2

Making and Harvesting Commodities

Episodes of Craft Growing to Industry

> The maddening pendulum urges me forward
> To labor and labor and still labor on.
> The tick of the clock is the Boss in his anger!
> The face of the clock has the eyes of a foe;
> The clock—Oh, I shudder—dost hear how it drives me?
> It calls me "Machine!" and it cries to me "Sew!"
>
> —Morris Rosenfeld, *In the Factory,* 1914:8

Many businesses manufactured, harvested, or processed natural and human-made commodities. Archaeological studies of such goods tend to focus on the use and disposal of those products. Analysis has also focused on changes in manufacturing methods evident in the attributes of those discarded objects. This chapter instead highlights archaeological investigations of the production sites. Such projects have been relatively few in number compared to studies of products themselves in end-user contexts. As a result, the sample of case studies presented here represents actual archaeology projects on work sites that were completed and published, rather than an idealized selection of historical subjects. This chapter's survey considers early textile mills, the blessing and curse of new rails for pottery production, and the material culture of glass works and cutlery manufacture. Other projects examine saddletree production, seafood commodities in local and international markets, bakery and cheese suppliers, interactions of artisans and beer bottling in an armory town, and family-run binderies and tanneries (Figure 2.1). Finally, I consider the impacts of transport networks on cement production, which leads to broader subjects of transportation industries that will be the focus of Chapter 3.

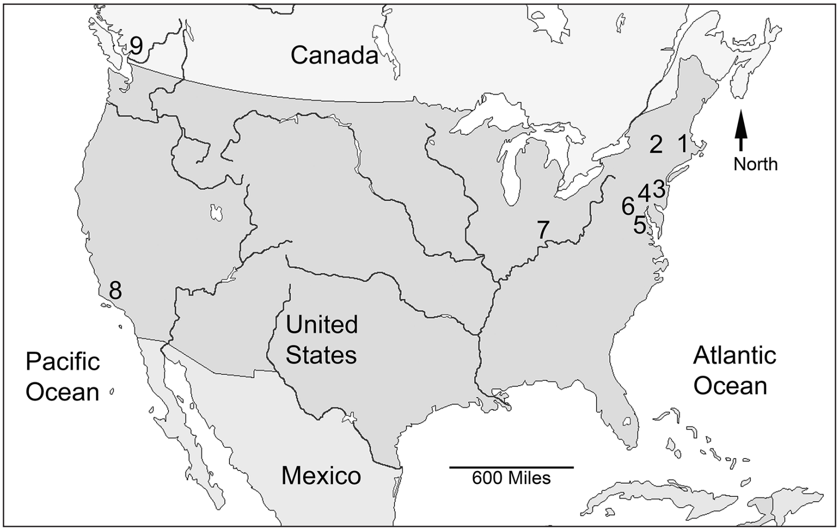

Figure 2.1. Locations discussed in this chapter include (1) textile mills, the John Russell cutlery factory, and the Springfield armament factory in Massachusetts; (2) Elijah Cornell's pottery, the Columbus Center Cheese Factory, and the Burghardt tanneries in New York; (3) textile mills in Paterson, and a bindery in Feltville, New Jersey; (4) Dyott and Kensington Glass Works in Philadelphia; (5) bakeries in Alexandria, Virginia, and Annapolis, Maryland, the James Wray Carpentry in Williamsburg, Virginia, and oyster enterprises in the Chesapeake Bay; (6) the Chesapeake and Ohio Canal, Virginius Island, Harpers Ferry, and Shepherdstown, in West Virginia; (7) Schroeder's Saddletree Factory in Madison, Indiana; (8) abalone fisheries in the Channel Islands and Santa Barbara, California; and (9) salmon fisheries near Vancouver, British Columbia.

Rivers and Textiles

Mechanized commodity production in the United States developed early in the New England region (Figure 2.1). Samuel Slater worked in textile mills in Britain and then moved to Rhode Island, where he developed the Slater Mill along the Blackstone River in 1793. As other factories were constructed in the area, relying on waterpower, the Blackstone River became a hub of early industrialization in the young nation. In 1814 Francis Cabot Lowell created the Boston Manufacturing Company to operate an integrated textile factory on the Charles River in Waltham, Massachusetts. A first planned factory town was developed in the 1820s in Lowell, Massachusetts, and grew into the largest industrial operation of its time by the 1850s (Albrecht 2012; Malone 2009; NPS 1992). Farther south, John Ryle developed silk mills in Paterson, New Jersey, in the 1860s. The Paterson location presented the advantages of waterpower, unemployed workers from earlier cotton mills, and proximity to needed production supplies. Children often worked in such textile mills, tending spinning machines with small, dexterous hands (Figure 2.2). Reform laws ended such child labor practices in the early twentieth century (Baxter 2019; Margrave 1975; Rutsch 1975).

The residential areas and work spaces of textile mills at Lowell were investigated through multiyear projects of archaeology. The area is presented to visitors today through museums, numerous informational signs, and exhibits in preserved buildings (NPS 1992). In designing these presentations, the National Park Service integrated insights from archaeology. Yet these exhibitions rarely emphasize the process of conducting archaeology or the particular knowledge such investigations contributed. The displays range from massive arrays of weaving equipment to a variety of hand tools made by workers to manipulate the looms they were assigned to tend (e.g., NPS 1992).

Lowell was among the first planned manufacturing towns, built on canal networks radiating from the Merrimack and Concord Rivers. The Boott Mills textile works at Lowell introduced innovative turbines for waterpower in 1849, instead of relying on older designs of waterwheels. The

Figure 2.2. Weavers in a New England cotton mill, circa 1911. Photograph by Lewis W. Hine (1874–1940), courtesy of the Library of Congress.

horizontal design of turbines avoided the disruption of vertical waterwheel operations that could occur due to chaotic flows of flood waters. Mill buildings could be built several stories tall, straddling canal races that housed turbines connected to belts that broadcast power up and throughout the buildings' operations. Belts feeding energy to each work room were typically made of leather. At times, the speed of the belt would overheat the leather, friction would cause a spark, and a belt could burst into flame. In contrast, textile mills in southern states developed later and relied on steam engines for power. This use of engine power contributed to building designs spread out in a broader footprint, with fewer floors and decentralized power sources. The tall mills of Lowell were efficient for using water turbine power but less efficient for the workflow through the facility space (Malone 2009; NPS 1992).

Work on the Lowell mills entailed numerous risks. The large floor plans relied on perimeter window light. Dim surroundings made moving machine parts hazardous to the inattentive. Weaving machines ran with deafening noise, and cotton dust clouded the air. The yarn running in the weaving assemblies remained stronger in hotter, more humid conditions. As a result, employees often endured high heat and stuffy conditions. They performed a variety of specialized tasks, including weavers, inspectors, loom fixers, twisters, bobbin boys, and sweepers (Malone 2009; Mrozowski et al. 1996; NPS 1992).

Winning and Losing in Cornell's Pottery

Commodity production industries were often impacted by expansions in transportation infrastructure. New canals and railways lowered the costs for transporting resources to manufacturing facilities. The same transport arteries expanded avenues of commodity distribution and intensified competition among the manufacturers within various wholesale and retail markets. Sophia Kelly (2013) examined the shift from earthenware manufacturing to stoneware production in the northeastern United States in the early 1800s. Potteries making earthenware goods could use lower-quality local clay deposits and kiln designs that did not have to withstand notably high temperatures (Kelso and Chappell 1974; Steen 1999). Shifting to stoneware production presented a number of challenges. The kiln design had to be improved to withstand the high temperatures that would harden the clay to the stone-like quality of a nonporous vessel (Fennell 2017b). A pottery would need access to higher-quality clay supplies that produced such nonporous paste without fracturing in the kiln's firing. The expansion of canals and railways in the northeastern United States in the 1820s dramatically lowered the cost of transporting clay supplies from the locations in which such higher-quality clays were found (Kelly 2013).

Potteries that produced earthenware goods in the United States in the early 1800s were often conducted in craft style, with all employees performing the full spectrum of relevant tasks. With the shift to stoneware production, manufacturers often moved to greater differentiation and specialization of their workers. Different workers handled the steps of clay preparation, throwing and shaping vessels, maintaining and firing the kiln, and applying decorations to vessels. Increased mechanization could also be introduced, employing devices that sped and standardized the shaping of vessels. Manufacturers who benefited from these developments could in turn out-compete smaller operators in the wholesale and retail markets due to decreased distribution costs via canals and railways. For small businesses such as Elijah Cornell's pottery in Ithaca, New York, transport improvements benefited their production capabilities (see Figure 2.1). However, the same transportation developments greatly burdened Cornell's retail sales due to increased market competition that took advantage of new distribution arteries (Kelly 2013; cf. Scarlett et al. 2006; Whipp 1990). I explore other stoneware potteries in greater depth in Chapter 6, presenting methods and findings from my multiyear research project focused on production enterprises in Edgefield, South Carolina.

Spinning Whimsies at Dyott's Glass Works

Glass vessels presented increasing competition against ceramic containers from the late 1700s onward. Glass containers have been produced for centuries through a variety of craft methods. Glass is made with molten silica, typically obtained from quartzite sand deposits, with additions of minerals such as soda-lime, potash-lime, and potash-lead. The color of glass is obtained by adding metallic minerals to the molten formula, such as iron, manganese, cobalt, copper, tin, silver, or chromium. Earlier forms of hand-blown glass, also called mouth-blown and free-blown, dominated up through the 1600s. Increasing use of molds and mechanization techniques developed in the 1700s and 1800s (Fike 1987; Jones and Sullivan 1989). Archaeologists have investigated a number of glassworks in the United States, including sites in Virginia, Maryland, New Hampshire, and, more recently, the Dyott factory in Pennsylvania.