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Report following Scholar’s Roundtable meeting Coltsville National Historical Park, National Park Service

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Creating the Coltsville National Historical Park provides the National Park Service an opportunity to tell important stories of American history that are not told at other Park Service sites. Coltsville’s history is worth telling both because Samuel Colt and the Colt Patent Fire Arms Manufacturing Company played a significant role in American history, and because of the contemporary relevance of the topics that can be considered there. In this report, I outline three interrelated themes that I believe the NPS might consider as interpretive strands at Coltsville, themes of manufacturing, marketing, and the relationship of industry and the military. For each, I’ll offer some possibilities for artifacts and images for exhibition.

These are three among many important strands we discussed at the Roundtable. These aren’t necessarily the most important themes; I have focused on them because they are my area of expertise.

# Manufacturing and the Rise of Mass Production

A central theme of Coltsville National Historical Park should be the significant technical accomplishments of Samuel Colt and the engineers, inventors and workers in the Coltsville factory. There is a long history of work toward interchangeable parts before Colt, both in federal armories and at the factories of other arms makers, and in related industries including clocks and textile machinery, and the story continues elsewhere, both during Colt’s time and afterward; but it is reasonable to argue that it was at Coltsville that all of the aspects of mass production – interchangeability, high-volume production, a full understanding of precision, and lower cost – came together for the first time. This is directly connected to the other themes I describe in this report, marketing and the military-industrial complex, but the technological and engineering triumphs deserve special attention.

Samuel Colt deserves much of the credit for this, but it is important to credit many people, working many jobs, in the Colt factory. We know the names of Samuel Colt and Elisha Root and a few other inventors and engineers, but many others at the factory also made important contributions. It should be possible to use company and patent records to discover some of the lesser-known inventors and, to use the nineteenth-century word, mechanicians, who created the system of mass production at Colt.

I believe that the Coltsville National Historical Park needs to trace these people, and these skills, beyond Coltsville. David Meyer, in his *Networked Machinists: High-Technology Industries in Antebellum America*, notes that the mobility of machinists and other production workers among firms was key to the success of manufacturing industries. He describes “an innovative network of mechanics and firms which served as the seedbed of machinery and machine tool firms.”1 This says a great deal about the nature of technological knowledge in these industries. It was

contained in the heads and hands of workers, and in small tools and jigs and fixtures used in production, and could be easily moved between firms. Machinists and other skilled workers moved up and down the Connecticut River valley, bringing with them the latest techniques for production.

Patents played a role in this process of technological diffusion. Thomson documents patents from a select group of Robbins & Lawrence and Colt workers. Twenty-four inventors at the two firms, he finds, received 531 patents, most of them at their own firms after leaving the two large companies.2 There is an extensive literature describing the role of patents in manufacturing in the nineteenth century, the way in which the patent system was concentrated in certain areas, and the way that it shaped innovation and manufacturing. The most extensive work has been done by Naomi R. Lamoreaux and Kenneth L. Sokoloff; while their papers tend to look at larger regions, their data would be useful for analyzing invention at Colt, in Hartford, and the transmission of technologies throughout the country.3

Colt was an important nexus in the transmission not just of arms manufacturing knowledge and technology, but also other metal-working manufacturing as well. Thompson’s data shows that almost two-thirds of the patents of his Colt and Robbins & Lawrence inventors were in other industries.4 Economic historian Nathan Rosenberg describes this process as building on “technological convergence,” the way a small number of new techniques could be used in many industries. A development in one metal-working industry benefitted all metal-working industries. All metal-using industries, he writes, faced similar problems related to power transmission, feed mechanisms, and metal properties, and could use similar tools, like milling machines, precision grinders, turret lathes, and automatic screw machines.5

People, too, were important in this movement of techniques between different kinds of metal- working industries. A few examples: George Crompton left the Colt Patent Fire Arms Factory in 1851 after working there for a few years to establish the Crompton Loom Works in Worcester, Massachusetts.6 Christopher Spencer moved to Manchester, New Hampshire’s Cheney Brothers silk manufacturers, where he invented an important silk-winding machine.7 There are dozens of similar stories, mechanicians who trained at Colt and then moved to firms making sewing machines, bicycles, automobiles, and airplanes – indeed, to every manufacturer whose work demanded the making of precision parts and assembling them into complex machines. Alumni of the Colt factory, writes Merritt Roe Smith, “also played a key role in establishing the American machine tool industry.”8

Thomson has traced some of the workers from Colt to other industries. Table 5 of his article “Eras of Technological Convergence” (reproduced below; unfortunately, it combines data from both Colt and Robbins and Lawrence) shows both the scale of this movement and some of the firms that benefitted. Both geographic distance and product diversity are important to note here, and it would be interesting to extend this beyond Thomson’s chronological bound of 1929.

This is a table showing the mobility of Robbins and Lawrence and Colt Workers. The table compares Industries, People and Firms. 


*Figure 1 Table 5 from Ross Thomson, “Eras of Technological Convergence: Machine Tools and Mechanization in the United States, 1820-1929,” (September 2010),* [*http://eh.net/eha/wp-content/uploads/2013/11/Thomson.pdf.*](http://eh.net/eha/wp-content/uploads/2013/11/Thomson.pdf)

It is important to trace the firms that fed into, depended on, and grew out of Colt, limning the industrial development of Hartford, the Connecticut River Valley, the Northeast, and then the Midwest and the nation, describing the ways that workers, ideas, and techniques moved to allow the industrial revolution of mass production to spread. Colt is one node in a network of technological knowledge, and telling that story should be a key aspect of the exhibition.

It is also important to go beyond inventors and engineers to include the knowledge and skill of supervisors and line workers. Manufacturing arms in the nineteenth century was mass production, but it demanded skilled workers, and I believe that the nature of skill in manufacturing is an important topic for the Coltsville park to address. The easy narrative of “deskilling” is not useful here.

Robert Gordon’s “Who Turned the Mechanical Ideal into Mechanical Reality?” is the best guide to understanding the changing skills of workers in arms factories. He describes four aspect of skill in manufacturing jobs: resourcefulness, planning, dexterity, and judgement. “As manufacturing methods developed through the 19th century,” he writes, there was less call for planning skills but heavier demands on the artificer's dexterity and judgment. What made the production of firearms by interchangeable parts possible, he shows, was the “superior standards of workmanship and mechanical skill of American artificers.” Only in the twentieth century did new machines, including grinders, more rigid machine tools, and high-speed steel, make precision handwork and metal-working judgement less important for most factory workers. That transition is an important topic for the Park to address.9

While interchangeable parts manufacturing is in large part a story of the triumph of ingenuity, resourcefulness, skill, and hard work, it is important that the Coltsville Park also include the many aspect of work at Coltsville that are less appealing. Manufacturing, especially as it became

increasingly subdivided, was not easy or pleasant work, and some sources suggest that Samuel Colt was a particularly tough boss.10 While workers became better at their tasks, their tasks became smaller, their work subdivided and regimented, with thinking separated from doing. It is important to talk about that work, and the way workers responded to it, among them unionization, “soldiering” and other attempts to maintain what control they could. At the Watertown Arsenal, a federal arms manufacturing facility outside of Boston, workers fought successfully against the imposition of scientific management in the 1910s11; it would be good to know more about similar attempts, and reactions, at Colt Arms Manufacturing Company.

Similarly, it’s important to know more about management technique at the Colt factory, and to explore the history of unionization and worker resistance.

It’s also important to explore the fundamental connections of the mass production of firearms with the ideological underpinnings of mass warfare. John Ellis, in his classic *Social History of the Machine Gun* (1975), wrote that

the general aspirations and prejudices of particular social groups are just as important for the history of military technology as are straightforward problems of technical efficiency. Guns, like everything else, have their social history. The anachronistic ideals of the

European officer class, the messianic nature of nineteenth-century capitalism, the imperialist drive into Africa and elsewhere were more important to the history of the

machine gun than any bald assessment of its mechanical efficiency.12

A similar cultural argument might be made about mass-produced weapons generally. It will be important to tease out the ways – the cultural contexts – in which gun manufacturing was connected to the mass production of violence.

Lindsay Schakenbach Regele’s recent article on “Industrial Manifest Destiny” suggests how this might be done, connecting firearms manufacturing and the ideology and practice of American Western expansion before the Civil war. She argues that the American system of manufactures “owed its development to manufacturers’ willingness to improve weapons in accordance with the demands of an expanding populace on the frontier.” “The realities of military conflict in the pursuit of territorial expansion in North America had particular effects on its manufacturing,” she writes. “Americans’ ability to acquire land depended on an implicit commitment among settlers, manufacturers, and federal officials to improve firearms.” 13

Schakenbach Regele notes the importance of the Indian Wars to the development of mass- produced weapons. The Seminole Wars in Florida needed a new kind of weapon, and Colt’s quick-firing revolver was ideal. Colt sold similar revolvers to the Texas Rangers, too, and redesigned his guns for the needs of these soldiers, making them lighter and safer. “The War with Mexico,” writes Schakenbach Regele, “changed the arms industry.”14

Colt’s weapons also became a favorite of settlers. Congress passed a law for the armed occupation of Florida by settlers who, after 1842, would receive federal subsidies for their own defense.15 They were part of his market from the beginning. He told a British audience: “Living in a country of most extensive frontier, still inhabited by hordes of aborigines, and knowing the insulated position of the enterprising pioneer, and his dependence, sometimes alone, on his personal liability to protect himself and family, [I] had often meditated upon the inefficiency of the ordinary double-barreled gun and pistol.”16

Colt’s firearms, and his manufacturing techniques, were developed in an era of American expansion, slavery, and settler colonialism. The design of his guns and his factory reflects that in ways that the Coltsville National Historical Park should try to reveal. This will take new work, and will be challenging to exhibit. Explaining invention, manufacturing technique, and the diffusion of technology is important; it’s just as important to connect it to the larger cultural and historical context.

How to tell this story.

The process of gun-making is important. I’d suggest focusing on an early moment in manufacture, and not put too much space or effort into showing change over time. Show both metal-working machinery and hand tools to tell the story of technological innovation at the Colt factory; show the files and jigs and fixtures that were used to achieve the precision needed for interchangeability. There are good illustrations of the factory reproduced in Houze, *Arms, Art, and Invention*17 and there is a good early description of the factory (*United States Magazine*, Vol 4, No. 3, March 1857) that might be useful for this.18 It’s important to make clear that these machines formed a system, and that designing and managing the factory as a system was both a challenge and one of Colt’s successful innovations.

Showing change over time in workers’ skills and management oversight is also important. This might be done using Gordon’s essay19 as a guide. The processes of milling and filing and judging accuracy might lend themselves to hands-on activities.

It’s important to show technological innovation; patent drawings might be useful to show innovations, and to give a brief overview of the ways that invention was turned into property.

Introduce visitors to some of the workers at the factory, and describe their paths there. This might be done through payroll records, if they survive. Census records might also be used: see “Selections from the Unites States Census” at [http://www.connhistory.org/wwsevis\_reading.htm.](http://www.connhistory.org/wwsevis_reading.htm) The American Precision Museum in Windsor, Vermont, tells this story. Continue their stories by tracing them to later places of employment, to show the diffusion of technological innovation and the movement of skilled workers. Maps of other arms and metal-working factories might be useful

The gun as object can tell some of this story. Show a gun in parts, and describe the processes of making those parts, and assembling them. This might allow you to address changes in manufacturing technique and skill.

Exhibiting the connections of the ideologies of mass killing and mass production will be difficult. That might best be done by using some of the images in the next section, on marketing.

# Marketing

Manufacturing prowess is of no use without marketing prowess – you need to be able to sell what you make – and Colt has a remarkable story to tell here, too. First Samuel Colt and then his successors at the firm developed brilliant strategies for selling guns, both to the government and to individuals. I believe it’s fair to claim that Colt invented the mass gun market by combining manufacturing techniques that reduced the price of guns with marketing techniques that increased the demand, for military, civilian, and international markets, and that his combination of marketing and manufacturing invented modern gun culture.

Colt and his firm were pioneers in three areas of marketing, and this might make for a useful set of categories for the exhibition.

*To the United States government*

Colt worked hard to convince the US government to buy his guns, working through traditional and untraditional channels.. He competed in the contract bids the Army advertised (not successfully at first), and also sold directly to individual members of the military, in Florida and the Republic of Texas, and then used their testimony, and their political connections, to successfully market to the US military.

Most other gun manufacturers focused their work on government contracts; Colt did not. But when that market grew larger during the Civil War, Colt would compete for and win many manufacturing contracts from the federal government. His firm would continue to sell both the military and to civilians, often using his military contract wins to convince civilians of the advantages of his weapons. The third section of this report, on the creation of the military- industrial complex, explores this further.

*To foreign governments*

Colt put at least as much effort into marketing to foreign governments as to the American government. (Indeed, he had himself made “Colonel Colt” by the governor of Connecticut to make himself more presentable to foreign governments.) The 1851 Crystal Palace provides an excellent starting point for this story, and one that lends itself nicely to museum exhibition.

Barbara and Kenneth Tucker describe Colt’s display:

But none was more attractive than the one set up by Samuel Colt. Colt created a magnificent exhibit of his famous six-shooters, shaping five hundred of them into a shield, emblematic of their ability to protect the common man. But what struck the observer most were the beautiful hand-engraved barrels and handles of these pistols, for they resembled a work of art as much as a weapon. Europeans were astounded that such firearms could be produced so quickly in factories using standard parts rather than through the laborious work of individual craftsmen.20

Colt also marketed directly to foreign governments, touring the world in pursuit of sales. In 1854, for example, with the outbreak of the Crimean War, Colt marketed arms to all three combatants: Russia, Great Britain and the Ottoman Empire. As part of his marketing he produced elaborate presentation pieces for the leaders of the countries he approached. The Metropolitan Museum of Art has in its collection one of the pair of gold-inlaid revolvers Colt pres ented to Czar Nicholas I of Russia. The Met’s catalog describes them: “The gift clearly



*Figure 2 Metropolitan Museum of Art (Accession Number 1995.336)*

demonstrated the technical and artistic aspects of Colt’s product, while its patriotic motifs proudly proclaimed its American origin. The museum's pistol features a portrait of George Washington and the Arms of the United States, while on the Czar's pistol there are a view of America's capitol building and a personification of American industry.”21

Colt would continue to sell to foreign governments. There had long been an international trade in armaments, even before mass production (hundreds of thousands of guns were imported each year into Africa in the eighteenth century), and the United States was an exporter of weapons by 1812, but the volume increased dramatically in the second half of the nineteenth century.22

In part, that was because the collapse of the large domestic military market after the Civil War meant that arms manufacturers looked overseas. “Those that prospered afterward, such as Colt, Remington and Winchester,” writes historian Brian DeLay, “did so by securing contracts from foreign governments and hitching their domestic marketing to the brutal romance of the American West.”23 That precisely describes the Colt Fire Arms Manufacturing Company’s strategy.

*Mass marketing*

DeLay’s line, “The brutal romance of the American West,”24 is a good place to begin with Colt’s invention of the mass marketing of guns to individuals, perhaps the most important and innovative aspect of Colt’s marketing. Colt’s early consumer marketing probably came about because of his failure to win federal contracts, the usual market for innovative gun manufacturers.

Colt’s marketing was innovative in many ways. He was, according to Herbert Houze, “quite possibly the first American manufacturer to use art as a marketing tool.”25 He used celebrities, including Wyatt Earp, Billy the Kid and Wild Bill Hickock, to tout his weapons – an early example of celebrity marketing. He convinced journalists to write stories about his guns. He advertised widely, and in many media, with a range of messages. He hired fifteen to twenty traveling salesman to sell to retail outlets, providing displays of his firearms to the stores. He used elaborate packaging. *26* He even branded his factory with the famous blue onion dome and Colt wind vane visible from almost everywhere in Hartford, and used that in his marketing.

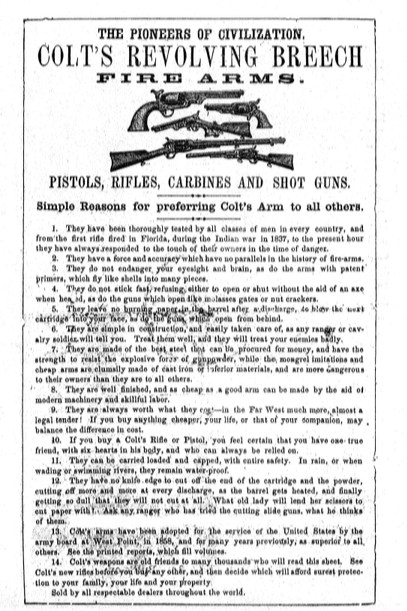


*Figure 3 George Catlin, "CATLIN THE ARTIST SHOOTING BUFFALOS WITH COLT'S REVOLVING PISTOL," Wadsworth*

*Atheneum, Accession Number 2005.8.2*

Colt contracted with artist George Catlin to show his guns in scenes of the Wild West and other exotic locales. These ten paintings (several of them now at the Wadsworth Atheneum in Hartford; six were reproduced as chromolithographs) are wonderful examples of Colt’s marketing. Colt hired Catlin to paint them, and then used them as advertisements, adding descriptions underneath the images. Catlin also wrote about Colt’s guns in his memoirs of travel and hunting around the world, his writing connecting Colt closely with his guns and the guns with adventure and triumph: “Why Sam Colt, a six-shot little rifle, always lying before me during the day and in my arms during the night, by which a tiger’s or alligator’s eye, at a hundred yards, was sure to drop a red tear.”27

After Colt’s death, the Colt Firearms company continued to advertise heavily. Richard Dillio’s analysis of Colt’s advertisements notes that like “most handgun promotions from this time period [1850s to 1930s],” they were “fear-appeals.” Early ads were explicit: Dillio writes: “There are also some interesting turns of phrase in this ad, such as “Treat them well and they will treat your enemies badly” and “If you buy a Colt Rifle or Pistol, you feel certain that you have one true friend with six hearts in his body [...].” The appeals to self-defense are obvious, made all the more forceful through their straightforward language.”28 This makes sense: Colt made revolvers and automatic pistols, not rifles; these weren’t sporting weapons, but weapons of war, crime, and self-defense.

*Figure 4 Colt ad, 1917. Reproduced from Dillio, p.38 Figure 5 1858 Colt advertisement. From Dillio, p. 25.*

I believe that it’s important to acknowledge the power, creativity, and originality of the Colt company’s advertising campaign. But it’s also important also to acknowledge what underlay the success beyond a good product, manufacturing and marketing prowess. Colt’s advertising invented modern gun culture, and the Coltsville Park should might use Colt’s ads to examine the roots of America’s modern gun culture. Colt’s marketing of guns is built on the notion that it’s right, sometimes, to kill people – that there are people who are dangerous – whether Native group defending their lands or criminals ready to rob you – and that you need to be ready to shoot them. Both the gun and the advertising contains an ideology. Colt leveraged the success of his military sales to conquer the civilian market, which by 1860 was much larger than the military market.29 Colt used testimony from American soldiers and images and arguments from the wars in Florida and Texas to sell his guns to civilians. “Frontier scenes,” writes Schakenbach Regele, “were powerful marketing tools.” 30

How to tell this story

Part of the story of marketing is easy to tell in a museum exhibition. Displays of presentation pieces have the dual advantage of showing off one of Colt’s most interesting marketing techniques and also showing objects that will appeal to gun collectors and an audience more accustomed to art museums than history museums.31

Displays of the artwork Colt commissioned will also be appealing. The firm’s advertisements are designed to get a reader’s attention. But that’s not enough for an exhibition; the challenge will be helping museum visitors get beyond the message they so powerfully tell and understand the marketing strategies and cultural assumptions behind them.

Marketing to governments (beyond the presentation pieces) is a much more difficult story to tell. It’s about government contracts, statistics, and behind-the-scenes politics. Statistics and maps might be one way to describe the international arms trade. Sales to the United States government might be told through the process of design and bidding, and the ways that government experts set gun models, and the ways that government inspectors worked to keep uniformity of production across many different plants. It might be possible to connect the Springfield National Historic Site to this story, too.

# Creating the Military-Industrial Complex

The relationship of private corporations and the United States military is a key story to be told at Coltsville National Historical Park. One might argue that the founding of the Colt Fire Arms Manufacturing Company is an important moment in the invention of the military-industrial complex. That phrase dates from President Eisenhower’s 1961 farewell address, but the idea extends much further back in history.

The military-industrial complex shapes both the economy of the state and the nation, guiding technological innovation in ways both good and bad. (One can argue that military demands shaped, for example, aviation, computers, and much more.) The influence also works the other way: it also shapes politics, and ultimately decisions about diplomacy and war.

There are several parts of this story that clearly fit into the Coltsville National Historical Park. One is the invention of the “American system.” Many individuals, firms, and government agencies contributed to the invention of the “American system” of mechanizing arms production in the early nineteenth century, one of the most important aspects of the American industrial revolution. Merritt Roe Smith, in his “Army Ordnance and the ‘American system’ of Manufacturing, 1815-1861,” argues that the Army Ordnance Department deserves primary credit. The Army took the lead on this under the authority of the 1815 “Act for the better regulation of the Ordnance Department,” which gave the bureau the responsibility “to draw up a system of regulations…for the uniformity of manufactures of all arms ordnance, ordnance stories, implements, and apparatus, and for the repairing and better preservation of the same.” Based on a strong belief in the idea of uniformity and central control, this act was to be, Smith writes, “the guiding principle of ordnance policy” for the next forty years.

The military thus laid the technological foundations and set the stage for private manufacturers, including Colt. The national armories at Harper’s Ferry and Springfield did essential work toward interchangeability and mass production, but it was done in collaboration with private arms manufacturers working under the government’s direction. Telling this story of the interactions of government and private firms is an important part of the Coltsville story.

Armament manufacture throughout the nineteenth and into at least the first half of the twentieth century continued to be a shared effort of private companies and the military. The relationship is complicated. At times the government took the lead, at times the private corporations, and there was much exchange of personnel and ideas. It might be useful to choose a few moments to focus on to tell this story, perhaps the Civil War, World Wars I and II, and the Cold War It will take some research to find the most significant Colt contracts, and the ones that illustrate the changing relationship of the military and military contractors.

It’s also a story that continues to the present day, and telling a local story might serve to tie the surrounding areas of Hartford and Connecticut to the presentation at the National Historical Park. A 1984 *Christian Science Monitor* article described the importance of military work to the state’s economy: “Connecticut leads the nation in the amount of per capita military money that flows to it, and it is high on the list of states in prime contracts awarded by the Defense Department.

Defense companies lead the state in employment.” One in five manufacturing jobs in Connecticut depended on defense spending.32

Ann Markuson et al.’s *The Rise of the Gunbelt* tells the story of the post-World War II rise of the American arms industry. The Connecticut Valley, they write, is the “industrial heart of New England,” and they trace the roots back to Colt. The would describe Colt as the ancestor of the industry, and Pratt & Whitney as the “founding grandfathers.” Francis Pratt and Amos Whitney worked for Colt, then opened their own gun and machinery works. That became Niles-Bement- Pond Company, which became part of Pratt & Whitney, which became part of United Aircraft, which became part of United Technologies Corporation (UTC). UTC, until recently headquartered in Hartford, was in 1991 “probably the largest employer in the state,” employing 45,000 people in that year.33 Today it employs over 200,000.

The details of this particular firm are less important than the big picture. United Technologies is representative of many firms that serve the military market in Connecticut, including Singer Corporation, Colt Firearms, and Avco. They are there, according to Markuson, because of “the general industrial traditions of the area.”34 Those industrial traditions trace back to the Colt Fire Arms Manufacturing Company.

How to tell this story

As with military marketing, this is a difficult story to tell. The evidence of the interactions of military and private firms is in company records, government contracts, and the relationships of individuals in business and government. But expanding beyond this, to explain the ways that the military and military contractors shaped modern technologies should be straightforward: there are many examples, though it will take some research to find examples connected with Colt.

Expanding beyond Colt to tell the story of the military-industrial complex in Connecticut more generally will open this open to more accessible presentation.

**Notes**

1 David R. Meyer, *Networked Machinists: High-Technology Industries in Antebellum America* (Baltimore: Johns Hopkins University Press, 2006), 75, [http://ebookcentral.proquest.com/lib/brown/detail.action?docID=3318269.](http://ebookcentral.proquest.com/lib/brown/detail.action?docID=3318269) 2 Ross Thomson, “Eras of Technological Convergence: Machine Tools and Mechanization in the United States, 1820-1929,” (September 2010), 18, [http://eh.net/eha/wp-content/uploads/2013/11/Thomson.pdf.](http://eh.net/eha/wp-content/uploads/2013/11/Thomson.pdf)

3 See, for example, Naomi Lamoreaux and Kenneth Sokoloff, “Inventive Activity and the Market for Technology in the United States, 1840-1920” (Cambridge, MA: National Bureau of Economic Research, May 1999), https://doi.org/10.3386/w7107; Naomi R. Lamoreaux and Kenneth L. Sokoloff, “Long-Term Change in the Organization of Inventive Activity,” *Proceedings of the National Academy of Sciences* 93, no. 23 (November 12, 1996): 12686–92, https://doi.org/10.1073/pnas.93.23.12686; and Kenneth L. Sokoloff, “Inventive Activity in Early Industrial America: Evidence From Patent Records, 1790–1846,” *The Journal of Economic History* 48, no. 4 (December 1988): 813–50, https://doi.org/10.1017/S002205070000663X.

4 Thomson, “Eras of Technological Convergence: Machine Tools and Mechanization in the United States, 1820- 1929,” 18 (Figure 5).

5 Nathan Rosenberg, “Technological Change in the Machine Tool Industry, 1840-1910,” in *Perspectives on Technology* (Cambridge [Eng.]: Cambridge University Press, 1976), 9–31.See also Thomson, “Eras of Technological Convergence: Machine Tools and Mechanization in the United States, 1820-1929.”

6 Meyer, *Networked Machinists*, 212.

7 Thomson, “Eras of Technological Convergence: Machine Tools and Mechanization in the United States, 1820- 1929,” 17.

8 Merritt Roe Smith, review of *Review of Samuel Colt: Arms, Art, and Invention*, by Herbert G. Houze and Elizabeth

M. Kornhauser, *Technology and Culture* 48, no. 2 (2007): 455–57.

9 Robert B. Gordon, “Who Turned the Mechanical Ideal into Mechanical Reality?,” *Technology and Culture* 29, no. 4 (1988): 769–75; 778, https://doi.org/10.2307/3105044.

10 Barbara M. Tucker and Kenneth H. Tucker, “Samuel Colt,” in *Industrializing Antebellum America: The Rise of Manufacturing Entrepreneurs in the Early Republic*, ed. Barbara M. Tucker and Kenneth H. Tucker (New York: Palgrave Macmillan US, 2008), 79–82, https://doi.org/10.1057/9780230614642\_4.

11 Hugh G. J. Aitken, *Taylorism at Watertown Arsenal; Scientific Management in Action, 1908-1915.* (Cambridge: Harvard University Press, 1960), https://catalog.hathitrust.org/Record/001621862.

12 John Ellis, *The Social History of the Machine Gun* (Johns Hopkins University Press, 1986), 9.

13 Lindsay Schakenbach Regele, “Industrial Manifest Destiny: American Firearms Manufacturing and Antebellum Expansion,” *Business History Review* 92, no. 1 (2018): 60, 58, https://doi.org/10.1017/S000768051800034X.

14 Regele, 77–78.

15 Regele, 74.

16 Tucker and Tucker, “Samuel Colt,” 66.

17 Smith, “Review of Samuel Colt,” 171–81.

18 Available here: <http://www.connhistory.org/wwsevis_reading.htm>

19 Gordon, “Who Turned the Mechanical Ideal into Mechanical Reality?”

20 Tucker and Tucker, “Samuel Colt,” 66.

21 https://[www.metmuseum.org/art/collection/search/24960](http://www.metmuseum.org/art/collection/search/24960)

22 Jonathan Grant, “‘Merchants of Death’: The International Traffic in Arms,” *Origins: Current Events in Historical Perspective* 6, no. 3 (December 2012), [http://origins.osu.edu/print/1564;](http://origins.osu.edu/print/1564%3B) Kritika Agarwal, “A World of Weapons: Historians Shape Scholarship on Arms Trading | Perspectives on History | AHA,” *Perspectives on History*, September 2017, https://[www.historians.org/publications-and-directories/perspectives-on-history/september-2017/a-](http://www.historians.org/publications-and-directories/perspectives-on-history/september-2017/a-) world-of-weapons-historians-shape-scholarship-on-arms-trading; See also Brian DeLay, “How the US Government Created and Coddled the Gun Industry,” The Conversation, accessed April 29, 2019, [http://theconversation.com/how-the-us-government-created-and-coddled-the-gun-industry-85167;](http://theconversation.com/how-the-us-government-created-and-coddled-the-gun-industry-85167%3B) DeLay is writing a book on the American arms trade that should be available soon.

23 DeLay, “How the US Government Created and Coddled the Gun Industry.”

24 DeLay.

25 Herbert G Houze, *Samuel Colt: Arms, Art, and Invention*, ed. Elizabeth Mankin Kornhauser (New Haven, Conn; London: Yale University Press, 2006), 20.

26 Tom Nicholas and Casey Verkamp, *Samuel Colt: An American Gun Maker*, HBS Case Studies 9-815–061 (Boston: Harvard Business School Publishing, 2016), 7.

27 George Catlin, *Episodes from Life Among the Indians, and Last Rambles* (University of Oklahoma Press, 1959),

27. The best online set of images of these posters I have found are here: <http://bid.igavelauctions.com/Bidding.taf?_function=detail&Auction_uid1=2754518>

28 Richard A. Dillio, “Samuel Colt’s Peacemaker: The Advertising That Scared the West” (Rochester Institute of Technology, n.d.), 12, https://[www.scribd.com/document/126270948/Samuel-Colt-s-Peacemaker-The-Advertising-](http://www.scribd.com/document/126270948/Samuel-Colt-s-Peacemaker-The-Advertising-) that-Scared-the-West. Note: this is a student paper, not a peer-reviewed publication.

29 Robert A. Howard, “Interchangeable Parts Reexamined: The Private Sector of the American Arms Industry on the Eve of the Civil War,” *Technology and Culture* 19, no. 4 (1978): 633–49, https://doi.org/10.2307/3103762.

30 Dillio, “Samuel Colt’s Peacemaker: The Advertising That Scared the West.”

31 For the challenges of this kind of display, see Jennifer Tucker et al., “Display of Arms: A Roundtable Discussion about the Public Exhibition of Firearms and Their History,” *Technology and Culture* 59, no. 3 (2018): 719–69, https://doi.org/10.1353/tech.2018.0064.

32 John Yemma, “Connecticut’s Military Alliance with Uncle Sam,” *Christian Science Monitor*, January 10, 1985, https://[www.csmonitor.com/1985/0110/nconn.html.](http://www.csmonitor.com/1985/0110/nconn.html)

33 Ann R. Markusen et al., *The Rise of the Gunbelt: The Military Remapping of Industrial America* (Oxford University Press, 1991), 129–30.

34 Markusen et al., 133.