but could also be

found in everyday items “such as a beautiful piece of cabinet work, a delicate and tasteful production of the loom, in a set of porcelain, or in a common stove.”<sup>13</sup>

Greeley and *Godey's Lady's Book* highlighted how nineteenth-century industrialization also depended on different type of creativity, one expressed through fashion, art, and design. Some industries, of course, focused heavily on engineering and organizational creativity. Increasing the productivity of processing industries—more efficiently turning wheat into grain or trees into lumber—was an engineering challenge rather than an artistic one. The same was true for steam engines, machine tools, and many other capital goods. On the other hand, a range of consumers goods incorporated fashion, art, and design as a crucial element of production. The rise of middle-class parlor culture highlighted the conjunction of industrialization, consumer culture, and artistic creativity. A large number of middle-class families regarded the parlor as a critical conduit between the outside world and domestic life. Through the choice of carpet, drapes, wallpaper, furniture, art, images, musical instruments, and decorative objects, middle-class women could use the parlor to signal refinement and respectability, while simultaneously projecting their own identity and values and aesthetic choices in regards to design, color, and layout.<sup>14</sup> The parlor also became a space for the performance of commercialized creativity, whether it was reading aloud a novel or performing with musical instruments and published sheet music. For firms and entrepreneurs, the parlor represented a rich and deep market which encouraged them to simultaneously reduce prices while meeting the aesthetic demands of middle-class consumers.

The piano embodied interdisciplinary creativity of what might be labeled the parlor industrial complex. The piano trade was a surprisingly important industry, larger than in terms of value added than the production of mechanical reapers or the firearms. A combination of

lumber yard, iron works, and craft workshop, piano factories embodied nineteenth-century industrialization. Piano factories sometimes took up an entire city block in buildings with multiple stories; observers believed that the Chickering piano factory in Boston, for example, was the second largest building in the United States.<sup>15</sup> Such factories used highly advanced machinery, including large steam engines that heated lumber sheds to season the wood, precision drills that bore hundreds of holes into each piano's iron frame, and sophisticated saws and planners that could carefully and efficiently cut wood veneers. In the midst of this profusion of industrial machinery, skilled craft workers made highly polished steel wire, which they carefully connected to the ivory keys and the piano's hammers. To ensure a high-quality sound, the heads of the hammers themselves had to be carefully constructed from carefully prepared basswood and covered with specialty felt or buckskin. Putting together the 6,000 different parts in each piano, in the words of one journalist, required "great skill, long experience, and thorough workmanship."<sup>16</sup> Artistry was at a premium, as pianos had to have both a precise sound and an attractive design. Like many creative goods, pianos simultaneously existed within mass markets and niche markets. Despite the demanding artistic requirements of piano production, manufacturers succeeded in mass-producing pianos to significantly lower prices and expanded access.<sup>17</sup> At the same time, the piano trade offered a variety of designs and improvements to satisfy different tastes and preferences, ranging from virtuoso performers in large concert halls to middle-class families seeking to provide their children with musical education within the home.

Perhaps the industry that relied most on the combination of engineering and artistic creativity—and the one that had the greatest cultural salience—was publishing and printing. Writing and editing are intellectual and artistic activities, but printed matter is a surprisingly complex physical commodity that northerners learned to produce on a mass scale. New

machinery allowed foundries in the 1840s to produce 6,000 pieces of type in an hour, whereas traditional hand casting might produce 4,000 pieces per day. The development of stereotype and electrotype plates gave printers more choices in the use of fonts and symbols, and allowed them to more easily store the plates of books, pamphlets, and other printed material for future print runs. By the late 1850s, new typesetting machines made it easier to compose type and printing plates. Inventors developed rotary systems and applied steam power to dramatically increase the speed of the printing press. Papermakers similarly embraced mechanization, which resulted in a rapid drop in price and a significant increase in quality and uniformity. The engineering creativity evident in the publishing industry helped fuel the growth of an expansive print culture. The number of newspapers and periodicals increased dramatically, while book prices plummeted so that inexpensive paperbacks sold for as little as 12 cents.<sup>18</sup> As print matter become less expensive, it simultaneously contained far more illustrations. Improvements in engraving and the advent of lithography led publishers to compete for middle-class readers with richly illustrated periodicals, while firms such as Currier and Ives became highly successful selling inexpensive single-print reproductions.<sup>19</sup>

The combination of industry, art, and design was an important part of nineteenth-century industrialization that extend well beyond pianos and publishing. Using the 1860 census, I have identified 42 census-defined industries that involved high degrees of both engineering and artistic creativity. I have grouped these industries into five major categories: decorative arts, furniture, fashionable textiles, musical instruments and publishing. Each industry required sophisticated expertise in fashion, art, and design. While many of the decorative arts remained somewhat craft oriented, many of the other industries incorporated a significant degree of mechanization and new technologies. Many of the individual industries were quite modest, but

taken together they accounted for a total value-added of \$45.7 million, exceeded the size of the iron industry. These highly creative industries tended to cluster in large metropolitan areas (defined as cities with more than 100,000 residents), which had deep pools of skilled workers and specialized suppliers as well as superior access to distribution networks. The nation's major metropolitan areas accounted for 9 percent of the U.S. population in 1860, but 52 percent of the value-added of the highly creative industries in Table One. Segments of other industries might have been included if the 1860 manufacturing census had provided more detailed information about individual firms. Many cotton textile producers, for example, obviously played close attention to fashion trends, but I excluded it because many other firms focused on the production of inexpensive and unadorned yarn and cloth.<sup>20</sup> I also excluded industries such as men's clothing and boots and shoes, which still relied on household labor and hand-sewn production in many areas.

Free-labor cities dominated these highly creative industries. Table One compares highly creative industries in nation's metropolitan areas. As Table One shows, the Midwest metros of Chicago and Cincinnati produced four times more in per-capita value added than the metropolitan slave cities of Baltimore, St. Louis, and New Orleans, while per-capita value-added in the northeastern metros of Boston, New York, and Philadelphia was more than six times greater than the slave cities. The free-labor metros generally had larger manufacturing sectors than the slave metros, but their advantage in these particularly creative industries was many times greater. The divide between slave cities and free-labor cities was especially striking in the publishing industry. The five northern metropolitan areas, which accounted for two-thirds of the national publishing industry's output, produced nine times the value-added than the three slave cities. The slave cities supported just two engraving firms and one lithography firm, employing

a total of 14 people. New York City alone was home to 117 such firms, collectively employing more than 700 workers. Northern publishing—bringing together engineering, artistic, and literary creativity—became a significant economic sector with a major cultural and economic impact. Publishing, like other highly creative industries, could help foster widespread invention and innovation. The engravers and lithographers in free-labor states, for example, could provide precise and high-quality illustrations for scientific and technical journals. Free-labor states, not surprisingly, supported 79 percent of the nation’s scientific newspapers and periodicals in 1850. The scientific journals in the free states produced twelve times the number of issues than the slave states, suggesting that they had a far larger and more frequent circulation.<sup>21</sup> Proximity to cutting-edge research and publications, one can reasonably surmise, was a significant advantage for northern scientists, engineers, and inventors.

The output of highly creative industries could function both as utilitarian consumer goods and as pieces of art and design. These qualities made such goods well suited for large-scale industrial fairs and exhibits, where attendees could readily admire both form and function. At the New York Exhibition of All Nations, visitors could view hundreds of examples of advanced technologies—ranging from steam engines to agricultural implements—as well as decorative books, elegant maps, and new pianos. Visitors could also view an impressive collection of sculptures and paintings, suggesting that technology and art intermixed, tied together through the common thread of economic creativity. More than 2,000 exhibitors from across the United States displayed samples, models, art, and technology in 31 different categories.<sup>22</sup> Firms and entrepreneurs presenting exhibits could display their commodities to the million people who attend the exhibition, while meeting agents, merchants, and distributors interested in a particular product, design, or technology. Most exhibitors came from New York City and nearby

northeastern states, which made sense given their close proximity and large manufacturing sectors. Firms located largest slave cities and midwestern cities, however, also exhibited their wares. In per capita terms, the midwestern cities sent more exhibits than those of the slave cities. Residents of Chicago and Cincinnati, the two midwestern metropolitan areas, collectively had 188 exhibits per million, while residents of the slave cities of Baltimore, New Orleans, and St. Louis had a total 131 exhibits per million. New Orleans, whose residents sent only six exhibits, had especially low participation given the city's size and close business and financial ties to New York City via the cotton trade. Baltimore's number of per capita exhibitions (189 per million) was better than New Orleans and in the same range as Cincinnati and Chicago, yet it significantly trailed nearby Philadelphia (318 exhibits per million).<sup>23</sup> Many of the Philadelphia exhibits revolved around highly creative industries such as publishing, musical instruments, and decorative arts.

### **Invention and Innovation in Slave Cities**

Highly creative industries generated high levels of invention, which often took the form of patents. Patents are an excellent example of the commodification of creativity. At root, a patent is a property right to a new technology. In exchange for disseminating information about an invention, a government grants patentees a monopoly for its use for a specified period. Patents thus turn creativity into a commodity that could be bought, sold, licensed or used as its holder saw fit. In the nineteenth century, the U.S. patent system was open, but not so open that applicants could easily submit frivolous applications for pre-existing inventions. The federal government charged relatively modest filing fee of \$30 so that many middling artisans and mechanics could patent new inventions, but after 1836 also required that applicants submitted a

description, engraving and model to prove the originality of their invention. A network of lawyers and patent agencies stood ready to broker agreements to sell or license patents, which allowed inventors to more easily sell or license their work to others.<sup>24</sup> Patenting also facilitated the dissemination of technical information because inventors had to disclose precisely how their inventions worked. The Patent Office regularly published detailed reports on new patents, while patent agencies (eager to encourage new applications) published periodicals such as *Scientific American*, *American Artisan*, and *American Inventor* that were filled with information about new patents.<sup>25</sup> In this respect, a patent was a speech act as well as a commodity, thus facilitating the flow of technical information to encourage more invention and innovation. Patents often represented the commodification of engineering and scientific imagination, but they could sometimes represent design elements as well. The inclusion of detailed engravings and models with patent applications gave them a pronounced artistic element. The U.S. Patent Office, in fact, showcased thousands of models in the National Gallery as one might exhibit a sculpture or painting.<sup>26</sup>

Patents were clearly an important element of nineteenth-century U.S. industrialization. Inventors patented across a range of industries, including textiles, iron, sewing machines, agricultural implements, railroads, machine tools, printing, and musical instruments. Entrepreneurs increasingly paid to purchase or license patents, suggesting that they had significant economic value. Before the Civil War, Americans patented nearly 41,000 inventions, making the United States a world leader. Patenting rates accelerated significantly in the late 1850s. The five-year period from 1856 to 1860, in fact, accounted for 42 percent of all patents issued before the Civil War.<sup>27</sup> The dramatic acceleration occurred despite the Panic of 1857 and the political instability of 1860 election, events which otherwise might have led to falling

patenting rates. The patenting boom of the late 1850s, occurring conveniently close to 1860 census, gives an excellent snapshot of invention before the Civil War. I used Harvard University's HistPat database, which uses digitized records to reconstruct the location of every patent issued between 1790 and 1975, to calculate annual patenting rates for the 1856-60 period in counties with a city of at least 12,000 residents.<sup>28</sup> The choice to focus on cities with 12,000 or more residents is seemingly arbitrary, but it provides a diverse set of 65 urban counties from all regions of the country, while avoiding a large number of small cities (primarily located in the northeast) in which a relatively small number of patents could dramatically alter patenting rates. The 65 urban counties accounted for approximately 10,000 patents, or 59 percent of the patents between 1856 and 1860 and a quarter of all patents issued before the Civil War.

Slave cities, as Table Two shows, lagged well behind their northeastern and midwestern peers during the patent surge of the late 1850s. Patenting rates were especially high in large free-labor cities. Metro areas such as New York City, Boston, and Philadelphia offered plentiful opportunities for creative collaboration and access to rich markets in the Northeast and Midwest. Slave cities could not compete with these inventive dynamos. Patenting rates in the three largest slave cities—Baltimore, St. Louis, New Orleans—not trailed the northeastern metros, but were also significantly behind the midwestern metros of Cincinnati and Chicago. Though they lagged behind smaller northeastern cities, smaller southern cities fared somewhat better when compared to midwestern counterparts. Southern industrial centers such as Richmond, Virginia, and Augusta, Georgia supported networks of manufacturers and engineers generated inventive activity that came close to midwestern cities. These smaller slave cities, though, tended to be far more established than the newer cities of the Midwest. Boosters who considered Richmond “the Lowell of the South” could take cold comfort in a patenting rate that was more comparable to

Dubuque, Iowa or Indianapolis, Indiana than the highly inventive cities of New England.<sup>29</sup> A direct comparison of free-labor cities in close proximity with slave cities provides further evidence than slavery retarded invention. Baltimore was one hundred miles from Philadelphia; Chicago and St. Louis waged a fierce rivalry for midwestern commerce; Louisville developed in tandem with neighboring New Albany, Indiana and was approximately 100 miles from Indianapolis; Wilmington, Delaware was a short trip from Philadelphia and only 75 miles from Lancaster, Pennsylvania. In every single case, the free labor cities had higher patenting rates higher than the nearby slave cities. Overall, patenting rates in northeastern cities were more than two times higher than slave cities, while patenting rates in the midwestern cities were 63 percent higher than slave cities.

Could some factor other than slavery account for the differential patenting rates? The presence of more manufacturing in midwestern and northern cities might account for the regional variations in patenting rates. Since patents often represented the application of engineering and scientific creativity applied to the practical problems of manufacturing, one could argue that the North's higher patenting rates simply represented high levels of manufacturing, including the highly creative industries highlighted in Table One. Regression analysis confirms a strong association between manufacturing output and patenting rates (Table Three). The positive relationship between manufacturing and patenting is somewhat ambiguous since causality between patenting and manufacturing probably ran in both directions: more manufacturing led to more patenting, but a highly inventive city was likely to generate more manufacturing over the long-term. Yet even if we assume that the causality ran completely in one direction and that patenting followed manufacturing, the presence of slavery was still highly significant. Slavery, in fact, lowered patenting rates by more than 120 patents per million residents after accounting

for levels of manufacturing, the age of a city, and the advantages of large metropolitan areas. Regression analysis also confirms that even a small number of enslaved could stunt creativity. Whereas the coefficient of a dummy variable indicating the presence of slavery was large and positive, the percentage of enslaved in a city turns out to be statistically insignificant. That makes sense given that patenting rates were low for New Orleans and Mobile (which had large numbers of enslaved workers) and were also low for Baltimore and St. Louis (which had a small number of enslaved workers). Slavery as an institution—not the percentage of the enslaved—strongly influenced levels of commercialized creativity, whether measured through creative industries or patenting rates.<sup>30</sup>

### **Explaining the Gap in Commercialized Creativity**

Why, exactly, did slave cities trail their free-labor counterparts in these different measures of commercialized creativity? Perhaps the evident lack of economic creativity in southern cities was a rational response to the great profitability of cotton, slavery, and plantations. With slavery removing the labor constraints on farm size, it is possible that the creative talent in the slave states gravitated toward staple agriculture while creative talent in free-labor states moved to industry and cities to escape the entrepreneurial limitations of the family farm. Such a reformulation of Heywood Fleisig’s classic argument seems plausible given that southern enslavers displayed a proclivity for entrepreneurial innovation, but it does not fit with a number of well-known facts. Agriculture in Virginia, Maryland, Delaware, and Kentucky had been in a state of relative decline for decades. Creative, entrepreneurial talent should have gravitated to slave cities such as Richmond, Baltimore, and Louisville, yet these still generated low levels of economic creativity. Such arguments also assume that free-labor farmers lacked

creativity when there is substantial evidence that they were just as creative as southern enslavers. Northern farmers, after all, readily adopted mechanical reapers and other implements, developed new seeds, experiment with new crops, and bred new livestock breeds. Vibrant and creative cities did not siphon economic creativity from the countryside, but enhanced it by providing northeastern farmers with new markets that encouraged shifts into livestock, dairy, and market gardens. While it is hard to compare levels of innovation in two distinctly different agricultural regimes, northern farmers may have been more economically creative than farmers in the slave states. On a per capita and per farm basis, northern farmers organized far more agricultural societies and published far more agricultural journals, suggesting a deeper commitment to innovative farm practices.<sup>31</sup> The publishers of most northern agricultural journals were located in Albany, New York, Boston, and Philadelphia, symbolizing how the simultaneous growth of economic creativity in the cities and countryside characterized the northern economy. In the North, there was no tradeoff between economic creativity between cities and farms; economic creativity flourished in both contexts in self-reinforcing fashioning.

Much of the literature on inventive activity and manufacturing focuses on consumer demand. In the North, patenting began to increase in the early nineteenth-century along waterways and transportation improvements, as expanded markets for manufacturers created incentives to invent and innovate.<sup>32</sup> Various demand-side factors limited markets for southern manufacturers, which may have undermined the demand for patents and other creative output. The inability of the enslaved to purchase consumer goods on the same scale as whites undermined local demand for manufactured goods that stunted southern industrialization. The southern railroad network, which was oriented toward plantation districts, left large portions of the southern upcountry isolated from slave cities. Wealthy enslavers often purchased imported

goods from cotton factors in port cities, further undercutting local demand. The poor soils of the South left large swaths of uncultivated land, which stifled the development of hinterlands that could support urban manufacturing.<sup>33</sup> One could plausibly argue that a confluence of these factors gave northern cities a significant head start in fostering economic creativity, a head start that grew progressively larger as the North's population and transportation network expanded in the 1840s and 1850s. Demand explanations are helpful in accounting for the lack of creativity in cities such as Norfolk, Virginia and Savannah, Georgia, where sparsely settled hinterlands did little to stimulate local manufacturing. Demand explanations work less well to explain the relatively low levels of economic creativity in border-state cities such as St. Louis, Baltimore, and Louisville, which had substantial free-labor hinterlands as well as soils and climates similar to nearby free-labor cities. Subtle differences in demand could still account for some of the relatively low levels of economic creativity the slave cities in the border states, but it seems likely that another set of factors were at work.

Supply-side explanations—which focus on factors that inhibited the number of creative individuals in the slave states—provide the most convincing account of low-levels of economic creativity. Slavery, of course, largely suppressed the economic creativity of more than four million Black people. While historians have documented that a few the enslaved contributed to improvements in the cotton gin or engaged in other creative work, for the most part the enslaved had neither the incentive nor the opportunity to invent and innovate. The lack of creative opportunity for the enslaved was a particularly egregious indicator of the slave states inability to generate a pipeline of economically creative individuals. The low number of inventors born in slave states highlights the extent of the problem. I linked a sample of 227 urban patentees to the 1860 census to determine their state (or country) of birth. The sample is incomplete and needs to

be expanded, but it covers all inventors in the slave cities and the southern Midwest (Cincinnati, Indianapolis, and New Albany) for 1859 and 1860, as well as a small number of inventors for New York City for the same years. The preliminary results are striking. Only 30 percent of patentees in slave cities were born in a slave state, as the overwhelming number of slave-city patentees were born in free-labor states (44 percent) or abroad. Perhaps southern-born inventors, frustrated with the lack of opportunity in their own region, left for the free-labor states. Yet even in the southern Midwest—the most obvious destination for inventive southerners—only 12 percent of inventors were born in a slave state. New York City, which had strong ties to southern merchants and cotton planters, might also have attracted southern-born inventors, but a preliminary sample of 50 inventors shows that none were born in the slave-states. The sample is preliminary, but when adjusted to account for regional differences in patenting rates, it suggests that less than 6 percent of patentees in 1859 and 1860 were born in slave states. Whereas the high schooling and literacy rates of the Northeast provide a large pool of potential inventors and innovators, the combination of slavery, low schooling rates, and high rates of illiteracy restricted the pipeline of economically creative individuals in the slave states.

If these results hold up, they raise an important question. Why did native-born southerners—who composed 29.5 percent of the population in 1860—account for so few patentees? Low rates of schooling and literacy was one obvious answer. Because states and localities in slave states provided little funding of education, even public schools in the South charged families high rates of tuition (or rate bills in the parlance of the nineteenth-century). Southern families, in fact, paid an average of \$2.51 in tuition per child in public schools, whereas northern families paid an average tuition of 26 cents per student.<sup>34</sup> The sizeable rate bills in slave-labor states made education a matter of class privilege in the South. No wonder that only

38 percent of free children in the rural South attended school while only 39 percent of free children in southern cities attended school, while 90 percent of children in the rural North and 67 percent of children in northern cities attended school. Low schooling rates, in turn resulted in high levels of illiteracy. In 1860, more than 16 percent of free adults in slave states could not read and write, which was nearly three times higher than free-labor states. There was no significant difference among the slave states; even in the four border states of Missouri, Kentucky, Delaware, and Maryland, 14.4 percent of free adults could not read and write.<sup>35</sup> The border states had especially high levels of illiteracy among free blacks, many of whom struggled on the margins of southern society. The pronounced class and racial divides in slave states clearly served to undermine the supply of creative talent.

Free-labor states also developed far more robust institutions that made learning and literacy an important part of the public sphere. Residents in free-labor states, for example, took great pride in building libraries made books and information more accessible. Most such libraries before the Civil War were organized as non-profit corporations that charged subscribers a modest fee for the right to use the library and check out books. Northern libraries often combined educational and philanthropic goals with a frank commercial strategy. The Mercantile Library Association (MLA) of New York embodied these seemingly contradictory impulses. Founded in the 1820s, the MLA was designed to provide moral and intellectual uplift for New York's thousands of young, male clerks. In 1854 the MLA moved into a large and prominent building to house its impressive holdings of 47,000 volumes, plus subscriptions to 250 newspapers and periodicals from around the world. It also contained a large collection of 2,000 to 3,000 natural history specimens in a specially designated Lyceum of Natural History, and developed a large collection of maps, atlases, and nautical charts to stimulate interest in

geography. The library offered young men classes in foreign languages, bookkeeping, and penmanship—natural areas of interest for ambitious clerks—as well as courses in chemistry, music, and mathematics. To help finance its educational mission, the MLA opened its membership to all patrons (including women) willing to pay a \$2 annual fee. It also increasingly focused on increasing its holdings of fiction, which was increasingly popular with patrons. Some observers bemoaned the fact that fiction became far more popular than works of history and religion, but from the standpoint of MLA’s management of enterprising young merchants, the dictates of the market trumped these concerns. Attracting patrons and raising revenue became a central part of what literary scholar Thomas Augst has called “the enterprise of reading.”<sup>36</sup>

The MLA was a particularly large and successful enterprise, but it reflected an ethos an ethos of learning, literacy, and sociability far more prominent in free-labor cities than in slave cities. The regional difference was particularly striking among the large metropolitan areas, those cities with populations greater than 100,000. According to the 1850 census, the slave cities of New Orleans, Baltimore, and St. Louis collectively had 18 libraries with a total 57,000 volumes, or an average of 6 libraries and 19,000 volumes per city. The free-labor metropolitan cities, on the other hand, had a total of 52 libraries with more than 388,000 volumes, or an average of 8.7 libraries and nearly 65,000 volumes per city. In per capita terms, libraries in the northern metros contained 175 volumes per thousand free residents; libraries in the slave city metros contained only 94 volumes per million free residents. Libraries in free-labor cities were often connected to major research institutions that facilitated economic creativity. The Franklin Institute in Philadelphia, for example, not only supported a library primarily for the city’s mechanics and manufacturers, but also sponsored scientific and engineering lectures, published a prestigious journal, held an annual industrial exhibit, evaluated and publicized new patents.

Demonstrating the importance of interdisciplinary creativity, the Franklin Institute offered highly popular courses in technical drawing that engineers and mechanics found particularly useful. Mechanic's institutes and learned societies such as the Franklin Institute were important research centers, but just as importantly they helped create a culture that valued the widespread dissemination of ideas and information.

Residents of slave cities attached less importance to those values. Libraries in slave cities, especially in the cotton states, were generally far less open than similar institutions in free-labor cities. The Charleston Library Society is a good example of how slave-state libraries often reflected class privilege. Founded in 1748, it contained 20,000 volumes on the eve of the Civil War. The Society, however, functioned more as a literary club for South Carolina's enslaving elite rather than as a means of promoting widespread learning. To join the library, subscribers had to pay a one-time admission fee of \$25 and a \$10 annual assessment, an expensive proposition for even the most ambitious clerk or mechanic.<sup>37</sup> Linking an 1845 membership list to 1850 census shows that most subscribers were wealthy enslavers, merchants, and bankers, with an assortment of well-to-do doctors, clergymen, and government officials. The average value of real estate holdings for all subscribers was \$17,000, many times greater than the typical Charleston resident. Rather than expand access to learning and literacy, the Charleston Library Association reinforced education as a class privilege. In contrast, many northern libraries, like New York's MLA, kept subscription costs to \$1 or \$2 per year, and often took pride in serving large numbers of patrons. Such libraries were still expensive for working class readers, but numerous circulating libraries in northern cities that rented books for a few cents per week.<sup>38</sup> The circulating library embodiment the impulse of commercialized creativity to lower price and

cultivate new markets. Circulating libraries were common in cities such as Boston—where the 1860 census marshal counted twenty such enterprises—but rare in most slave cities.

Even though we can only incompletely measure the different cultures regarding learning and literacy in slave cities and the free-labor cities, the data nevertheless show a significant impact on levels of economic creativity. The regression in Table 4 replaces the slavery variable with variables for statewide illiteracy rates in 1860 and library volumes per capita in 1850. As one would expect, higher statewide illiteracy rates were associated with lower patenting rates, while more library volumes per capita was associated with higher patenting rates. Both variables represent broad difference in cultural sensibilities over the importance of widespread education and widespread access to information and knowledge between free-labor cities and slave cities. The coefficients for variables such as city size (representing large metro areas) and age (when a city's state entered the Union) become far smaller and less statistically robust, suggesting that higher patenting rates in large, well-established cities hinged significantly on how well they encouraged learning and literacy.

### **Commercial Creativity and Regional Economic Differences**

The regional divide over commercialized creativity has important implications for the way scholars understand nineteenth-century U. S. capitalism. Economic creativity in the slave states, it is clear, did not readily extend its influence beyond the world of plantation agriculture and wealthy enslavers. As the recent literature has emphasized, enslaving capitalists often supported more industry and more cities as way of maintaining the political power of slave states, but that did not mean they embraced widespread economic creativity. In 1850, enslaver

James Henry Hammond urged his fellow South Carolinians to invest more in manufacturing, warning that a single-minded focus on agriculture was politically and economically unwise. Instead of fostering widespread economic creativity, South Carolinians could rely on low-wage workers. In Hammond's imagination, South Carolina's poor whites—who allegedly ate more cheaply, lived in less expensive homes, and used less fuel than British and northern workers—constituted a readily available pool of cheap labor that would allow local manufacturers to undercut global competitors. South Carolina's manufacturers could simply import the skilled workers and machinery they needed. “[W]e may draw from any and every quarter of Europe and the North,” Hammond asserted, “the full amount and precise kind of skill we may desire, with as much certainty as we could bring, by order, a cask of wine, a bale of woollens.”<sup>39</sup> Hammond's vision was prescient. Often importing technology from outside the region, the former slave states would remain dependent on agriculture, extractive industries, and low-wage manufacturing well into the twentieth century. Many of the former slave states would still lag badly behind in economic creativity well into the twentieth century, as racial violence and relatively low levels of education continued to deter invention and innovation.<sup>40</sup>

**Table One**

**Value-Added of Especially Creative Industries in Major Metro Areas, 1860**

| <i>Region/City</i>             | <i>Decorative Arts (\$)</i> | <i>Furniture</i> | <i>Fashionable Textiles</i> | <i>Musical Instruments</i> | <i>Publishing</i> | <i>Creative Industries, Total</i> | <i>Other Manufact., Total</i> |
|--------------------------------|-----------------------------|------------------|-----------------------------|----------------------------|-------------------|-----------------------------------|-------------------------------|
| <b><i>Slave Metros</i></b>     | <b>0.8</b>                  | <b>1.46</b>      | <b>0.09</b>                 | <b>0.27</b>                | <b>0.62</b>       | <b>3.23</b>                       | <b>37.83</b>                  |
| <i>Baltimore</i>               | 0.35                        | 1.04             | 0.19                        | 0.59                       | 0.79              | 2.96                              | 28.77                         |
| <i>New Orleans</i>             | 0.07                        | 1.4              | 0.02                        | 0                          | 0.16              | 1.65                              | 33.19                         |
| <i>St. Louis</i>               | 2.09                        | 2.09             | 0                           | 0.09                       | 0.8               | 5.07                              | 54.76                         |
| <b><i>Midwest Metros</i></b>   | <b>1.25</b>                 | <b>7.11</b>      | <b>0.11</b>                 | <b>0.07</b>                | <b>3.7</b>        | <b>12.82</b>                      | <b>60.89</b>                  |
| <i>Cincinnati</i>              | 1.6                         | 10.56            | 0.18                        | 0.04                       | 4.96              | 17.34                             | 80.59                         |
| <i>Chicago</i>                 | 0.73                        | 3.05             | 0                           | 0.11                       | 2.42              | 6.31                              | 31.48                         |
| <b><i>Northeast Metros</i></b> | <b>4.06</b>                 | <b>4.93</b>      | <b>3.31</b>                 | <b>1.65</b>                | <b>7.83</b>       | <b>21.08</b>                      | <b>69.67</b>                  |
| <i>Boston</i>                  | 4.4                         | 4.04             | 2.3                         | 5.48                       | 8.51              | 24.73                             | 65.71                         |
| <i>New York</i>                | 3.12                        | 3.69             | 2.27                        | 1.72                       | 7.64              | 18.44                             | 58.55                         |
| <i>Philadelphia</i>            | 5.75                        | 5.02             | 5.66                        | 0.52                       | 7.97              | 24.92                             | 92.52                         |

Notes and Sources: Data taken from 1860 Manufacturing Census. All data are county-level; New York City includes Brooklyn. The category of decorative arts includes brass founding, brass ware, and brass ornaments; china and glass decorating; cutlery; glassware; gold leaf and foil; jewelry; hanging paper; perfumery and fancy soaps; pottery and stoneware; silver and Britannia ware; and venetian blinds. Furniture includes billiard tables; clocks and clock cases; furniture; gas fixtures, lamps, and chandeliers; sash, doors, and blinds; upholstery; and veneers. Fashionable textiles includes calico printing; carpets; lady's clothing; silk goods. Musical instruments includes melodeons, organs, pianofortes, and miscellaneous Instruments. Publishing includes bookbinding; engraving; ink; lithography; maps; music printing and publishing; stereotyping and electrotyping; and type and stereotype founding.

**Table Two**  
**Annual Patents per Million for U.S. Urban Counties, 1856-1860**

| <b>Region</b>                   | <b>Metro Areas (&gt;100,000)</b> | <b>Large Cities (100,000-35,000)</b> | <b>Small Cities (35,000-12,000)</b> | <b>All Cities</b> |
|---------------------------------|----------------------------------|--------------------------------------|-------------------------------------|-------------------|
| Northeast                       | 459                              | 332                                  | 254                                 | 356               |
| Midwest/West                    | 288                              | 214                                  | 146                                 | 219               |
| Slave Cities (Total Population) | 164                              | 92                                   | 107                                 | 134               |
| Slaves Cities (Free Population) | 171                              | 131                                  | 144                                 | 159               |

Source: Calculated from Petralia, Sergio; Balland, Pierre-Alexandre; Rigby, David (2016) "HistPat Dataset", <https://doi.org/10.7910/DVN/BPC15W>, Harvard Dataverse, V8,

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Notes: Data is for the 65 counties with a city greater than 12,000 residents. Washington D.C. is excluded because of its high patenting rates partially resulted from the presence of the U.S. Patent Office.

**Table Three**  
**Slavery and Annual Patenting Rates in Urban Counties, 1856-1860**

|  | (1)<br>Annual Patents Per<br>Million, 1856-60<br>(Free Population) | (2)<br>Annual Patents Per<br>Million, 1856-60<br>(Total Population) |
|--|--|---|
| Per Capita Value-Added<br>Manufacturing (\$) | 1.27*<br>(.49)   | 1.33***<br>(.48)  |
| Metropolitan City<br>(Population > 100,000)  | 113.42*<br>(44.46)   | 123.2***<br>(43.76)   |
| Year of Statehood Minus 1788                 | -1.92*<br>(.96)  | -1.82*<br>(.94)   |
| Slave State                                  | -88.34*<br>(37.61)   | -121.2***<br>(37.02)  |
| Intercept                                    | 182.86***<br>(39.9)  | 177.04***<br>(38.28)  |
| Adjusted R Square:                           | .32  | .39   |

Number of Counties: 65

*Standard Errors in parenthesis*

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.00$

Sources and Notes: Patent rates calculated from HistPat dataset; Value-Added in manufacturing was calculated from Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 16.0 [dataset]. Minneapolis, MN: IPUMS. 2021. <http://doi.org/10.18128/D050.V16.0>

**Table 4**  
**Libraries, Literacy Rates and Patenting in Urban Counties, 1856-1860**

|   | (1)   | (2)  |
|---|---|--|
|   | Annual Patents Per<br>Million, 1856-60<br>(Free Population) | Annual Patents Per<br>Million, 1856-60<br>(Total Population) |
| Per Capita Value-Added<br>Manufacturing (\$)    | 1.19**<br>(.46)   | 1.3*<br>(.47)  |
| Metropolitan City<br>(Population > 100,000)     | 82.05<br>(42.3)   | 85.85*<br>(42.51)  |
| Year of Statehood Minus 1788                    | -1.78<br>(.90)  | -1.63<br>(.91)   |
| State Illiteracy Rate, 1860                     | -748.12**<br>(309.01)                                       | -995.1**<br>(317.77)   |
| Library Volumes<br>Per Thousand Residents, 1850 | .0026**<br>(.098)   | .23*<br>(.099)   |
| Intercept                                       | 203.33***<br>(51.13)  | 211.26***<br>(51.38)   |
| Adjusted R Square:                              | .43   | .42  |

Number of Counties: 65

*Standard Errors in Parentheses*

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.00$

Sources and Notes: HistPat dataset; value-Added in manufacturing was calculated from Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 16.0 [dataset]. Minneapolis, MN: IPUMS. 2021. <http://doi.org/10.18128/D050.V16.0>

## Notes

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<sup>1</sup> William Lloyd Garrison, “Address,” *The Liberator* 8 (August 17, 1838), 1.

<sup>2</sup> Schumpeter, *Capitalism, Socialism and Democracy*, 83. I have found the following work helpful for defining creativity, particularly in an economic context: Irina Surkova, “Towards a Creativity Framework,” *Society and Economy* 34, No. 1 (March 2012), 115-138. See also the many essays in Daniel Araya and Michael A. Peters, *Education in the Creative Economy: Knowledge and Learning in the Age of Innovation* (New York: Peter Lang, 2010).

<sup>3</sup> Schumpeter, *Capitalism, Socialism and Democracy*, 83.

<sup>4</sup> Richard Bushman, *The Refinement of America: Persons, Houses, Cities* (New York: Random House, 1993); David Jaffee, *A New Nation of Goods: The Material Culture of Early America* (Philadelphia: University of Pennsylvania Press, 2010); Joanna Cohen, *The Politics of Consumption in Nineteenth-Century America* (Philadelphia: University of Pennsylvania Press, 2017).

<sup>5</sup> Zorina B. Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790–1920* (New York: Cambridge University Press, 2005).

<sup>6</sup> Paul W. Rhode, “Biological Innovation without Intellectual Property Rights: Cottonseed Markets in the Antebellum American South,” *Journal of Economic History* 81 (March 2021), 198-238; Alan L. Olmstead and Paul W. Rhode, *Creating Abundance: Biological Innovation and American Agricultural Development* (New York: Cambridge University Press, 2008), 98-133; Caitlin Rosenthal, *Accounting for Slavery: Masters and Management* (Cambridge: Harvard University Press, 2018).

<sup>7</sup> Daniel B. Rood, *The Reinvention of Atlantic Slavery: Technology, Labor, Race, and Capitalism in the Greater Caribbean* (New York: Oxford University Press, 2017), 148-196; Angela Lakwete, *Inventing the Cotton Gin: Machine and Myth in Antebellum America* (Baltimore: The Johns Hopkins University Press, 2003).

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<sup>8</sup> John Majewski, *Modernizing a Slave Economy: The Economic Vision of the Confederate Nation* (Chapel Hill: University of North Carolina Press, 2009).

<sup>9</sup> Edward Glaeser, *The Triumph of the City* (New York: Penguin Press, 2011); Charles Landry, *The Creative City: A Toolkit for Urban Innovators*, 2<sup>nd</sup> Ed. (London: Earthscan, 2008); Richard Florida, *The Rise of the Creative Class*, 2<sup>nd</sup> Ed. (New York: Basic Books, 2012). Jane Jacobs, *Cities and the Wealth of Nations: Principles of Economic Life* (New York: Vintage Books, 1985).

<sup>10</sup> <https://www2.census.gov/library/working-papers/1998/demo/pop-twps0027/tab09.txt>

<sup>11</sup> As quoted in Bruce J. Schulman, *From Cotton Belt to Sunbelt: Federal Policy, Economic Development, and the Transformation of the South, 1838-1990* (Durham: Duke University Press, 1994), 3.

<sup>12</sup> Horace Greeley, *Art and Industry, as Represented in the Exhibition at the Crystal Palace, New York, 1853-54* (New York: Redfield, 1853), 28, 45, 52-53.

<sup>13</sup> Rachel N. Klein, *Art Wars: The Politics of Taste in Nineteenth-Century New York* (Philadelphia: University of Pennsylvania Press, 2020), 95-127, Godey's quote on 105.

<sup>14</sup> Katherine C. Grier, *Culture and Comfort: Parlor Making and Middle-Class Identity, 1850-1930* (Washington, D.C: Smithsonian Institution Press, 1988), 13-21.

<sup>15</sup> Crawford, *America's Musical Life*, 235. See also "Chickering & Son's Piano Forte Manufactory," *Ballou's Pictorial Drawing-Room Companion* 17 (July 23, 1859), 56.

<sup>16</sup> "The Piano Forte: Its Origin, History, and Manufacture," *Graham's American Monthly Magazine of Literature, Art, and Fashion* (May 1857), 417-25, quote on p. 423.

<sup>17</sup> "Godey's Arm-Chair: A List of Articles We Can Supply. Piano-Fortes for \$150," *Godey's Lady's Book and Magazine* (December 1859), 59.

<sup>18</sup> Ronald J. Zboray, "Antebellum Reading and the Ironies of Technological Innovation," *American Quarterly* 40 (March 1988), 65-82; Jeffery D. Groves, "Periodicals and Serial Publication," in Scott E. Casper, Jeffery D. Groves, Stephen W. Nissenbaum, and Michael Winship, *A History of the Book in America* vol. 3 (Chapel Hill: University of North Carolina Press), 226-27; Louise Stevenson, "Homes, Books, and Reading," in Scott E. Casper, Jeffery D. Groves, Stephen W. Nissenbaum, and Michael Winship, *A History of the Book in America* vol. 3 (Chapel Hill: University of North Carolina Press), 319-21.

<sup>19</sup> Erika Piola, "The Rise of Early American Lithography and Antebellum Visual Culture," *Winterthur Portfolio* 48 (Summer/Autumn 2014), 125-138; Cynthia Lee Patterson, *Art for the Middle Classes: America's Illustrated Magazines of the 1840s* (Jackson: University of Mississippi Press, 2010), 128, 160-7.

<sup>20</sup> I did, however, include calico printing, which combined design and fashion with industrialization.

<sup>21</sup> Calculated from the returns of each individual state in *The Seventh Census of the United States: 1850* (Washington, DC: Robert Armstrong, Public Printer, 1853).

<sup>22</sup> Thompson, *Structures of Change*, 204.

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<sup>23</sup> Calculated from the *Official Catalogue of the New-York Exhibition of the Industry of All Nations, 1853*. (New York: George P. Putnam & Co., 1853).

<sup>24</sup> Steven Lubar, “The Transformation of Antebellum Patent Law,” *Technology and Culture* 32 (October 1991), 932-959;

<sup>25</sup> Naomi Lamoreaux and Kenneth L. Sokoloff, “Inventive Activity and the Market for Technology in the United States, 1840-1920,” National Bureau of Economic Research Working Paper (May 1999), 6-7.

<sup>26</sup> Kenneth W. Dobyns, *The Patent Office Pony: A History of the Early Patent Industry* (Boston: Docent Press, 1994), 138-39.

<sup>27</sup> Ross Thompson, *Structures of Change in the Mechanical Age: Technological Innovation in the United States, 1790-1865*, (Baltimore: The Johns Hopkins University Press, 2009), 104-05.

<sup>28</sup> For more on the HistPat database, see Sergio Petralia, Pierre-Alexandre Balland, and David L. Rigby, “Unveiling the Geography of Historical Patents in the United States from 1836 to 1975,” *Nature* 3 (2016), accessed at <https://www.nature.com/articles/sdata201674>

<sup>29</sup> “Richmond, Virginia: Its Advantages for Manufacturing Purposes,” *Plough, the Loom, and the Anvil* 1 (September 1848), 162.

<sup>31</sup> Ariel Ron, *Grassroots Leviathan: Agricultural Reform and the Rural North in the Slaveholding Republic* (Baltimore: John Hopkins University Press, 2020), 66-70

<sup>32</sup> Kenneth L. Sokoloff, “Inventive Activity in Early Industrial America: Evidence from Patent Records, 1790-1846,” *Journal of Economic History* 48 (December 1988), 813-50; Zorina B. Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790–1920* (New York: Cambridge University Press, 2005), 106-127.

<sup>33</sup> For a summary of these arguments, see Eugene D. Genovese, *The Political Economy of Slavery: Studies in the Economy and Society of the Slave South*, 2<sup>nd</sup> ed. (Middletown, Connecticut: Wesleyan University Press, 1989), 157-179; John Majewski, *A House Dividing: Economic Development in Pennsylvania and Virginia before the Civil War* (New York: Cambridge University Press, 2000), 158-161; John Majewski and Viken Tchakerian. “Shifting Cultivation, Slavery, and Southern Development,” *Agricultural History* 81 (Fall 2007), 522-548.

<sup>34</sup> Sun Go and Peter Lindert, “The Uneven Rise of American Public Schools In 1850,” *The Journal of American History* 70 (March 2010), 4. See also Claudia Goldin and Lawrence F. Katz, *The Race Between Education and Technology* (Cambridge University Press, 2008), 129-162. and Michelle Connolly, “Human Capital and Growth in the Postbellum South: A Separate but Unequal Story,” *Journal of Economic History* 64 (June 2004), 363-399.

<sup>35</sup> Calculated from *Statistics of the United States in 1860 Compiled from the Original Returns and Being the Final Exhibit of the Eighth Census* (Washington, DC: Government Printing Office, 1866), 508

<sup>36</sup> Thomas Augst, *The Clerk’s Tale: Young Men and Moral Life in Nineteenth-Century America* (Chicago: The University of Chicago Press, 2003), 158-206.

<sup>37</sup> William J. Rhees, *Manual of Public Libraries, Institutions, and Societies in the United States*, (Philadelphia: J. B. Lippincott & Co., 1859), 450.

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<sup>38</sup>Zboray claims that books were still a luxury that many working-class could not afford, but he ignores the hundreds of circulating libraries that served primarily working-class audiences. On circulating libraries, see David Kaser, *A Book for a Sixpence: The Circulating Library in America* (Pittsburgh: Beta Phi Mu Press, 1980).

<sup>39</sup> James Henry Hammond, "Governor Hammond's Address before the South Carolina Institute, 1850," *The Commercial Review of the South and West* 2 (June 1850), 501, 510.

<sup>40</sup> Michelle Connolly, "Human Capital and Growth in the Postbellum South: A Separate but Unequal Story," *Journal of Economic History* 64 (June 2004), 363-399; David L. Carlton and Peter A. Coclanis, "The Uninventive South? A Quantitative Look at Region and American Inventiveness," *Technology and Culture* (April 1995), 302-326; Lisa D. Cook, "Violence and Economic Activity: Evidence from African American Patents, 1870-1940," *Journal of Economic Growth* 19 (June 2014), 221-257.