Handloom Outwork and Outwork Weaving in Rural Rhode Island 1810-1821

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Rhode Island was a pioneer in the American textile industry from 1790, when Samuel Slater successfully duplicated British spinning and fiber-preparing technology, until 1821, about five years after the development of a successful power loom. Rhode Island cotton mill owners produced utilitarian fabrics either in mill owned weave sheds or by putting out machine-spun warps to part-time handweavers. Between 1810 and 1821, outwork weaving became the predominant method of commercial handwoven fabric manufacture. Outwork networks grew during an era of technological and organizational experimentation in the textile industry. Technological change centered on reproducing British textile machinery and improving textile equipment already in use.

Organizational innovation concentrated on establishing efficient and productive work environments. Textile mill owners drew on several systems to produce fabric by hand prior to the development of a marketable power loom. They duplicated craft workshop conditions within the factory setting, they contracted with craftsmen to weave in independent enterprises, hired weavers to work in mill owned housing and they issued webs to individuals to produce fabric in their homes. By comparing successful and failed commercial hand cloth manufacturing efforts, this study will offer insights into outwork weaving as a system of manufacturing cloth between 1810 and 1821.

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Outwork resulted not only from experimentation in factory production but also from changes in communities and families.[1] By the first quarter of the ninteenth century, inheritance patterns, over-population, and limited local land resources threatened communities and family unity. Exchange networks enabled rural communities to attain self-sufficiency; farm families bartered goods and services. While such exchanges provided rural families with the necessities of life, they were limited by the scope of what was available locally. A growing dependence on non-agricultural pursuits and the tension of cooperative networks set the stage for new sources of income made available by textile mills. With industrialization, factory labor and outwork offered new opportunities. They provided a cash-based as opposed to a commodities- and services-based system and enabled women to contribute to the family's cash income. Finally, outwork presented families with a means of going beyond the community by purchasing commodities produced elsewhere.[2]

Changes in rural economy and family life coincided with a generalized reclassification of work. The disintegration of an artisan-based labor system allowed for the rise of semi-skilled outwork weavers. Domestic manufacturing had operated alongside professional handloom weaving and resulted in two types: semi-skilled home weavers and craft trained handloom weavers. The rejection of factory-labor by professional handloom weavers increased the opportunities for semi-skilled outworkers but more importantly marked the ultimate demise of craft-dependent fabric production.

Because textile manufacture was one of the first mechanized industries to incorporate outwork production into its manufacturing procedures, this essay provides a missing link between outwork before and during industrialization. The era is significant in that it constituted a time of trial and adjustment for a labor system that provided women, and young adults, with an acceptable means of earning supplementary income.

Finally, this paper advances the view that social, economic and technological factors encouraged women in disproportionate numbers to participate in outwork weaving. Improvements to textile machinery diminished or changed the skills required to produce yarn, thread or cloth. As a result, jobs were redefined to suit the requirements of increasingly mechanized factories.[3] Both Daryl Hafter and Mary Blewett indicate that women willingly worked at newly created positions rejected by men with craft skills. Gender divisions in work denied women places in already-defined work situations, particularly those involving labor outside the home. Yet, outwork weaving was both timely and fortuitous for women; it positioned them at the vanguard of change and innovation.[4] As a result, forces that kept trained male artisans from participating in company-owned weave shed work also made part-time outwork performed in the home attractive to semi-skilled female workers.[5] The popularity of putting-out and the

demand for handweaving by textile mills during this era provided rural Rhode Island families with an important source of supplementary income for over thirty years.

I
The Relationship between Mechanization and Hand Production

One of the forces behind work reclassification was the development of equipment to replicate tasks that had been performed by hand. The reproduction of British textile technology, and improvements to it after 1790, led to the establishment of cotton spinning mills in Rhode Island. These early businesses did not eliminate the involvement of skilled craftsmen in textile manufacture. During the early phases of mechanization, cotton textile mills continued to incorporate hand work into factory production. But subsequent technological innovations limited, and ultimately excluded, hand processes from textile manufacturing.[6]

Initially, inventive genius focused on fiber preparing and spinning processes. Spinning and fiber preparing machines required different skills and abilities than those needed for hand processes. The new machinery effectively cast hand spinners out of mill employment. Each improvement broadened the market for machine-spun thread and further reduced the need for commercial handspinning. The displacement of handspinners from the mill workforce occurred rapidly after 1790 when Samuel Slater introduced spinning frames that could produce both warp and weft.

The displacement of handweaving from the textile industry occurred at a much slower rate than that of handspinning. First, a marketable power loom and complementary equipment including warpers and dressers were not developed until 1814, about twenty-four years after the elimination of handspinning from the factory environment. Second, in Rhode Island, economic conditions, power shortages, ineffective protective tariffs and technological limitations hampered the diffusion of power loom technology. As a result, power looms were not generally used in the state until about 1826. Third, in Rhode Island, outwork weaving continued until at least 1840 because the nature of the woolen fiber forced technological innovation in the woolen industry to lag behind mechanization in cotton textile manufacturing.[7]

Since about twenty-four years elapsed between the elimination of handspinning from mill work and the introduction of a marketable power loom, textile manufacturers had either to restrict their production to thread, warp and yarn, or to find a good way of incorporating handweaving into their production procedures. Some Rhode Island mills did confine their output to the manufacture of thread, warp and yarn. By 1820, 21 out of 82 mills restricted their manufacture to thread alone and 31 sold textiles

as both thread and fabric.[8] As more spinning mills competed with one another for the sale of warp, yarn and thread, mill owners found their options limited and their decisions clear. Their survival necessitated bringing other, perhaps less competitive, products to market. The manufacture and sale of simple utilitarian fabrics proved profitable and less competitive, particularly prior to 1816, when foreign trade was disrupted by the Napoleonic War and the War of 1812.[9]

II
Early Cloth Manufacture

At first, textile mills used a variety of means to produce cloth. Before outwork came to predominate, in Rhode Island, Almy and Brown of Providence tried to duplicate craft workshop conditions within the factory setting. The firm initiated mill-owned weave sheds in the cellars of houses in Providence. Almy and Brown were not alone in establishing weave sheds to produce fabric. Union Manufacturing Company, Columbian Manufacturing Company and the Stone Mill in Warwick among other early Rhode Island cotton mills also implemented the factory weave shed system for cloth manufacture.[10]

By reproducting craft workshop conditions in company-owned weave sheds, textile mill-owners attracted a small number of British immigrant weavers to enter into contracts. Mill owners hoped that immigrant textile workers might impart their knowledge of mechanized spinning to them. Yet, immigrants brought with them strong craft ideals and memories of negative experiences in British textile factories. The desire to adhere to craft traditions and to prevent either close supervision or displacement, made the factory weave shed environment unattractive.

As a result mill-owned weaving operations failed in several signficant ways. Entrepreneurs regulated the work of artisan employees by creating a closely controlled and efficient work environment. The owner used contracts to ensure productivity and to encourage consistent attendance at the workshop. As the key official in the organization, the mill owner or agent severely diminished the significance of the master weaver classification. Journeymen, who had worked toward owning their own business enterprises previously, were offered little encouragement or assistance in bettering their situation. Finally, apprentices were not trained sufficiently to make their way as journeymen outside of the mill owned weave shed environment. Though modeled after artisan-owned workshops, these company-owned imitations paled by comparison.[11]

In large part, weave shed conditions highlighted the redefinition of craft system in the United States and Britain. The British guild system had begun to disintegrate during the sixteenth and seventeenth centuries. Many British artisans emigrated to the United States at the end of the

eighteenth and early nineteenth centuries in search of a better environment in which to ply their trade. Upon arrival weavers found that guild regulation did not exist to set standards for proper training and advancements. Craft terms—"master," "journeyman," and "apprentice"—were used loosely even by formally-trained artisans. Despite the diminished importance of craft weaving, mill owners organized weave shed enterprises to attract craftsmen.

The artisan-based labor system was on the brink of obsolesence. Yet, the weave shed craftsmen endeavored to set their own standards and reestablish the craft. They showed their dissatisfaction with the mill system by avoiding it, by shifting from job to job or by investing in independent ventures.[12] Gary Nash and Cynthia Shelton suggest that the weave shed environment failed to attract sufficient artisans to insure success of the early weaving and spinning factories. Both the environment and the association of the work with poorhouse labor repelled potential employees from the enterprises.[13] Almy and Brown experienced problems in hiring sufficient numbers to operate all their looms in the weave shed as well as in retaining weavers already employed by them between 1788 and 1796. Four out of six of their journeymen and master weavers left the company-owned workshop in order to establish independent enterprises.[14]

As a result of these problems, many early Rhode Island factory weaving businesses failed. Mill owners reacted to the situation by instituting other forms of fabric manufacture: they contracted with weavers to produce fabric in independent weave sheds, issued warps to individual part-time weavers and commissioned cloth agents to issue warps to weavers.[15]

For Almy and Brown, the shift from the workshop to outwork fabric production occurred smoothly as several of their own workshop weavers instituted artisan-owned weave shed enterprises in Providence. In 1794, Almy and Brown began to hire independent master craftsmen to weave cloth from Almy and Brown's machine-spun warps. John Maguire, Ichabod Tabor and James McKerris wove goods for the firm in independent weave sheds after leaving Almy and Brown's workshop. In addition, the company records indicate that David Buffum, Peter Stowell, James Wheaton and John Reynolds, none of whom had worked in the weave shed, agreed to produce fabric for Almy and Brown between 1789 and 1791.[16] This system of cloth manufacture suffered the same fate as the mill-owned workshops because there were not enough independent weavers in Providence to manufacture the fabric needed by the firm.

As early as 1794, Almy and Brown had sold warps to Benjamin Shepard, an entrepreneur who owned a small jenny spinning shop. By 1802 Almy and Brown contracted with Silas and Benjamin Shepard, Benjamin's sons, to weave, dye and bleach about 1900 yards of ticking in

their weaving shop in Taunton, Massachusetts. The agreement between Almy and Brown and the Shepards accounted for all of Almy and Brown's cloth manufacturing in 1802. The method of contracting all their weaving with a single independent workshop continued until 1806, by which time the Shepards had produced well over 14,000 yards of ticking for Almy and Brown.[17]

The conditions of the agreement regulated production by requiring that the Shepards convert one third of the yarn they took from Almy and Brown into fabric for the firm. In addition, Almy and Brown did not demand that they weave exclusively for the firm. The benefits of the system to Almy and Brown were that many of the problems associated with company-owned workshop management were eliminated. Almy and Brown supplied yarn and received the finished product. In addition, Almy and Brown no longer had to tie up capital in looms, associated equipment or in space to house the weave shed enterprise. The Shepards had to battle transient labor, damaged warps, broken equipment or illness among workers. The brothers insured quality and quantity in a timely manner or suffered the loss themselves.[18]

After 1806, the Shepard brothers severed their contract with Almy and Brown and turned to individual private investments. Silas Shepard became Superintendent of the Taunton Manufacturing Company. His interests also centered on technological innovation. Between 1816 and 1824, Silas developed several textile mechanisms including a filling frame, an upright power loom and a bobbin winder. By 1810, Benjamin Shepard left his father's textile mill and moved to Middleborough, where he operated a cotton textile business until about 1837. Almy and Brown neither expanded the system nor found individuals to take on their cloth fabrication contract. For a time, they focused on marketing the yarn and thread produced in their Pawtucket and Warwick mills.[19]

In contrast with Almy and Brown's initial efforts, the Blackstone Manufacturing Company of Mendon (now Blackstone), Massachusetts, contracted with artisans to weave in the kitchens of the firm's tenement housing. In 1811, the company records indicate that at least three weavers contracted to manufacture fabric for the firm in mill housing. Thomas Brand, James Cupples and Leonard Dobbins rented mill tenements and wove in the kitchens of their rented dwellings. The firm appears to have treated the resident artisans with deference; several other mill employees were moved around in the tenements to make sure that Dobbins and Cupples would live in the same house. Their accommodations were located in the building best suited to weaving.[20]

Textile firms recruited immigrant craftsmen because they knew that foreign artisans were likely to have some knowledge of textile technology. It may be that all three of these resident weavers were foreign and that the firm did not plan to manufacture all their fabric by hiring professional

weavers to work in factory-owned facilities. Leonard Dobbins had recently arrived from Ireland just prior to working for the Blackstone Manufacturing Company.[21]

One resident weaver's contract has survived. On September 17, 1811, Cyrus Butler and Seth Wheaton, investors in the company, corresponded regarding an agreement with Thomas Brand: "Sir, we have engaged Thomas Brand to go to Blackstone to weave 9/8 checks at nine cents full yard of full width number twelve warp and find him our looms and use of warping tools. He finding reed and harness, brushes and sizing and doing all the work of spooling, quilling, warping, etc."[22] While the document is specific in describing the kind of cloth, the equipment and the services Brand must supply, it does not specify the amount of cloth or the tenure of the contract. In addition, Blackstone weaving ledgers do not list Brand among the weavers.

Brand's contract differs from those issued by Almy and Brown to their workshop weavers in several respects. First, the Blackstone Manufacturing Company provided less materials than did Almy and Brown. Although both Brand and the Almy and Brown weavers had to quill and spool their weft, Almy and Brown's weavers were provided with reeds, harnesses and brushes. Second, the Blackstone Manufacturing Company did not stipulate the rate or quantity of production, whereas Almy and Brown required that their artisans weave at the rate of five yards per day and also specified the yardage to be manufactured by a specific date. On the basis of this evidence, it would seem that the textile mill did not rely as heavily on the fabric production of these three resident weavers as did Almy and Brown on their workshop artisans. Since the Blackstone Manufacturing Company established their outwork network simultaneously with this form of textile manufacture, their reliance on the resident weavers was not limited to the weavers' skills and productivity alone. The firm probably hired foreign textile workers as consultants who could provide them with information about the organization, management and machinery of successful British textile mills.[23]

In the cases of Cupples and Dobbins no contracts exist but rental rolls indicate that they resided at the Blackstone Manufacturing Company for about one year. During that time Cupples produced 423 yards of chambray and stripe, and Dobbins wove 391 yards of chambray, gingham and stripe. The low yardage total indicates that the weavers did not live and work at the mill for long. Records of the settlement of accounts buttress this assessment by showing that Cupples remained in Mendon from about August 1811 through October 1812. Dobbins continued weaving for the mill until December 1812. Like other native or immigrant handloom artisans, neither Dobbins, Brand nor Cupples continued weaving for the textile mill for extended periods. Whether the short duration of their

employment related to the environment, management controls or to the firm's changing needs is unknown.[24]

III
Outwork Weaving

Since neither native-born nor immigrant skilled male weavers were willing to work in factory-owned weave shed settings, and since the number of artisan weavers inclined to contract for factory labor was insufficient, mill owners had to find other ways to manufacture fabric. No letter or journal describes the strategies involved or identifies individuals who recognized where available workers might be found. Business accounts, however, provide evidence that agents and mill owners came to resolve their fabric production problem with outwork.

Textile company store accounts indicate that, from the outset, domestic textile production might be exchanged for store goods. Many of these accounts refer to payment in woven handkerchiefs, tow cloth, fustian, aprons or other textile goods produced at home by women. The numerous and widespread examples of this activity indicate that mill owners discovered a resource of part-time semi-skilled female weavers residing on farms and in homes throughout the state.[25]

Textile manufacturers did not invent the concept of outwork. The system was adapted from a well-established custom of supplementing agricultural income by taking in raw materials to process in the home. Studies of industry in the English countryside suggest that outwork existed in England from as early as the fourteenth century.[26]

In Rhode Island and elsewhere in New England, few farmers could increase income by expanding their acreage. As the smallest state in area, Rhode Island had limited free land. Moreover, the state, composed primarily of glacial moraine, had a rocky landscape and thin soil. From the outset some families supplemented agricultural income with day labor, mining and trades. By the mid eighteenth century, non-agricultural income was essential to most Rhode Island families. By the early nineteenth century, New England as a whole suffered from localized over-population.

Initially rural populations pursued trades to retain self-sufficiency. Local networks allowed individuals to exchange commodities and services for what they needed but could not buy with cash or produce. At first these cooperative networks assured the self-sufficiency of rural communities. As the populations grew, however, the availability of local fertile land diminished. Inheritance traditions had led farmers to acquire tracts of land sufficient for all their sons to support each of their son's nuclear family. With the growth of the resident population, this custom rapidly ate up fertile agricultural resources. As a result there was local land shortage, despite vast untamed lands to the west. Farmers were faced with several

options: see the family disperse by having some members acquire properties elsewhere, move away to less densely populated regions with plentiful fertile acreage, encourage offspring to develop interests in non-agricultural pursuits through apprenticeship training or find some way to survive with limited land holdings.[27]

Fortuitously the local land shortages occurred at a time when mill owners sought a dispensible and cheap source of labor, particularly a workforce unfettered by troublesome craft traditions. Though committed to earning money or exchanging labor for goods, the rural weaving labor force was not trained in the weaver's art. Joseph France, a Rhode Island master weaver, quoted James Butterworth's British weaving book which reported that few outworkers knew how to read a pattern or draft a design. Although France published Butterworth's guide almost verbatim, his retention of the complaint about outworkers suggests that lack of skill was a problem in both the United States and Britain.[28] Outwork weavers were not entrepreneurs; few started independent weaving enterprises or established their own textile mill. Rather, this group of predominantly female part-time artisans saw weaving as a way to pay for goods not produced on the farm, to earn cash to purchase additional lands or to attain financial independence. Weaving was a means not an end; to outworkers weaving remained attractive only as long as some other form of outwork did not pay better. Women could pursue weaving outwork without disrupting their sphere of domestic work because the labor was performed at home.[29]

In addition, though the market for domestic fabrics influenced the manufacturer's choice of product line, the skills of the available extra-factory work force also determined the kinds of cloth to manufactured. Most textile mills hired outworkers to produce utilitarian fabrics requiring very little skill or knowledge of weaving beyond the basics. Almy and Brown altered the kinds of fabric they produced between 1790 and 1804. Weave shed artisans wove a wide variety of goods from plain weave to velveret between 1789 and 1796, but Almy and Brown could not keep the firms' looms busy because, in large part, skilled weavers were unwilling to work for the mill. Their attempt to increase the number of weavers capable of producing at least some fabrics resulted in the production of simple bedticking. Merchant weavers put out webs to local part-time weavers or hired some weavers to work in their weave shed. Work on less complex fabrics enlarged the pool of employees available for textile work and resolved the labor scarcity problem for a time.[30]

Other factors also influenced the decision to switch from complex fancy fabrics to plain cloth production. Correspondence with cloth merchants indicates that Almy and Brown's line of fancy fabrics was not generally popular with the rural population. On the contrary, foreign complex weave fabrics held far more appeal than domestically-manufactured specialty goods in both price and distinction. Evidently American

firms lagged behind British and French textile manufactures in setting fashion and in providing stylish goods. As a result, provincial fabrics found a limited market for their velvets, weaverettes and baronettes. American manufactures were suitable for household needs such as work shirts, bed clothes, toweling and mattress covers as long as the prices were competitive.

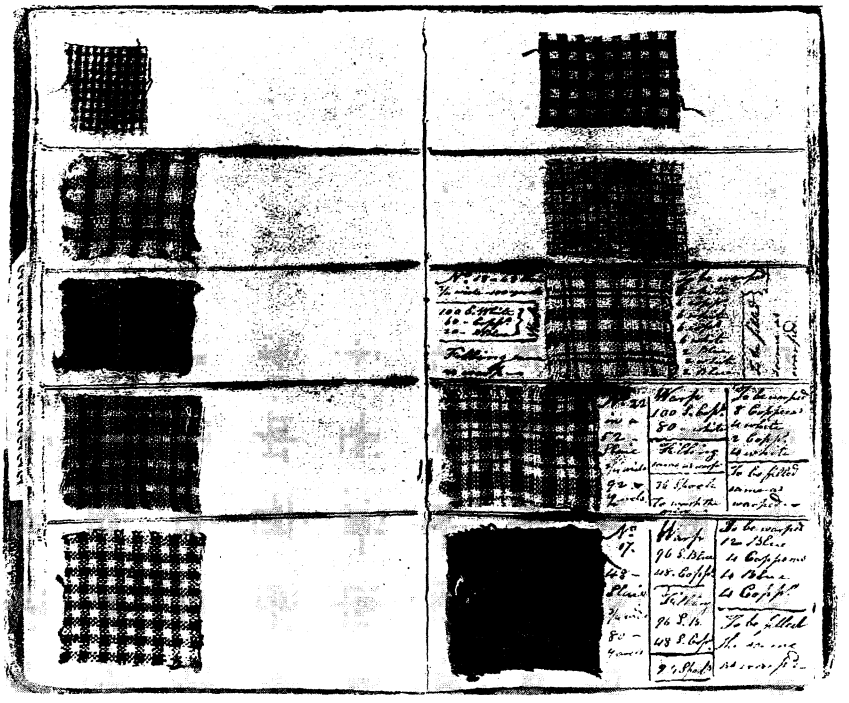
By 1810, textile mills commonly manufactured simple utilitarian goods such as check, stripe, shirting and sheeting. All the fabrics were simply constructed, and the materials had a wide appeal. The availability of semi-skilled labor, the demand for simple and inexpensive goods, the lack of foreign competition with the passage of the Embargo Act and the complementary needs of the rural population and textile mill owners determined fabric choices.[31]

Outwork became the predominant method of handwoven fabric manufacture between 1810 and 1821. The textile mills organized almost identical putting-out systems. There is some evidence to indicate that textile mill owners shared information on establishing outwork weaving networks. The Blackstone Manufacturing Company, for instance, contacted Caleb Greene and the Coventry Manufacturing Company of Coventry, Rhode Island, regarding methods of issuing work and paying for labor. Each firm's outwork employment and compensation systems were so similar that the prices of the goods and rates of compensation were within pennies of each other.[32]

Most of Rhode Island's spinning mills followed the same general outwork scheme. The number of individuals involved and the amount of warp risked at one time required keeping complex and detailed records documenting outwork and outworkers. These account books also provide ample details of fabric quality, quantity and cost.[33] A certain percentage of machine-spun warp and weft was made into or organized into webs. Webs consist of warp put into weaver's chains for warping on the loom, and of weft prepared for quills. The yarn was premeasured for each kind of fabric and each specific width and length.

Each web received a ticket and a number. The ticket indicated the weight, coarseness of the goods, the pattern and payment. The ticket number and information on the ticket were recorded in a ledger. When the materials were issued to weavers, the weaver's name, and the date that the webs were issued were added to the account book. The weavers took the ticket with them and returned it with the completed fabric. Manufacturers issued as many as 270 webs to over one hundred outwork weavers each year. Once woven, each web produced between 25 and 75 yards of fabric. Consequently a large amount of capital was at risk at one time.

Once these webs were prepared, the mill had to find ways to distribute efficienctly the work to weavers and to maintain records. Mills dispersed the webs to weavers in three ways: local weavers might pick up webs and



A page of a swatchbook from Arkwright Corporation, Coventry, Rhode Island. The swatches shown are plaids and checks. The notations on the page indicate the amount of warp and weft required, harnesses and reeds necessary, and how to warp the loom to create the fabric. Reprinted by permission of the Rhode Island Historical Society, Providence, Rhode Island.

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receive weaving instructions at the company store; family members who worked in the mill might sign for warps to be woven by someone else in their home; or agents might arrange to have materials delivered to the weavers who lived far from the store.[34]

Although the putting-out system provided the textile industry with a plentiful and previously untapped labor force, outwork was a mixed blessing. Issuing warps to great numbers of local outworkers directly from the mill or factory store created problems that textile mill owners found insurmountable. To put-out warps directly from the factory, the mill owner or agent hired and oversaw hundreds of part-time transient employees. Manufacturers maintained little control over these laborers as the weavers did not work on company property, but away from the mill site.

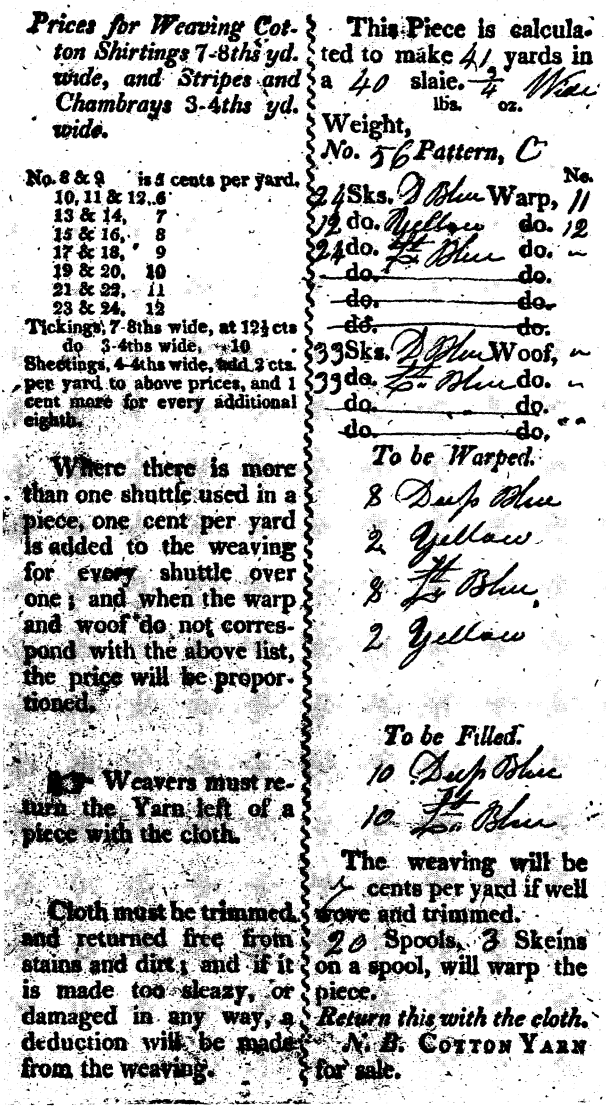
The productivity levels of outworkers in comparison to those of the factory weave shed artisans demonstrates the effects of fabric manufacture without oversight and without a strong commitment of outworkers to weaving. Almy and Brown required their workshop weavers to produce five yards of fabric per day. Even so, John Reynolds, an independent master weaver associated with the firm, suggested that the requirement was not challenging because weavers could do "all of Thursday's work in half a day." Nonetheless outworkers did not achieve the expected production. Outworkers, as part time workers, averaged just 25 yards with a single warp at thirteen week intervals and a total of 200 yards per year. To counteract low productivity rates, firms had to risk more warps to more part time workers.[35]

As more and more factories began to manufacture fabric by issuing warps to outworkers, their networks extended over further distances from the mills. Distance also affected the rate of completion. Those who lived far from the mill or store relied on agents to deliver warps to them. Hence, they and their neighbors received webs and also returned the completed fabric on the same day. As indicated on the maps (next page), Blackstone Manufacturing Company outworkers resided in almost every city and town in Rhode Island. Although the textile mill was built in Massachusetts near the Rhode Island border, only 188 out of 760 outworkers lived in Massachusetts.[36]

Mills issued large quantities of yarn for about three months time, risking embezzlement and suffering losses due to shoddy workmanship. The quality of the finished fabric varied widely, and, not surprisingly, some were returned in an unsaleable condition. These pieces of cloth were classed as "gauzy," "shoddy" or "poor" and resulted in loss to the mill and fines to outwork weavers.

Although the term "shoddy" probably reflects lack of skill, "gauzy" is more suggestive of embezzlement. Embezzlement of yarn or cloth was not uncommon among British outworkers. Weavers sought to fend off pauperism by lightening the fabric and retaining unused threads. To a great extent, embezzlement was a symptom of the decline of the trade. Under similar circumstances, American outworkers also resorted to theft of either completed fabric or yarn.

Part-time weavers sought to receive the most from their efforts. This resulted in several forms of defalcation. Gauzy fabrics resulted from using insufficient weft or filling. The unused weft and possibly warp would be kept by the weaver and used to make additional yardage. It was like getting paid twice for the same web. Weavers did not always return completed cloth to the factory that issued the web but sold their fabric to the highest bidder. Fabric sales were facilitated by the broad geographic area over which webs were distributed and the span of time between



Prices for Weaving Cotton Shirtings 7-8ths yd. wide, and Stripes and Chambrays 3-4ths yd. wide.

No. 8 & 9 is 8 cents per yard.
10, 11 & 12, 6
13 & 14, 7
15 & 16, 8
17 & 18, 9
19 & 20, 10
21 & 22, 11
23 & 24, 12
Tickings, 7-8ths wide, at 12½ cts
do 3-4ths wide, 10
Sheetings, 4-4ths wide, add 2 cts. per yard to above prices, and 1 cent more for every additional eighth.

Where there is more than one shuttle used in a piece, one cent per yard is added to the weaving for every shuttle over one; and when the warp and woof do not correspond with the above list, the price will be proportioned.

☞ Weavers must return the Yarn left of a piece with the cloth.

Cloth must be trimmed, and returned free from stains and dirt; and if it is made too sleazy, or damaged in any way, a deduction will be made from the weaving.

This Piece is calculated to make 41 yards in a 40 slaie. 3/4 Wide
lbs. oz.
Weight,
No. 56 Pattern, C

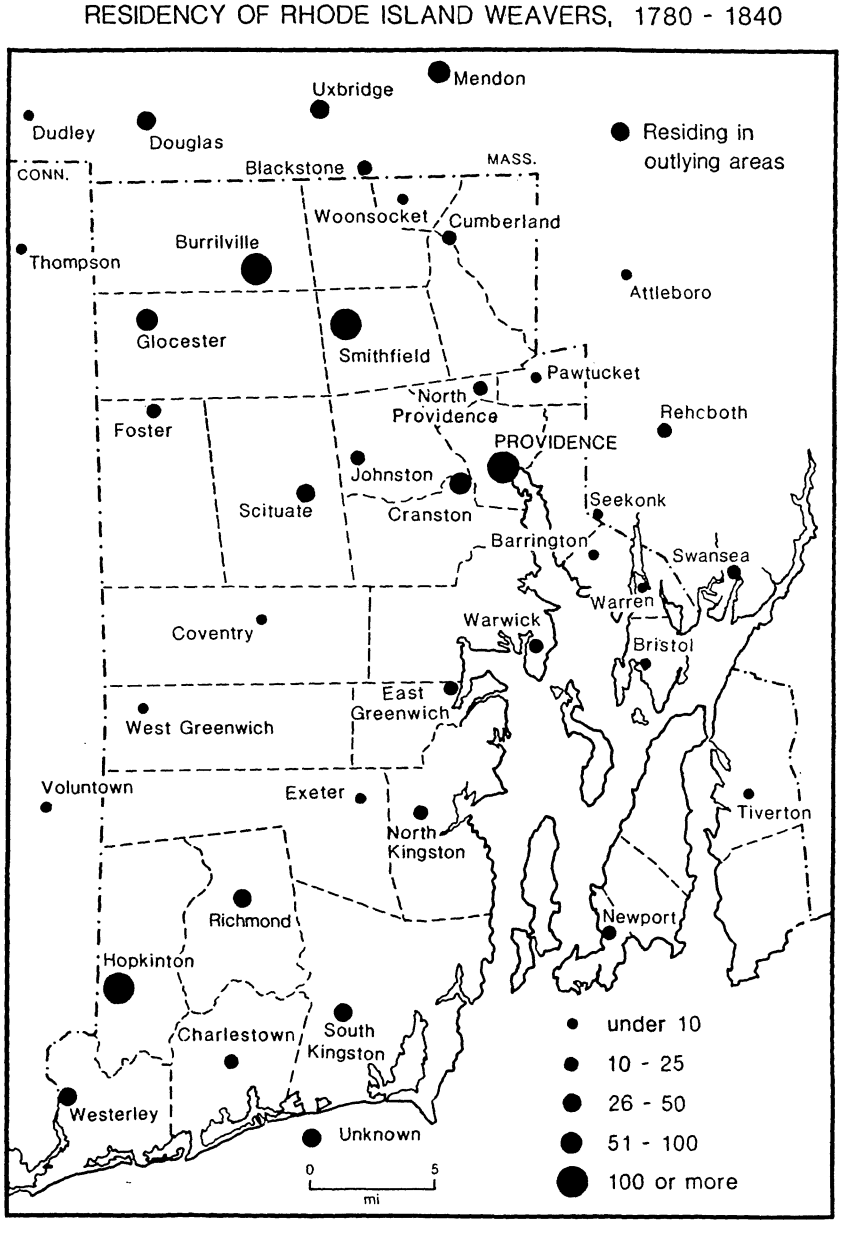
		No.
24 Sks.	D. Blue Warp,	11
12 do.	Yellow do.	12
24 do.	Lt. Blue do.	—
— do.	do.	
— do.	do.	
— do.	do.	
33 Sks.	D. Blue Woof,	—
33 do.	Lt. Blue do.	—
— do.	do.	
— do.	do.	

To be Warped.
8 Deep Blue
2 Yellow
8 Lt. Blue
2 Yellow

To be Filled.
10 Deep Blue
10 Lt. Blue

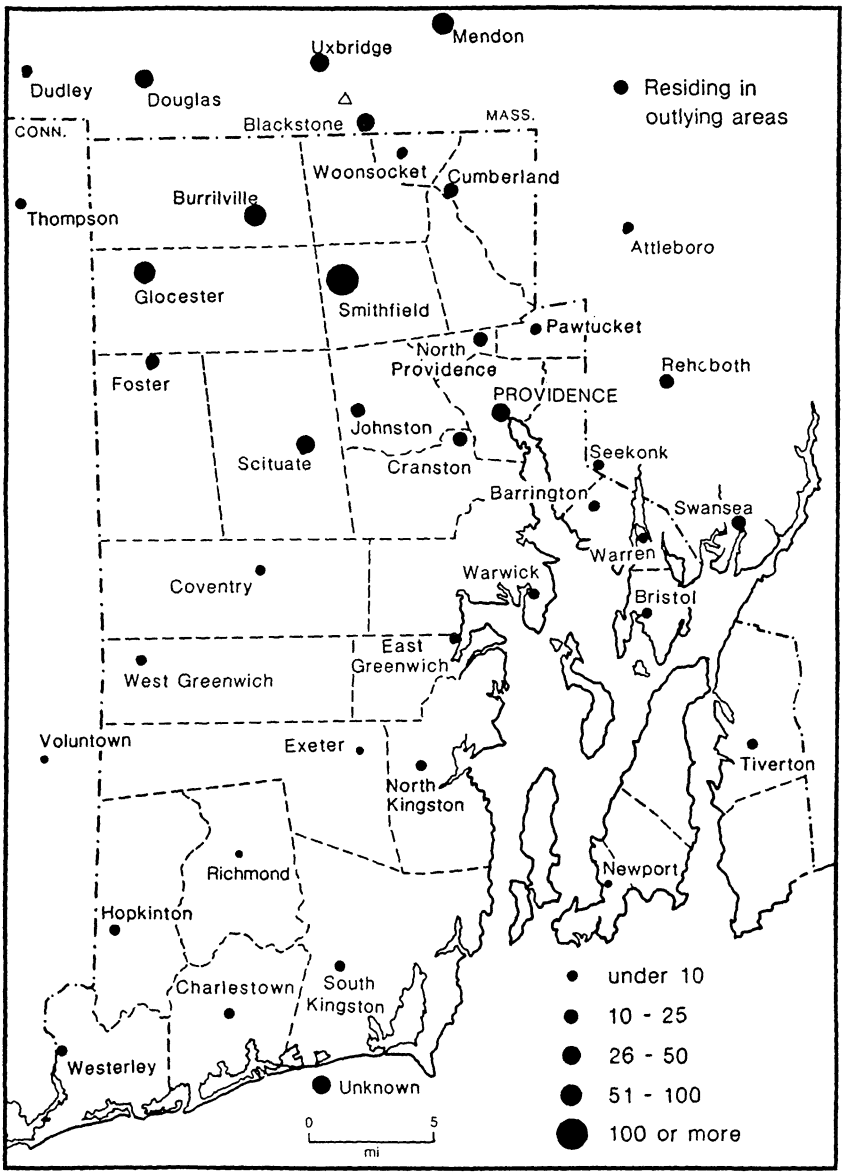
The weaving will be — cents per yard if well wove and trimmed.
20 Spools, 3 Skeins on a spool, will warp the piece.
Return this with the cloth.
N. B. COTTON YARN for sale.

Sample of a weaving ticket issued by the Blackstone Manufacturing Company, Mendon (now Blackstone), Massachusetts. Reprinted by permission of the Rhode Island Historical Society, Providence, Rhode Island.



Residency of Rhode Island Weavers, 1780-1840.

BLACKSTONE MANUFACTURING CO., MENDON, MASSACHUSETTS



Residency of weavers for Blackstone Manufacturing company, Mendon, Massachusetts, 1780-1840.

delivery and pick up. Outworkers opted to be paid now rather than await the proper mill's agent.[37]

Embezzlement was enough of a problem that firms encouraged other employees or trusted neighbors to help guard against theft. The agents of Blackstone Manufacturing Company, for instance, requested that one neighbor spy on the activities of an outworker. In a letter to Duty Smith, Stephen Tripp wrote:

> Phoebe Finch who lives in your neighborhood took some yarn of us last spring to weave into coverlets. She has returned about half of them and the remainder about 35 pounds of yarn she has now and I suppose it is not wove. I have understood that her husband has lately returned to Burrilville intends or says he intends to carry her away with him and fearing that she may be influenced by him to carry away or to sell our yarn, I should be obliged to you if you will have an eye to her conduct.[38]

Whether Duty Smith was successful in performing this task or willing to do it is not known. Since Phoebe Finch continued to work for the firm until 1820, she must have satisfied her employers by completing the coverlets or returning the warps. It is also apparent from this exchange that agents had to maintain an awareness of personal problems affecting outworkers as well as an understanding of the financial records.

The use of part-time semi-skilled artisans to weave fabrics was also plagued by transience. Blackstone Manufacturing Company records indicate that few employees continued to weave for the firm for more than two years. Between 1810 and 1820, the factory hired a total of 760 artisans to take in warps, yet their annual workforce never exceeded 150 outworkers. About fifty-three weavers wove for the mill for over six years. About 66 percent of the labor force changed each year. Several factors led to the short tenure of worker employment including the use of weaving as a supplement to family income, death, marriage, geographic mobility, weaving as a part time occupation and perhaps dissatisfaction with the terms of employment. Equally important, outworkers displayed little loyalty; they switched employers or changed from one kind of outwork to another whenever they could earn more.[39]

A related development resolved some of the problems of outwork for the mills: the system of contracting out large amounts of warp to commission agents began around 1807. Some textile manufacturers solved the inequities of outwork by delegating the risks and annoyances of the system to the commission agent. As a result, middlemen hired the large labor force, maintained copious records, arranged to deliver yarn and collected the finished product. The merchant also absorbed the risks as manufactur-

ers penalized the agent for shoddy workmanship, dirty cloth, wasted warps, theft and any other losses except acts of God. The use of commission agents redirected many outwork problems but did not make outwork issued from mills obsolete. Rhode Island mills used these systems side by side until about 1826. Cloth agents removed the paperwork, tedium and risk from factory management but did not improve the efficiency.[40]

IV
Outwork Weavers

The pitfalls and risks of the putting-out system led to record keeping that details fabric manufacture but does not offer a clear image of the weaving population. Cloth records emphasize production, cloth quality, cost and other aspects of manufacture yet provide little information about the weavers themselves aside from earnings, productivity and sometimes residence. The scant surviving correspondence between weavers and the mill agents rarely mentions the specifics of life and livelihood. Unlike surviving literary efforts generated by Lowell Mill "girls," Rhode Island's outwork weavers have left us few written insights.

Business and cloth accounts reflect a male bias which obscures the female weaving population. Typically ledgers name the male head of household rather than the artisan. In other instances the ledger clearly indicates the relationship between the household head and the actual outworker as in the cases of "Mercy Brightman of Martin," "Perry Edwards' wife," or "Colonel Stephen Abbott's widow." The use of the head of household's name to represent the work of family members suggests families were the basic units of production. Further ledger accounts link a single name to a variety of work performed by family members. A single account might list outwork weaving, factory work such as carding, and spinning, and other forms of extra-factory labor such as picking. The work of many individuals is grouped and attributed to a single household unit under one name. This accounting method diminishes the significance of individual earnings but maintains the importance of family contributions to the economic well being of the household.

Because of the system of crediting the household head for outwork weaving, only 30 percent of the 1,248 names obtained from five textile mills records are female. Occupations of the people listed in the accounts suggests that many of them were not the individuals doing the weaving. Fifteen percent of the Blackstone Manufacturing Company weavers were listed elsewhere in company records as pickers, day laborers, dye housemen or teamsters. Picking and wastepicking constitute outwork requiring little skill. These tasks might have been performed by very young children or, by other family members than the outwork weaver. Day laborers and teamsters hired for occasional labor, worked the slack seasons of their

regular trades. Since the records contain such a variety of tasks under individual names, it is likely that the records represent the collective work of families.

Civil records identified over one half of the names recorded in cloth ledgers as farmers, husbandmen or yeomen. None of the weaver's names were the same as those listed in full-time in-house factory labor such as spinners, carders or machinists. Less than 1 percent of the Blackstone outworkers resided in company housing, which inicates that the remainder either owned or rented property outside the factory village. As a result, a much greater percentage of the 1,248 names listed in cloth ledgers are those of farmers than suggested by textile accounts. Despite the seasonal nature of agricultural employment, it is unlikely that the farmers themselves took in outwork, as records indicate a consistent level of fabric production throughout the year. These factors all contribute to the assumption that the names listed in the cloth accounts are not necessarily the names of the people who actually wove and that the names in the weaving ledgers often hide the work of women.

That women rather than men were weavers is suggested by both contemporary accounts and mill advertisements. For instance, in 1817, Henry Bradshaw Fearon described the outwork system as he saw it during his travels in Providence, Rhode Island: "A considerable portion of weaving is done by women who have or live in farm houses. They receive 3 1/2d. per yard for 3/4 wide stout dark gingham, an article which is sold at 13 1/2d. wholesale and 15d. retail. These female weavers do not in general follow the occupation regularly. It is done during their leisure hours and at the dull time of the year."[41]

Want advertisements for weavers corroborate Fearon's description. Earlier, during the late eighteenth century, advertisements for apprentice weavers either for factory or master-owned workshops requested applications from boys.[42] Indeed, Almy and Brown only hired one woman to work in their eighteenth-century weaving workshops.[43] By 1810, however, advertisements solicited female weavers.[44] John Arnold hired "ten experienced young women to work spring shuttle looms" but also wanted twelve "native lads" as apprentices in the cotton mill industry.[45] In 1815 the Rutenberg Factory advertised for eight or ten unmarried women to weave plain weave.[46] In each case, textile firms recruited women to work on an outwork basis, whereas in-house workshop weavers were men or boys.

Land and probate records as well as local histories and advertisements offer insights into the composition of the outwork weaving population. In large part the population of weavers mobilized by the outwork system resided in the rural areas of the state; all but about 140 out of the 1,248 handloom outworkers resided in Rhode Island's less densely populated rural areas such as Burrilville, Glocester, Smithfield and Hopkinton. To some degree, the location of the five textile factories determined who

worked for them as weavers. The mills were located in Mendon, Massachusetts, and Cranston, Hopkinton, Providence and Warwick, Rhode Island. A large percentage of each mill's weavers lived close to the factory. Yet each mill also employed workers in outlying areas, and, as a result, the outworkers for the five mills studied here lived in every city and town in the state.

As suggested earlier, the circumstances that caused individuals to supplement their income with outwork weaving were felt most strongly in the rural areas of Rhode Island. As outwork developed, it supported both the economy of the traditional farm family and the self-sufficiency of the farm community. Outwork solidified rather than eroded the solidarity and independence of the family unit. Women and children supplemented family income without leaving home, and young adults aided the family without moving to the city. The rise of factory outwork occurred at an opportune time both for farming families in need for supplementary income and for mills in need of a large labor force of workers to produce fabric.[47]

Based on these conclusions and on some specific examples from the data collected, the weaving population may be described. The outworkers fall into four distinct categories depending on common economic conditions, age distribution and family structure: a. young adults between the ages of fifteen and twenty-five who continued to reside with their parents, b. young newly married women with no or few children, c. widows and single women acting as household heads and d. professional weavers.

The largest group of outwork weavers includes women from ages fifteen to twenty-five. Almost 80 percent of the 1,248 names represent heads of households whose daughters or young wives took in outwork to supplement the family income. Parents with unmarried young adult children often took in warps. The propensity to become involved with outwork depended on the necessities of life and stages of the life cycle. Families supplemented their income to purchase land to help male children establish themselves on their own farms or to purchase those things the family could not otherwise acquire. During this period in a family's history, the father's or the household head's name appears in the ledger as does an occasional child's name. Almost 10 percent of the outworkers named were men over forty with large families consisting of children in their late teens or early twenties.[48]

A graphic example of this is the case of Peleg Cranston. In 1814, his family included twelve children, five males and seven females, ranging in age from thirteen to twenty-nine. Several of Peleg Cranston's children wove for the Blackstone Manufacturing Company during 1814 and contributed their earnings to the family. In 1811 and 1812 Amy and Mary Cranston, two of Peleg's daughters, married two brothers, Clark and Gorton Howard. As soon as the sisters married the Howard brothers,

Clark and Gorton's names are listed on the mill roster. The wives continued to take in warps during the early years of their marriage, though their names never actually appear in the ledger. Clearly their earnings supplemented the family incomes.[49]

Weaving records suggest that neither the Cranstons nor the Howards relied heavily on weaving for their subsistance. During 1813 and 1814 the families never produced more than 800 yards of fabric, and averaged 300 hundred yards annually. In each case, the income probably contributed to the Cranstons' and the Howards' move westward to New York in 1819.[50]

That 70 percent of the names listed in the weaving ledgers are linked by marriage suggests that the Howard families and Peleg Cranston's family were typical. As young couples began to establish financial independence from their parents, supplementary non-agricultural income played an important role.

Another category of outwork weaver consisted of single or widowed women who headed a household. Over 50 percent of the 365 female names listed in cloth accounts were female household heads. This factor in part reflects the male bias in the account books, but more importantly it suggests that the mill entrepreneur treated the family's earnings as those of an individual, the household head. Clearly the income earned in outwork provided family support.

For Ruth Mowry, widowed in 1818 with six young children, weaving allowed her to support her family without public assistance. In 1818, Ruth Mowry's husband, Jonathan, died leaving his wife and children thirty acres of "mostly unimproved land destitute of any kind of shelter for man or beast." Ruth petitioned the court to allow her to retain some items from her husband's estate that would allow her to earn an income. The court allowed her to have one loom, one lot of harnesses, four shuttles, a pair of temples, a 23 dent reed, quill wheels, swifts, a 34 dent reed, spools and warping bars as well as bed and furnishings. These tools enabled Ruth Mowry to continue weaving for the Blackstone Manufacturing Company through 1822 when the mill discontinued outwork. Ruth Mowry depended greatly on her earnings from weaving. She produced almost 2,000 yards of fabric each year making her earnings almost equivalent to a spinner's annual wage from factory work.[51]

Like Ruth Mowry, widows Ann Tucker and Catherine Saunders contributed to the support of their families by weaving over 200 yards annually. Saunders averaged 600 yards of cloth per year between 1811 and 1815. Her household consisted of one female child between the ages of twenty-six and thirty-five in 1820. Ann Tucker produced 640 yards of cloth from 1811 and 1822. Tucker became a seamstress between 1822 and 1825 when she died. Though neither woman produced sufficient amounts of fabric to support their families, their earnings through outwork supplemented agricultural income.[52]

Other widows increased their earnings by taking in less-skilled outwork tasks such as picking and waste picking. Hannah Babcock and Mary Streeter both took in waste picking. Several widows maintained their husband's farming interests but the widow's ability to succeed in agriculture depended upon the age of her children.[53]

Outwork weaving attracted female household heads and young married women with small children for several significant reasons. Outwork provided women with young children with a way to support themselves while caring for their children at home. Weaving was an activity that might be interrupted at anytime without damaging the cloth and as such would conform to the daily routines of a household. Although the handloom was both large and cumbersome, it was not hazardous to the worker or other family members. The handloom did not remove fingers, or otherwise maim either the operator or the curious young observer. Finally, though weaving did require some training, the skill required to produce simple utilitarian fabrics such as denim or sheeting was minimal and could be learned in a short time.

Eighteen names from the cloth ledgers identified artisans who supported themselves solely by weaving. These craftsmen were categorized as professional weavers in two ways. Either they produced over 2,000 yards of fabric in a year for textile firms or they were listed elsewhere in civil records as weavers. Probate inventories of some artisans indicated that they owned weaving workshops and employed two to five other artisans by taking in warps from textile firms. Outwork weaving played an important role in a full time weaver's life as it might constitute the difference between solvency and bankruptcy in a changing market for textile products.

Though master craftsmen clung tenaciously to handweaving for their sole source of income, by 1820 many were forced to file bankruptcy or to seek alternate forms of employment due to changes in technology and economic conditions. The numerous artisans who might successfully compete with outwork cloth manufacturing no longer wove profitably in a market flooded with power loom goods. As textile mills incorporated power looms into their production procedures, full-time handweavers lost their toehold on solvency.

Of the eighteen professional or full time artisans recorded in weaving ledgers, at least half petitioned the Rhode Island General Assembly for relief from insolvency between 1816 and 1830. Alexander McMurray's life experiences indicate how professional handweavers might change careers and become successful in an alternate form of employment. McMurray arrived in New York from Scotland in 1811 at age twenty-six. By 1817 he had moved to Rhode Island and lived in Burrilville, weaving for the Blackstone Manufacturing Company. He produced enough shirting, denim, stripe and gingham to support his family. By 1820 he moved to

Coventry and suffered losses. That year he petitioned for aid for insolvent debtors as a weaver. McMurray's reason for bankruptcy was attributed to his "failure to perform his trade for three years." His estate valued at $73.90 listed no cloth making equipment. His debts and losses amounted to $1,567.00. However, by the time he died in 1852, McMurray had entered into a partnership with his daughter's husband as a merchant and had achieved affluence and status in the community. He contributed to the building of a school and supported the Congregational church in Coventry.[54]

Like McMurray, Pardon Case also declared himself insolvent in 1820. Pardon Case was born in 1790 in West Greenwich and by 1813 he had married Priscilla Westgate of Cranston and lived in Warwick where he pursued the weaving trade. Case took in warps from a variety of cotton spinning mills as his name appears in an A. and W. Sprague ledger for 1812, and his petition for relief indicates that he also worked for Lippitt Manufacturing Company and the Providence Manufacturing Company.

Case's 1820 petition to the General Assembly of the state of Rhode Island reveals the small distance between success and destitution. His petition read, "Pardon Case of Warwick by a variety of misfortunes was rendered unable to pay his just debts that he has been obliged to witness his hard earnings stripped from him and support of his family by the failure of others and in particular his loss of one year's service in the same way unless he is relieved by your honors his family must be reduced to want and himself drawn from useful business to spend his days in prison." The failure of others referred to in the petition is the failure of Edmund Hool[sic] to honor his offer to employ Case for one year and pay him $675.00 for that year. The loss of salary in 1820 resulted in bankruptcy at age thirty and the destitution of his wife and children.[55]

In addition to McMurray and Case, Eden Russell, Edward Howard, Joseph France, Christopher Young, Stephen Greenhalgh, Thomas Slack, John Shearman and Anthony Shaw all declared bankruptcy before 1826. Most of the bankruptcies occurred during the post-Napoleonic War and post-War of 1812 depression when foreign textiles flooded the market with inexpensive goods. These goods had not been exported to the United States during the embargo and disrupted trade of the war years. The era coincides with the period when cotton mills struggled with economic, and energy problems while trying to implement power weaving equipment in textile mills.[56]

Obviously professional weavers were not the only ones affected by the introduction of power weaving equipment in textile mills. By 1821, technological change began to color the face of outwork weaving with the impact of Paul Moody's 1814 power loom and of William Gilmore's 1817 duplication of the scotch crank loom in Rhode Island. Despite the early

introduction of power looms, outwork weaving networks continued mostly unaffected by these technological changes until about 1821.[57]

V
Closing the Book on Outwork Weaving

The Blackstone Manufacturing Company discontinued outwork weaving entirely by 1822. As early as 1817 the company had introduced power loom weaving for shirting and sheeting and later added power loom stripe to their list of machine manufactured fabrics. They continued to produce stripe, ticking and check by hand but discontinued their use of cloth agents or commission merchants and relied on local outworkers to manufacture the handloom cloths until 1822.

Between 1817 and 1821, the textile industry in Rhode Island suffered a crippling depression. Along with deficiencies of the 1816 tariff, technological limitations of the newly developed power looms, water power shortages and a variety of other developments, the depression inhibited the introduction of power loom technology. Rhode Island cotton textile mills continued to put out warps locally and also used commission merchants between 1817 and 1826. By 1830 cotton cloth manufacture was performed only by machines. Between 1817 and 1826, firms manufactured four-harness multi-shuttle fabrics by hand as power loom mills cornered the market on two-harness, single shuttle cloth. Although outwork continued, less people could perform the tasks because the complexity of fabric manufacture increased. Mill correspondence indicates that mill-agents and commission merchants found it difficult to attract sufficient numbers of outworkers to do the increasingly complex weaving patterns. Some weavers sought outwork in other fiber types where technology lagged behind cotton textile production technology. Rowse Babcock of Westerly, for instance, continued to hire local outworkers to produce woolen plaids until his death in 1840.[58] By 1826 thousands of individuals had stopped handweaving cotton cloth. Yet there is no evidence of hardship. Outwork weaving of cotton fabric did not immediately disappear. It gradually faded away over the next four to nine years. During those years, outwork weaving became a less attractive source of supplementary employment. Before discontinuing cotton weaving outwork, firms gradually decreased the price paid per yard. In 1813, the price paid for gingham was 11 cents per yard, but by 1826, the price for the same cloth was 3 cents per yard.[59]

As a result, other forms of outwork or part-time income-producing tasks became more attractive. Some weavers switched to other work even if it was merely weaving another fiber type. Benjamin and John D. Langworthy, for instance, appear both in the 1813-15 records of George Thurston and

Company producing cotton textiles and later in the records of Rowse Babcock weaving woolen plaids.[60] Obviously, the Langworthys discovered that weaving woolens could prove satisfactory as a supplementary source of income. Unlike professional craftsmen outworkers were not limited by training or tradition to a single form of income but followed market demand. For instance, Joseph France shifted from weaving to bleaching. Others might take in waste picking, perform day labor or take in other kinds of outwork.

As the leaves of the weaving ledgers turned and power loom accounts replaced individual accounts, outwork weavers sought and found other forms of outwork. The putting-out system took many shapes: palm-leaf-hat making, broommaking, shoemaking and other semi-skilled and unskilled activities. As a result of the shifting demands for labor as well as the continuing need for cash, farm-based workers performed whatever work they could find. Although it is clear that they participated in many kinds of outwork, there is little evidence to show what kind of outwork they preferred or found more lucrative after the demise of outwork handweaving. We know very little of what became of those individuals who found there were no more warps to take home.

Between 1810 and 1820, textile outwork's success depended upon the rejection of factory labor by artisans, the availability of semi-skilled workers and the needs of the agricultural population. Weaving artisans' refusal to work in the factory setting accelerated the breakdown of artisan-based fabric production. It opened the door for employment of domestic cloth manufacturers who had woven simple utilitarian goods for home use or barter. Male rejection of technologically redefined jobs created opportunities for women who were not craft or tradition bound. The availability of piece work for married and unmarried women within the home proved attractive because home fabric manufacture for textile mills provided much needed supplementary income without disrupting the household unit. Women could complete orders and continue to ensure the smooth operation of the home. Despite the continued tie of outwork to home production, putting out might be viewed as one of the first efforts to incorporate women into the general labor force.

The rise of outwork during the early nineteenth century and the development of the factory labor system marked the process of transforming gender roles, family and work. Initially technological change solidified the family. Subsequent developments, however, took work out of the home and placed it in the factory, removing female family members from the home and putting them in factory-owned housing. In addition, the shift in workplace deprived married women with children from participation in the workforce. The process that initially saved rural families later facilitated the destruction of the unit and dispersal of family members.

Notes

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1. This study, along with Thomas Dublin's study of palm-leaf-hat making, Gregory Noble's research on broommaking and Mary Blewett's papers on shoemaking is representative of a growing body of literature on outwork and outworkers in New England. These studies place outwork within the context of rural life and family economy during the last three-quarters of the nineteenth century. Gregory Nobles, "Commerce and Community: A Case Study of Rural Broommaking Business in Antebellum Massachusetts," *Journal of the Early American Republic* 4 (Fall, 1984), 287-308; Mary H. Blewett, *Men, Women and Work: Class, Gender and the Protest in the New England Shoe Industry 1780-1910* (Urbana, Illinois., 1988); "Women Shoeworkers and Domestic Ideology: Rural Outwork in Early 19th Century Essex County," *New England Quarterly*, 60 (1987); 403-428; "I am Doom to Disappointment: The Diaries of a Beverly, Massachusetts Shoebinder, Sarah E. Trask 1849-1851," *Essex Institute Historical Collections* 117 (1981), 192-212; "Work, Gender and the Artisan Tradition in New England Shoemaking 1780-1860," *Journal of Social History* 17 (1983), 221-248; "Shared but Different: The Experience of Women in the 19th Century Workforce of the New England Shoe Industry," in Robert Weible, Oliver Ford and Paul Marion, eds., *Essays from the Lowell Conference on Industrial History 1980-1981*, (Lowell, 1981) 77-86; Thomas Dublin, "Women's Work and the Family Economy: Textiles and Palm Leaf Hatmaking in New England 1830-50," *Toqueville Review* V (Fall and Winter 1983), 297-316; "Women and Outwork in 19th Century New England Town: Fitzwilliam, New Hampshire," in Jonathan Prude and Steven H. Hahn, eds., *The Countryside in the Age of Capitalist Transformation: Essays in the Social History of Rural America* (Chapel Hill, 1985), 51-70; Christopher Clark, "Household Economy, Market Exchange and the Rise of Capitalism in the Connecticut Valley, 1800-1860," *Journal of Social History* 13 (1979-80), 169-189; and Jonathan Prude, *The Coming of Industrial Order: Town and Factory Life in Rural Massachusetts* 1810-1860 (New York, 1985), 73-78.

2. Phillip Greven, *Four Generations: Population, Land and Family in Colonial Andover, Massachusetts* (Ithaca, New York, 1970), 125-172; Carole Shammas, "How Self-Sufficient was Early America?" *Journal of Interdisciplinary History* 13 (1982), 247-272; Michael Merrill, "Cash is Good to Eat: Self Sufficiency and Exchange in Rural Economy in the United States," *Radical History Review* 4 (1977), 52-57; James Henretta, "Families and Farms: Mentalite in Pre-Industrial America," *William and Mary Quarterly* 35 (1978), 12-14; and Clark, "Household Economy," 173.

3. Herbert Gutman, "Work, Culture and Society in Industrializing America 1815-1919," *American Historical Review*73 (1973), 559-561; E. P. Thompson, *The Making of the English Working Class* (New York, 1968), 248, 360; Cynthia Shelton, *The Mills of Manyunk: Industrialization and Social Conflict in the Philadelphia Region, 1787-1837* (Baltimore, 1986), 29, 63-65; Barbara Tucker, *Samuel Slater and the Origins of the American Textile Industry 1780-1860* (Ithaca, New York., 1984), 16; and Mary Blewett, "Work, Gender," 224.

4. Daryl Hafter, "Agents of Technological Change: Women in the Pre- and Post-Industrial Workplace," in Dorothy G. McGuigan, ed., *Women's Lives, New Theory, Research and Policy*, (Ann Arbor, 1980), 159-168; and Mary Blewett, "Work, Gender," 224.

5. Nancy Cott, *The Bonds of Womanhood, "Woman's Sphere in New England 1790-1835* (New Haven, 1977), 70.

6. Gail B. Fowler, "Rhode Island Handloom Weavers and the Effects of Technological Change 1790-1860," Unpublished dissertation, University of Pennsylvania, 1984; and E.P. Thompson, *The English Working Class*, 248-368.

7. Gail Fowler Mohanty, "Putting Up with Putting-Out: Technological Diffusion and Outwork Weaving in Rhode Island Textile Mills 1821-1829," *Journal of the Early Republic* 9 (1989), 191-216.

8. "List of Cotton Mills in Rhode Island, October 31,1811, and "Cotton Mills in Rhode Island in the year 1815," Zachariah Allen Papers, Rhode Island Historical Society, Providence, Rhode Island; United States Census, Schedules of Manufacturers for Rhode Island and Massachusetts, 1820. In 1811, 36 mills operating 31,602 spindles were located within the borders of Rhode Island. One year later, the number of mills increased to 38 and the spindlage had grown to 48,034. Gary Kulik, "The Beginnings of the Industrial

Revolution in America, Pawtucket, Rhode Island 1672-1829," Unpublished dissertation, Brown University, 1980, 265.

9. Peter J. Coleman, *The Transformation of Rhode Island 1790-1860* (Providence, 1969), 84-85,88.

10. *Providence Gazette*, August 11, 1810; *Rhode Island American*, January 7, 1812; *United States Chronicle*, February 4, 1796; *Providence Phoenix*, January 23, 1813; and Blackstone Manufacturing Company, Brown and Ives Manufacturing Records, Mss 9, Rhode Island Historical Society, Providence, Rhode Island.

11. Gail Fowler Mohanty, "Experimentation in Textile Technology, 1788-1790 and its Impact on Rhode Island Handloom Weavers and Weaving," *Technology and Culture* 29 (1988),1-31; John Bradburn to Almy and Brown, Artisan Accounts, November 11, 1789, Almy and Brown Papers; Kulik, "The Beginnings of the Industrial Revolution," 129; and Tucker, *Samuel Slater*, 44-47.

12. Tucker, *Samuel Slater*, 16; Kulik, "The Beginnings of the Industrial Revolution," 227; and Mohanty, "Experimentation."

13. Cynthia Shelton, *The Mills of Manayunk*; Gary B. Nash, "The Failure of Female Factory Labor in Colonial Boston," *Labor History* 20 (Spring, 1979), 165-88; and Mohanty, "Experimentation."

14. Mohanty, "Experimentation," and Kulik, "The Beginnings of the Industrial Revolution," 162.

15. Cloth Account, 98:8, Almy and Brown; and Cloth Book Series D, vols. 379A, 382, 417, 713, 731; Series E, vols. 3, 6-7, Series B, vol. 53, Blackstone Manufacturing Company, Rhode Island Historical Society, Providence, Rhode Island.

16. Kulik, "The Beginnings of the Industrial Revolution," 226, 231; *United States Chronicle*, February 2, 1791; Cotton Manufacturing Accounts, 1791, Jonathan Whiting to William Almy and Smith Brown, October 24, 1793; Weaving Accounts, vols. 80, 97; Lewis Peck and William Almy and Smith Brown, February 4, 1791, Almy and Brown Papers.

17. Benjamin Shepard to Almy and Brown, 10 May 1794, Almy and Brown Papers.

18. Cloth Account, 98:8, Almy and Brown Papers.

19. David Jeremy, *Transatlantic Industrial Revolution: The Diffusion of Textile Technology between Britain and America 1790-1830s* (Cambridge, Massachusetts, 1981), 99, 196, 209; Margaret D. Leggett, *Subject Matter Index of Patents for Inventions issued by the United States Patent Office from 1790 to 1873 inclusive* (Washington, D.C., 1874), 887; Samuel Hopkins Emory, *History of Taunton Massachusetts from its settlement to Present* (Syracuse, New York, 1893), 660, 661, 646-647; Thomas Weston, *History of the Town of Middleboro* (Boston, 1906), 287; William Bagnell, *Textile Industries of the United States*, 1 (Cambridge, 1893), 171-175.

20. Cyrus Butler and Seth Wheaton to Stephen Tripp, August 17, 1811; and August 24, 1811, Blackstone Manufacturing Company.

21. William P. Filby and Mary K. Meyer, *Passenger and Immigration Lists Index* (Detroit, 1981), 476; and Jeremy, *Transatlantic Industrial Revolution*, 78-83.

22. Cyrus Butler and Seth Wheaton to Stephen Tripp, September 17, 1811, Series F, Box 9, Folder 3, Blackstone Manufacturing Company.

23. Joseph Alexander to Moses Brown and William Almy, Agreement, May 20, 1789; and Thomas Kenworthy and Moses Brown and William Almy, Agreement, 1789, Almy and Brown Papers.

24. Leonard Dobbins, and James Cupples, Artisan Accounts, 1812, Series B, Box 3, Blackstone Manufacturing Company.

25. See also Clark, "Household Economy," 173; Bettye Hobbs Pruit, "Self-Sufficiency and the Agricultural Economy of Eighteenth Century Massachusetts," *William and Mary Quarterly*, ser. 3, 4 (1984), 349-50; Laurel Thatcher Ulrich, *Goodwives: Image and Reality in the Lives of Women in Northern New England 1650-1750* (New York, 1982), 51-68 for more information about cooperative networks and trading commodities. Examples of accounts exchanging goods to pay for bills incurred to textile mills, see: Seabury Lawton, Account 1798, Joseph Waldron, Account, 1798, Timothy Sheldon, Jr., Artisan Account, 1790, Walter Allen, Artisan Account, 1790, John Croad, Accounts, 1791.1-6, Almy and Brown Papers.

26. Joan Thirsk, "Industries in the Countryside," *Essays in the Economic and Social History of Tudor and Stuart England* (Cambridge, Massachusetts, 1961), 72-73; E.L. Jones, "Agricultural Origins of Industry," Past and Present 40 (1968), 58-71. In the United States the use of outwork prior to the rise of industry is cited in Cott, *The Bonds of Womanhood* (New Haven, 1977), 25.

27. Coleman, T*he Transformation of Rhode Island 1790-1860*, 3-25; James Henretta, "Families and Farms: *Mentalite* in Pre-Industrial America," 8-9; Phillip Greven, *Four Generations*, 125-72; Clark, "Household Economy," 175-176; Michael Merrill, "Cash is Good

to Eat," 54-55, 57-59. According to Greven, an apparent land shortage occured due to inheritance patterns of the first two generations of settlers in the region. By the third generation, the plentiful land allotments had been overly subdivided and the resulting plots were no longer sufficient to support a family. In addition, the rise in land prices made the accumulation of acreage more difficult. As a result parents were not able to accumulate enough acreage to provide their sons with sufficient land to support their families.

28. Joseph France, *The Weaver's Complete Guide or Web Analyzed* (Providence, 1814), iv; Shelton, *Mills of Manayunk*, 28; Kulik, "The Beginnings of the Industrial Revolution," 163; Cloth Account Book, vol. 98:8; and Weaving Books 80, 97, Almy and Brown; and David S. Landes, *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present* (Cambridge, Mass., 1969), 56; see also Isadora Mancoll Safner, "Joseph France: The Admirable Pirate," *An Interweave Press White Paper* (1981:1 and 2) for proof of France's plagerism of a British publication.

29. Blewett, "Women Shoeworkers," 403; and Dublin, "Women and Outwork," 62-64.

30. "Simple utilitarian fabrics" refers to those kinds of cloth usually produced by textile firms including check, shirting, stripe, sheeting, plain cloth, chambray, plaid and bedticking. These are two or four harness weave patterns and the most elementary designs used in fabric. Plain weave is the simplest of all weaving pattern consisting of a two-harness under one and over the next one type weave. Velveret is a cotton pile fabric often ribbed like corduroy and made from extra weft woven-pile structure.

31. Cyrus Butler and Seth Wheaton to Stephen Tripp, September 17, 1811, Correspondence, Box 9, folder 3, Blackstone Manufacturing Company; Almy and Brown to James Burnham, July 15, 1795; Jackson T. Nightingale to Almy and Brown, February 20, 1794; Caleb Congdon to Almy and Brown, June 1798; and Catharine Hanes to Almy and Brown, October 16, 1797, Almy and Brown Papers. Nightingale of Savannah, Georgia describes what goods might sell best. Catharine Hanes states: "the coarsest whitened cotton was very saleable and perhaps when our citizens return, the fine may prove so too, but the unwhitened remains unsold and neither do I think it will sell . . ." James Burnham attributes few sales to high prices: "We have as yet made little progress in selling ticks, their prices being too high if that difficulty could be removed, we think it probable that we could dispose of them among our people and send other of our goods in return."

32. "Prices Paid for Cloth," Coventry Manufacturing Company, Series G, Box 1, Folder 1, Blackstone Manufacturing Company; and "Caleb Greene's Prices for Weaving," Series D, Box 7, Folder 3, Blackstone Manufacturing Company.

33. Weaving Accounts, vol. 97; Lewis Peck and William Almy and Smith Brown, 1791, Agreement; and Cloth Account, vol. 98:8, Almy and Brown Papers; Cloth Book Series D, vols. 379A, 382, 417, 713, 731; Series E, vol. 3, 6-7, Series B, vol. 53, Blackstone Manufacturing Company; Lippitt Manufacturing Company, Weaving Book, Connecticut Historical Society, A. and W. Sprague Company, Ledger for Mill 1, Rhode Island Historical Society, and White and Robinson, Weaving Book, Connecticut Historical Society.

34. Fowler, "Rhode Island Handloom Weavers and the Effects of Technological Change," 131-184; Mohanty, "Putting Up with Putting Out."

35. John Reynolds to Moses Brown, June 22, 1789, Moses Brown Papers, Rhode Island Historical Society, Providence, Rhode Island; and Joseph Alexander with Moses Brown and William Almy, Agreement, May 20, 1789, Almy and Brown Papers.

36. Some examples of evidence of issuing warps at a great distance from the factory include the Lippitt Manufacturing Company, Weaving Book; and the White and Robinson, Weaving Book which list outwork for Rhode Island companies in Connecticut; Russell Wheeler, Store Account Books, Connecticut State Archives and Silas Jillson, Weaving Ledger, Museum of American Textile History, North Andover Massachusetts. See also Peter J. Coleman, "Rhode Island Cotton Manufacturing: A Study in Economic Conservatism," *Rhode Island History* 23 (1964), 65-80.

37. "I have sent most of the cloth I set last Saturday for webs to come in. But a number of webs piled which was almost out if I had waited a week longer. But I had engaged my team and a number were waiting for webs which if they could not have, would take them to other places," Noah Curtis to Stephen Tripp, November 13, 1818, Correspondence, Box 15, Series F, File 11, Blackstone Manufacturing Company; Duncan Bythell, *The Sweated Trades: Outwork in Nineteenth Century Britain* (New York, 1978), 18, 155; and Cynthia Shelton, The Mills of Manayunk, 29, 45-46.

38. Stephen Tripp to Dutee Smith, October 13, 1819, series F, Box 15, Folder 12, Blackstone Manufacturing Company.

39. Dublin, "Women and Outwork," 57.

40. Stephen Tripp to Norman B. Brown, May 11, 1818, Series F, Box 1 Folder 10, Blackstone Manufacturing Company; and Mohanty, "Putting Up with Putting Out."

41. Henry Bradshaw Fearon as quoted in Gertrude S. Kimball, *Pictures of Rhode Island in the Past 1642-1833 by Travelers, and Observers* (Providence, 1900), 166.

42. *United States Chronicle*, February 4, 1796.

43. Weaving Accounts, vols. 78,79, and 97, Almy and Brown Papers.

44. *Providence Phoenix*, August, 26, 1809.

45. *Rhode Island American*, March 6, 1810.

46. *Rhode Island American*, May 2, 1815.

47. Dublin, "Women and Outwork," 65

48. Tamara K. Hareven, "Introduction: The Historical Study of the Live Course," and Glen H. Elder, Jr., "Family History and the Life Course," in Tamara K. Hareven, ed., *Transitions: The Family and the Life Course in Historical Perspective* (New York, 1978), 1-56; Phillip Greven, Four Generations, 222-258; Frank F. Furstenberg, Jr. "Industrialization and the American Family: A Look Backward," *American Social Review* 31 (1966): 326-336; Henretta, "Families and Farms: Mentalite in Pre-Industrial America," 6-8.

49. Howard Papers, Rhode Island Historical Society, Providence, Rhode Island; James Newell Arnold, *Vital Records of Rhode Island 1636-1850* (Providence, 1892), vol. 12: 468, vol. 21:18,367; United States Census 1790 and 1810.

50. Arnold, *Vital Records* (n. 50), vol. 2:18; vol. 3:17; Howard Papers, #8, #100, #104, Rhode Island Historical Society, Providence, Rhode Island.

51. "Prices for Labor" c. 1812, Series D, vol. 713, Blackstone Manufacturing Company; Probate Records, vol. 3:514,728,732, Smithfield, Rhode Island; and Arnold, *Vital Records*, vol. 2:52, vol. 7: 193; and United States Census 1810.

52. Probate vol. 8: 382, 640; and Deed Book 13: 480, Smithfield, Rhode Island; and United States Census 1820.

53. Weaving Book 1815-18, Blackstone Manufacturing Company; and United States Census 1810.

54. Filby and Meyer, *Passenger Immigration List Index*, 1408; Cloth Book, Series D, vol. 379A, Blackstone Manufacturing Company; *Providence Gazette*, January 31, 1820; Rhode Island General Assembly, Petitions, 52, doc. 56, State Archives, Providence, Rhode Island; Land Evidence, vol. 19:520, vol. 21: 270, 574 and Wills, vol. 6: 535, Coventry Town Hall, Coventry, Rhode Island.

55. Rhode Island General Assembly, Petitions 49; Arnold, Vital Records, vol. 1:66, vol. 17: 172; and Ledger for Mill 1, A. and W. Sprague Company, Rhode Island Historical Society, Providence, Rhode Island.

56. *Providence Gazette*, May 25, 1812; *Rhode Island American*, May 20, 1817; *Rhode Island American*, April 9, 1816; *Providence Patriot*, June 12, 1815; *Providence Phoenix*, February 2, 1811; and *Providence Patriot*, February 24, 1818.

57. Stephen Tripp to Jabez Averill, September 12, 1815, Box 1, F. 8, Zabdiel Rogers, Mystic to Stephen Trip, October 8, 1814, Box 1 F. 19, Blackstone Manufacturing Company; United States Census of Manufactures 1820; and Mohanty, "Putting Up with Putting Out."

58. Weaving Ledger, Rowse Babcock, Rhode Island Historical Society, Providence, Rhode Island.

59. Peter J. Coleman, "Rhode Island Cotton Manufacturing: A Study in Economic Conservatism," *Rhode Island History* 23 (1964), 76.

60. Weaving Ledger, Rowse Babcock; and Weaver's Book, George Thurston and Company, Rhode Island Historical Society, Providence, Rhode Island.