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Introduction

I like clothes.

Not far from the house in which I grew up on the island of Martha's Vineyard is a place that we locals call the Dumptique. There are too many *New York Times* Travel Section pieces devoted to giving away islander secrets for me to describe its exact location here in good conscience, but imagine it in a low-lying field edged with gnarled, wind-stunted oaks: a small uninsulated shack set a few hundred yards out from the municipal landfill. The Dumptique is stuffed to its corrugated metal roof with pots, pans, books, old lamps, worn-out puzzles, and several bins of used clothing.

Everything at the Dumptique is free, and every year wealthy summer residents of Martha's Vineyard leave behind extraordinary garments that end up buried among unwanted craft kits, waiting to be discovered by a sharp eye. I went to the Dumptique every Saturday of my adolescence to scavenge, and in this way garments I would never otherwise have touched, let alone owned, came into my possession. To wit: A loden coat. A Barbour jacket. A pink silk cocktail dress from the 1950s with a cream-colored taffeta lining. A green Marimekko Design Research dress from the 1970s. Swiss-made camisoles with delicate scalloped edges. Camel hair shirts. Arche boots. Slowly, ineluctably, these treasures drained any possible enthusiasm I could

have felt for the clothes in the Falmouth TJMaxx, which was the other place I shopped at that time. I became, irrevocably, a clothing snob.

In the Dumptique I began to notice that the older clothes were almost invariably better and more durably made than the newer ones. I noticed the same thing when I watched old films. Lauren Bacall's tailored suits, Anna Karina's perfect jersey tops, even in celluloid, retained markers of an integrity and formal thoughtfulness that was totally absent in, say, one of Jennifer Aniston's limp rayon blouses.

The record on film and in the Dumptique could not take me back much further than the early twentieth century. But about three miles west of the Dumptique stands a house built around 1740, beside a brook dammed by a Puritan patriarch who made his name as a general in King Philip's War. Like many colonial-era American homes, the house was designed with no closets. Rather, a single hook or a peg rail sufficed. This was testament to a time when each member of the family owned two sets of clothing: one for Sunday, and one for every other day of the week. These clothes must have been durable indeed.

It seemed to me that the quality and durability of American clothing had seen a steady decline and fall. My mother's reminiscences about her past were further testimony. My mother grew up in Sheffield, Massachusetts, in the 1950s and 1960s. When she was in high school, a common joke was "what does she, make her own clothes?" to refer to a nerdy or unpopular girl. This was really, my mother recalls, a coded way of saying that the girl was poor. What this points to (beyond the barbarity of American high schoolers) is that in the 1960s it was still cheaper to make your own clothes than to buy them in a store. And no wonder: garment manufacture was union work at which highly skilled workers labored and earned a living wage and health benefits. At the time, the International Ladies' Garment Workers' Union was one of the largest unions in the U.S.

Today, it is no longer cheaper to make your own clothes than to buy them. A task that once fell within the province of the ordinary household is now an esoteric hobby, requiring skills out of reach to most ordinary Americans. It can even be cost prohibitive, since to buy the cloth to make a shirt will often cost more than the price of a new shirt. A curious reversal.

Ralph Tharpe, the former design engineer at Cone Mills in North Carolina, and the man responsible for making denim for Levi's 501s during the 1970s, put the question to me this way: "Why is it that from 1960 to today the price of a Ford truck has increased ten times over and the price of a pair of dungarees has stayed the same?" This question becomes even more puzzling when one considers that many mass-manufacturing processes have been automated since the 1960s but sewing is not one of them. The process one follows to sew a garment has not changed materially since the advent of the sewing machine. Fabric is a fussy and unpredictable material, unlike sheet metal, that still requires the subtle manipulation of tension that can only be done by a real human hand.

How then, did this happen?

If it were possible to travel back in time five hundred years, we would be dazzled by the beauty and diversity of the clothing that people made and wore. We would see huipil woven of handspun cotton dyed with cochineal, silk kimono, shibori dyed using indigo, Hezhe dresses made of salmon skin, Kuba textiles woven from palm leaf fiber, embroidered with complex geometric patterns and stained red with dye from the heartwood of a tropical tree, and Russian peasant shifts made from linen, embroidered with threads dyed a deep mauve using local lichen. We would see the flora and fauna of thousands of micro-environments transformed into cloth: like the scratchy wool of the Herdwick sheep, which thrive on the rocky terrain of the Cumbrian fells of northern England, perfect for the local tweed. The colors of the clothes were drawn from lichen, shells, bark, indigo, saffron, roots, beetles. The fabric constructions and patterns themselves were astonishing, containing special regional weaves and knits, number magic, protective prayers, and clan symbols, collectively honed motifs, and individual flourishes. This localism coexisted with trade. And a type of small-scale textile manufacturing thrived among every group of agriculturalists across the world.

In our present world, whether we traveled to England or Russia, China or Mexico, Kenya or Uruguay, we would see T-shirts, jeans,

jackets, and skirts made predominantly of two materials: cotton and petroleum. At the same time, the system of production responsible for making all these clothes has everywhere become more extractive, centralized, and concentrated among a few megacorporations. In 2019, global retail sales of apparel and footwear reached 1.9 trillion U.S. dollars. That's more than double that year's global sales of consumer electronics and four times global arms sales. Meanwhile, Nike's market capitalization is more than four times that of the Ford Motor Company. And what had once been the world's most common and widely distributed popular art—making textiles—has almost disappeared from the hands of the artisan.

In the preindustrial period, anthropologists estimate, humans devoted at least as many labor hours to making cloth as they devoted to producing food. It is almost impossible to overstate how enormous the change was in the daily rhythm when textile work disappeared from everyday life and moved into the factory. The worlds on either side of this schism differed from one another completely: or at least as much as the two different kinds of cloth.

The contemporary clothing trade may be valuable, but the clothes produced are not. Between 2000 and 2014, clothing production around the world doubled. This was possible because clothing had become almost completely disposable. Over the course of this almost fifteen-year period consumers came to buy, on average, 60 percent more clothes than they used to, but kept each garment for half as long. By 2017, one garbage truck of clothes (5,787 pounds) was burned or sent to landfills every second.

Alarm bells have been ringing about fast fashion's evils: its toxicity and exploitativeness. These aren't new problems. What *is* new is their scale. Textile and garment work have been dangerous to laborers since industrialization, but three of the four deadliest garment factory disasters in history occurred during the 2010s. Textile making has been damaging the environment for centuries, but today the industry produces a full fifth of global wastewater, and emits one tenth of global carbon emissions.

"Fast fashion" didn't spring from a void in the 1990s, the decade during which this term came into circulation. It isn't a thirty-year-

old problem, but the newest symptom of a problem that is centuries old. I wanted to go digging for its roots, and discover how our modern clothing system came to be.

This book is not meant to be the all-encompassing history of fabric and its production and importance in the world. Rather, I want to tell the story of what I found, of how we went from making fabric for ourselves as part of our everyday work to dressing in clothes that come from a complex, inscrutable system that has divorced us from the creative act, from our land, from our rights as consumers and workers.

It may not be intuitive to everyone who does not sew that clothes are made by people, not just machines. In fact, it was not until I started making clothes myself—I was nine years old and I wanted to replicate the cream-colored blouse that Jennifer Connelly’s character wears in *The Labyrinth*—that I really understood clothes *are made*. This probably sounds absurd. I remember watching a young man who had grown up in Manhattan learn that if you planted an apple seed, an apple tree could grow. These things can happen in a culture as divorced from agriculture and industry as the one in which we live today. Once I started sewing, clothes revealed themselves as assemblages of tubes and planar surfaces: two-dimensional cloth arrayed on three-dimensional bodies, pierced with holes, spangled with buttons, folded and tucked to make pleats, rounded under at the edges to make hems. Making clothes demanded that I examine the way the tube of the arm connects to the tube of the torso, and the full range of motion of the shoulder joint. I realized that a neck opening had to be large enough to allow the hard cantaloupe of the head to pass through it, and then fastened up with buttons if the shirt was to be snug around the neck. I came to understand clothes as a very particular kind of sculpture, made to echo the body’s shape but also to transform that shape: a puffy shoulder to make the arm billow out like a bird’s, a flared leg to make the shape of the human calf into an ecstatic bell. Experiments with sewing taught me to appreciate clothes, and the art and labor that goes into them.

I learned to appreciate *cloth* when I tried to make clothing without it.

I was a polemical teenager. One day shortly before New Year's Eve 2002, I announced that the human race had been tragically closed-minded regarding the material for clothing, insisting, as they had since the beginning of time, that it be made of cloth, when there were clearly many other suitable materials readily available. I proposed that this year for New Year's Eve my friends and I wear dresses made only of paper.

We gathered at Lila's house, down a long dirt road by the Tisbury Great Pond, where her family's sheep grazed in pasture running up to the water. My family had kept sheep, too, before we moved to Massachusetts from rural Vermont in 1995. My friends and I started in the late morning, and spread out a massive pile of newspapers, magazines, and packing material. Hannah used only the covers of *Vogue* and clear plastic tape and let her boyfriend Colin adjust the hemline with a pair of scissors, which he did until you could almost see her ass. Luke made himself a handsome newspaper suit. Lila made herself a pleated skirt out of Stop & Shop glossy inserts, and for the top of the ensemble she used the cardboard rainbow spinner wheel removed from a Candy Land board game, placed right over her solar plexus, with bands of white printer paper radiating out over her shoulders and around her narrow chest. Kate made a series of concentric paper hoops held together by a strip down the front. I made a newspaper dress and earrings out of toilet paper rolls. We all crimped our hair.

At the party, our dresses revealed a design flaw. They ripped. It started as we exited the car, and continued as we danced, walked, sat, or even lifted our arms to take swigs of our forties. By the time we went home, we were all more or less naked. This experience gave me a respect for fabric.

Clothing is made from cloth. Cloth can come from plants (cotton, linen), animals (sheep, silkworm), and, since the nineteenth century, from synthetic materials and processes, namely plant-derived cellulose liquefied and then extruded into strands (rayon) and various chemical recombinations of petroleum (nylon, spandex, polyester).

This book begins with the story of linen. Northern Europeans dressed from the Paleolithic Age through the nineteenth century primarily in a fabric that is now rarely worn except by small numbers of the elite: linen. The oldest fabric in the archeological record is made from linen or related vegetal fibers, and this section looks to fabric's early beginnings. Clothmaking has in many cultures been women's work. Women represent more than two thirds of the modern garment workforce. The value of women's labor and women's wages has been shaped by cloth production, and vice versa, and this section looks at the importance of women's work at the dawn of industrial fabric production.

Next comes cotton. Cotton is an incredibly thirsty crop, and it is also chemically intensive, accounting for almost 20 percent of the global usage of pesticides. In this section, I journey to sites where cotton agriculture is causing ecological disaster, while examining the colonial armatures that set up these modern systems of production. The cotton industry has shown its workers no more mercy than its land. Cotton has been a central part of the stories of the colonization of India, slavery in the American South, and the modern-day ecogenocide of the Uyghur people of Xinjiang in western China.

Third comes silk. Silk is almost synonymous with luxury, and this section traces the course of luxury clothing and its use as a status marker. Humans carefully clothe their hierarchies, and political power is not just advertised by forms of clothing; it is sometimes achieved through skillful use and manipulation of both personal dress and the national textile trade. This section interrogates clothing's deep interpenetration with power and hierarchy, from ancient China to Louis XIV, to the modern mega brand.

Fourth is the story of synthetics. From the ancient silk route, we move to more contemporary trade routes and regimes, by tracing the rise of synthetic fabric in the twentieth and early twenty-first centuries. Between 2000 and 2008, petroleum-based fabrics supplanted cotton as the most commonly worn fabric on the planet. In the previous century, clothing manufacture briefly moved out of the sweatshop, and then back into it while governments aided and abetted this back-

slide in basic workers' rights. Today, synthetic fabrics and low-wage labor join to make cheap clothes that are, like fast food, bad for the land and the people who make them.

Finally, in the story of wool, we discover that what once was known as a commoner's fabric is now in the avant-garde of radical textile experiments. These experiments seek both to resuscitate handcraft and find ways to use textile machinery that serve human life, rather than threaten it. This section looks at regenerative projects that rely on small-scale production models. It celebrates some of the many people who are helping tell new stories about clothing and the connections between people, their work, their ancestors, and the land.

There is scarcely a part of the human experience, historic or current, that the story of clothes does not touch. The history of clothing has been also the history of a human quest for warmth, and both have been tied, in turn, to the story of human migrations. Researchers believe humans began wearing clothes well after they lost their body hair, and that clothing may have been the technology that enabled the first humans to migrate out of Africa and encounter the conditions of the Ice Age. If possessing clothing has driven migration, so has coveting it: in the seventeenth century, the earliest forays by Europeans into the interior of what is now the United States and Canada were made in order to trade with the native inhabitants for furs.

Clothing drives government policy, and demarcates environmental use. Economies have risen on the back of its manufacture. Meanwhile, our daily human interactions are mitigated by the presence of clothing and its innumerable signals, whether we are receiving a traffic ticket, attending a graduation, or determining a stranger's social class. Virginia Woolf observed that clothes "change our view of the world and the world's view of us." A clearinghouse of social codes, clothing also springs from concrete exchanges of resources, work, and wealth. Understanding these very particular objects with any precision means coming to terms with our own location within a plenitude of hierarchies. Decoding the global system that makes our

clothes, and how it came to be, might also change the way we view the world.

This book blends reportage with historical research. Although I traveled widely to research this book: to China, Vietnam, Honduras, India, England, and throughout the U.S., the history and reportage it contains is weighted toward understanding the U.S.'s role in building a global garment trade that touches every corner of the world. And, with this, to interrogate the fact that despite its handiwork the U.S. remains aloof in international conversations to do with the ethics of this trade. The garment factory collapse in Dhaka in 2013, which killed over one thousand workers in a day, galvanized European consumers to band together to pressure brands, some of which have taken concrete and meaningful actions to prevent future disasters. No movement of parallel force has emerged in the United States, nor has any such meaningful response come from U.S. brands like The Gap and Walmart, who continue on as before.

I discovered much that was heartbreaking in the years that I spent researching and writing this book, but also much to celebrate. I met many people who are finding ways to create fabric on their own terms, claiming the right to make something both useful and beautiful. My first interview was with Jay Ar dai of Fingerlakes Woolen Mill, who invented a way to use repurposed early-twentieth-century machinery to card and spin batches of wool from small-flock owners, to allow them to knit and weave their own fleeces. Later, I met Navajo women in Phoenix learning traditional weaving in an old high school, mending a line of transmission that had been severed by racist assimilation policies. I visited a country store on I-80 selling wool all dyed with local plants. I met sheep breeders in Cumbria who match their sheep to the geology and the ground cover to build sustainable systems. I met Rabbit Goody, who runs her weaving shop in upstate New York along nineteenth-century socialist cooperative lines.

Cloth is often used to symbolize the web of connections between people, as phrases like “the social fabric” or “the community was rent apart” or “an alliance was stitched together” or “moral fiber” attest. On a literal level cloth and clothing, with which we live in such inti-

mate proximity from cradle to grave, link us together with the people who made our garments, people we will never meet. These relations between maker and wearer can be very difficult to decipher, but I hope this book will be a guide.

As a child I had a great fondness for the factory segment on *Mister Rogers*, which ushered curious children into a toothpaste factory one week and a crayon-making plant the next. I registered a note of the uncanny in being surrounded by everyday objects, like clothing, whose origins were mysterious. I found this odd and demoralizing. Part of this project is an answer to that impulse, or craving, to know where things come from. After all, our clothes don't just come ready-made from factories or from the countries named on their tags. They come from our histories.

Linien

The Last Linen Shirt in New Hampshire

For peril is bothe fyr and tow t' assemble . . .

—WIFE OF BATH'S PROLOGUE, GEOFFREY CHAUCER,
CANTERBURY TALES

In 2012, my mother and I drove up from Woods Hole, Massachusetts, through the gutted former textile hubs of Fall River and New Bedford, to visit a museum exhibit located inside the restored Sylvanus Brown House in Pawtucket, Rhode Island. The Sylvanus Brown House was a family dwelling from mid-eighteenth-century New England, arranged to give the visitor an idea of its inhabitants' daily lives. We were there for the displays of textile tools used to make linen in colonial New England, before the arrival of the factory production.

Linen is a fabric made from flax, a plant with a slender stalk that grows to two or three feet tall and bears a light blue flower. Inside the hard husks of *Linum usitatissimum*, otherwise known as linseed or flax, are soft, silky strands. When these are twisted together, the brittleness of each strand alone is surmounted by group strength, and the resulting cord or thread can then become longer than any of the individual strands. These threads are woven together to make linen.

The thicker flax is sown in the ground, the finer the stalk, and subsequently, the thread. New Englanders planted their flax at the end of March or early in April. "Flax should be sowed promiscuously (as Wheat or Oats, &c.) but somewhat thicker . . . it will take

a Bushel and a Half to sow one Acre of Land to make it fit for Linen or Thread,” instructed John Wily, in *A Treatise on the Propagation of Sheep, the Manufacture of Wool, and the Cultivation and Manufacture of Flax*. The plants were pulled in July when the leaves turned yellow and left to dry. Then the dry plants were pulled through a rippling comb to strip the seeds, and retted—a process employing moisture to rot and soften the outer cellular tissue of the plant—in a stream or a dewy field. “It is out of the Power of any Man to tell the exact Number of Days it will take to water or dew rot Flax,” wrote Wily, leaving much to the farmer’s own discretion. After the flax had been retted it was crushed down the line of the stalk until all the coarse outer bark known as tow had been broken; then it was scutched—struck and scraped with a wood knife until the tow fell to the ground. The inner fibers of the flax were then drawn through a hackling comb to remove smaller pieces of tow, then carded, and spun, and woven into fabric.

Our tour guide at the Sylvanus Brown House was in period costume, with a long skirt, a shawl around her shoulders, and bonnet atop her head. She was a heavysset woman with a thick Rhode Island accent. She showed us the flax break, which looked like a large wooden paper cutter, and demonstrated with a sheaf of dried flax how to crush the bark, bringing down the wooden blade every inch or so. She showed us the iron spikes of the hackling comb and the carding brushes, which were lined with rows and rows of tassel, the spiky head of a flowering plant ideal for drawing multitudinous fibers into parallel rows.

Upstairs, our tour guide brought us to see the loom, which presided over an entire room. Finally she showed us the spinning wheel, and the groove in the wooden floor beside it that was made by the woman who was spinning as she walked back and forth, back and forth, a motion required by this particular kind of spinning wheel, dubbed the “walking wheel,” in order to draw the fiber away from the spindle and lengthen it before giving it a twist. The wheel would have been moved every so often in order to avoid wearing a groove too deep into the floor, the guide said. My mother and I looked at each other, making our eyes wide. She then announced to us, without

ceremony or regret, in that frank manner that New Englanders have, that her shift was over.

I reflected on the bittersweetness in that phrase, “my shift is over.” On the one hand, textile making was the shift that was *never* over for the New England farm woman, as the grooves by the side of the walking wheel could so amply attest. On the other hand, the thread she had spun and woven—indeed all the materials to make her family’s clothing—came from a few acres around her own house. The American essayist, activist, and farmer Wendell Berry has said that “eating is an agricultural act.” So is getting dressed. Mrs. Brown would have known where her meal was grown and exactly where her clothing had been harvested. This was part of a long-standing tradition. The type of linen making that was being practiced on the New England farm before the Industrial Revolution was one that had persisted through thousands of years of human history. On this unlikely patch of New England soil, unbeknownst to anyone, it was living out its twilight years.

Humans developed an upright stance, and modern hands and feet, about four million years ago, oral speech between 150,000 and 100,000 years ago, and writing 3,500 years ago. The advent of string, according to Elizabeth Wayland Barber, professor emerita of linguistics and archeology at Occidental College, who specialized in using techniques from both archeology and linguistics to study ancient textiles, comes well after people had learned to speak, and before they learned to write.

The first clothes were most likely made of animal skins. Researchers using the DNA of lice have determined that humans most likely began clothing themselves in hides and pelts about 170,000 years ago. Then, at some critical moment in the long and leisurely waste of pre-literate human time, people learned to weave plant fibers into textiles. Because cloth is rarely preserved at archeological sites, it is difficult to identify its earliest use with any level of certainty. In 2009, a Georgian, Israeli, and U.S. research team discovered more than one thou-

sand fibers of the flax plant in the Dzudzuana Cave in the foothills of the Caucasus Mountains in what is now the Republic of Georgia. The microscopic fibers were found in layers radiocarbon dated to as early as 36,000 years ago. A small number of fibers were colored black, turquoise, gray, and pink, and the research team concluded they had been dyed. This pulverized fiber powder is the earliest evidence we have of humans making use of linen.

Cloth is made from hundreds of strings interlaced with one another at right angles, or knit together in multitudinous knots. Before they could make cloth, humans had to learn to make thread. String making began during the Upper Paleolithic, a period during which humans migrated from Africa to every econiche on the globe. According to Barber, these two developments are connected: the advent of string made the rapid expansion of the zone of human habitation possible. With string, people could make nets, snares, tethers, leashes, fishing lines, and ways to bind objects together to make complex tools—new ways to catch prey and gather food.

Some of the earliest representations of humans wearing clothing made from vegetal fiber (rather than hides or sinew) show them wearing not cloth, but string. These so-called Venus statuettes made from bone and carved stone were discovered in what is now Russia and Eastern Europe, in a zone that represented the eastern end of what archeologists have termed the Gravettian culture. Most of these statuettes show naked women but some—the earliest of which dates to 20,000 BC—depict women wearing skirts made of twisted cords, distinguishable from strands of sinew because the artist carefully carved the fraying ends of each of the strings. These skirts were more ceremonial than practical, used to signify and enhance fertility, and to protect women during childbearing. One such statuette, the Venus of Gagarino, wears a string skirt that hangs only in front, above the pubic bone and below the breasts, covering neither.

Representations of women in string skirts exist in this geographical area for the next twenty thousand years, and beginning around 1300 BC actual string skirts are preserved or partially preserved in the archeological record. The first physical evidence of cordage made of vegetal fiber dates much earlier, to 15,000 BC, and comes from the

Lascaux caves in southern France, where an abbot working on copying cave paintings “picked up a compact lump of clay” and broke it open to find, inside, “the carbonaceous imprint of a sort of fillet with twisted lines stretching the entire length of the lump.” All the earliest string in the archeological record is from plant fiber such as flax, hemp, jute, ramie, yucca, elm, linden, willow.

The first intact cloth in the archeological record, like those microscopic remnants from the Georgian cave, is also of linen. In 1988 archeologists digging in Çayönü, Turkey, found a linen fragment wrapped around the handle of a tool made from antler that had miraculously been preserved because of contact with calcium in the bone. The cloth was radiocarbon dated to 7000 BC. Analysis of seed types at the archeological site demonstrated that, unlike the wild flax that was used to make the linen found in the Georgian cave, this flax was domesticated. The world’s first farmers, planters of wheat and barley at the headwaters of the Tigris, had also domesticated flax, and farmed the materials for their clothing, as they had for their food.

Barber has argued that textile production up until the Bronze Age, which began in the Near East around 3000 BC, was in almost all human societies women’s work, in large part because it is an activity that is compatible with childrearing and safe for children to be around, unlike hunting. Toward the end of the Bronze Age, roughly 1200 BC, men begin to weave, not for household use, but for profit (or in some cases, if they were enslaved, for a slave owner’s profit) in a period of increasing trade and specialization. In Egypt, men began weaving decorative, patterned cloth at around 1500 BC. For this, they used upright, vertical looms, today called tapestry looms, which provide a suitable orientation for producing expensive fabrics with designs in them. By that time, women in the region had been weaving plain linens on horizontal looms for three thousand years.*

Perhaps because of this deep-rooted association with women, textiles have often been treated as less important archeological artifacts

* This did not mean that women were not also sometimes textile entrepreneurs, like the woman in Apollonia, Egypt, who, in AD 298, records show spending three hundred troy ounces of silver on a loom to set up a profit-making weaving shop.

than other kinds of ancient objects. Textiles also break down quickly. Where they have survived, physically, their second-class status has threatened them with a more avoidable kind of historical annihilation. This was almost the fate of the oldest shirt in the archeological record. The shirt was found in a First Dynasty Egyptian tomb at Tarkhan, and dates to 3000 BC. Excavating the tomb in 1912 and 1913, the British archeologist Sir William Matthew Flinders Petrie dug it up among numerous other linens and placed it among his findings. The shirt went on to languish at University College London in a storage container marked “funerary rags” until two female curators exhumed it in 1977 and discovered what it was: a meticulously crafted shirt with an elaborate system of pleats that allowed its wearer to move their limbs comfortably, while still enjoying a fitted silhouette.

Growing flax to make linen was one of the oldest human activities in Europe, particularly in the Rhineland. Archeologists have found linen textiles among the settlements of Neolithic cultivators along the shores of Lake Neuchâtel in the Jura Mountains west of Bern, Switzerland. These were elaborate pieces: Stone Age clothmakers of the Swiss lakeshores sewed pierced fruit pits in a careful line into a fabric with woven stripes. The culture spread down the Rhine and into the lowland regions.

The Roman author Pliny observed in the first century AD that German women wove and wore linen sheets. By the ninth century flax had spread through Germany. By the sixteenth century, flax was produced in many parts of Europe, but the corridor from western Switzerland to the mouth of the Rhine contained the oldest region of large-scale commercial flax and linen production. In the late Middle Ages the linen of Germany was sold nearly everywhere in Europe, and Germany produced more linen than any other region in the world.

At this juncture, linen weavers became victims of an odd prejudice. “Better skinner than linen weaver,” ran one cryptic medieval German taunt. Another macabre popular saying had it that linen weavers were worse than those who “carried the ladders to the gallows.” The rea-

son why linen weavers were slandered in this way, historians suspect, was that although linen weavers had professionalized and organized themselves into guilds, they had been unable to prevent homemade linen from getting onto the market. Guilds appeared across Europe between the twelfth and fifteenth centuries but many of the items they produced for exchange, like textiles and soap, were also produced at home right up through the nineteenth century. The intricate regulations of the guilds—determining who could join, how they would be trained, what goods they would produce, and how these could be exchanged—were mainly designed to distinguish guild work from this homely labor. That linen making continued to be carried out inside of households—a liability for guilds in general—lent a taint to the linen guild in particular.

In the seventeenth century, guilds came under pressure from a new, protocapitalist mode of production. Looking for cheaper cloth to sell on foreign markets, entrepreneurs cased the Central European countryside offering to pay cash to home producers for goods. Rural households became export manufacturing centers and a major source of competition with the guilds. These producers could undercut the prices of urban craftsmen because they could use the unregulated labor of their family members, and because their own agricultural production allowed them to sell their goods for less than their subsistence costs.

The uneasiness between guild and household production in the countryside erupted into open hostility. In the 1620s, linen guildsmen marched on villages, attacking competitors, and burning their looms. In February 1627 Zittau guild masters smashed looms and seized the yarn of home weavers in the villages of Oderwitz, Olbersdorf, and Herwigsdorf.

Guilds had long worked to keep homemade products from getting on the market. In their death throes, they hit upon a new and potent weapon: gender. Although women in medieval Europe wove at home for domestic consumption, many had also been guild artisans. Women were freely admitted as masters into the earliest medieval guilds, and statutes from Silesia and the Oberlausitz show that women were master weavers. Thirteenth-century Paris had eighty mixed craft guilds

of men and women and fifteen female-dominated guilds for such trades as gold thread, yarn, silk, and dress manufacturing. Up until the mid-seventeenth century, guilds had belittled home production because it was unregulated, nonprofessional, and competitive. In the mid-seventeenth century this work was identified as *women's* work, and guildsmen unable to compete against cheaper household production tried to eject women from the market entirely. Single women were barred from independent participation in the guilds. Women were restricted to working as domestic servants, farmhands, spinners, knitters, embroiderers, hawkers, wet nurses. They lost ground even where the jobs had been traditionally their own, such as ale brewing and midwifery, by the end of the seventeenth century.

The wholesale ejection of women from the market during this period was achieved not only through guild statute, but through legal, literary, and cultural means. Throughout the sixteenth and seventeenth centuries women lost the legal right to conduct economic activity as *femes soles*. In France they were declared legal “imbeciles,” and lost the right to make contracts or represent themselves in court. In Italy, they began to appear in court less frequently to denounce abuses against them. In Germany, when middle-class women were widowed it became customary to appoint a tutor to manage their affairs. As the medieval historian Martha Howell writes, “Comedies and satires of this period . . . often portrayed market women and trades women as shrews, with characterizations that not only ridiculed or scolded them for taking on roles in market production but frequently even charged them with sexual aggression.” This was a period rich in literature about the correction of errant women: Shakespeare’s *The Taming of the Shrew* (1590–94), John Ford’s *'Tis Pity She's a Whore* (1629–33), Joseph Swetnam’s “The Araigment of Lewde, Idle, Froward, and Unconstant Women” (1615). Meanwhile, Protestant reformers and Counter-Reformation Catholics established doctrinally that women were inherently inferior to men.

This period, called the European Age of Reason, successfully banished women from the market and transformed them into the sweet and passive beings that emerged in Victorian literature. Women accused of being scolds were paraded in the streets wearing a new

device called a “branks,” an iron muzzle that depressed the tongue. Prostitutes were subjected to fake drowning, whipped, and caged. Women convicted of adultery were sentenced to capital punishment.

As a cultural project, this was not merely recreational sadism. Rather, it was an ideological achievement that would have lasting and massive economic consequences. Political philosopher Silvia Federici has argued this expulsion was an intervention so massive, it ought to be included as one of a triptych of violent seizures, along with the Enclosure Acts and imperialism, that allowed capitalism to launch itself.

Meanwhile, over the course of the sixteenth and seventeenth centuries, England’s large landowners seized control of land that had traditionally been held in common, or leased by families to use for their own purposes. Some peasants no longer had common pasture, while others were forcibly evicted. Enclosure spelled the end of subsistence, and the end of the peasant family’s ability to support itself on the land. Women were often the fiercest resisters and were accused of devil worship, and burned as witches.

Part of why women resisted enclosure so fiercely was because they had the most to lose. The end of subsistence meant that households needed to rely on money rather than the production of agricultural goods like cloth, and women had successfully been excluded from ways to earn. As labor historian Alice Kessler-Harris has argued, “In pre-industrial societies, nearly everybody worked, and almost nobody worked for wages.” During the sixteenth and seventeenth centuries, monetary relations began to dominate economic life in Europe. Barred from most wage work just as the wage became essential, women were shunted into a position of chronic poverty and financial dependence. This was the dominant socioeconomic reality when the first modern factory, a cotton-spinning mill, opened in 1771 in Derbyshire, England, an event destined to upend still further the pattern of daily life.

Meanwhile, another story was unfolding across the ocean. While in England enclosure created a landless workforce that soon

would be drawn into the new spinning mills, in North America it looked as though a new golden age for independent, small-scale agriculture was dawning. Late-seventeenth- and eighteenth-century America was a world, in the words of historian Laurel Thatcher Ulrich, “where any man might own land,” and in which “cloth making was an extension of farming.”

The region of New England that became most famous for its linen was Londonderry, New Hampshire. Londonderry linen was sold, bartered, and exchanged each year at country festivals. Although grown on individually held plots, diarists from the time record how villagers shared the labor of harvesting and processing flax. “Break flax for Jam Henry forenoon and for myself in afternoon,” wrote one resident. On another day: “Break 18 Bundles Jamison swingle 14 for mee.” Men helped with the work of harvesting and breaking the flax while women skutched, hackled, carded, combed, spun, and wove the fiber. Fishing, farming, and flax making commingled in rural self-sufficiency.

This pastoral setting in which early American industry was born was not as utopian as it appeared. While the linen makers enjoyed plentiful land and the freedom to use their labor as they willed, others were not so lucky.

The tow, the hard bark skutched from the long, soft, inner fiber of the flax plant, was spun and woven to make tow cloth, “which is exported to the Southern States, to Clothe the Negroes, who labor on the plantations,” as Jeremy Belknap recorded in 1792. The land itself had been newly evacuated. Shortly before the Ulster Scots arrived, in 1713 Massachusetts and New Hampshire officials had met in Casco Bay, Maine, with representatives of several groups of Abenaki—Algonquian-speaking peoples whose homeland had extended across most of what is now northern New England and into Quebec and the Maritimes—to sign “Articles of Pacification,” rendering the Abenaki subjects of Queen Anne, and promising colonists freedom to hunt, fish, and develop in the “Eastern Parts.” North of Londonderry’s idyllic country fairs, in a raid on an Abenaki camp in St. Francis in 1759, one participant recalled that soldiers were ordered to kill all the

women and children, but when a “papoose” looked up at him he faltered. “Nits become lice,” his commander said, and killed her himself. As settlers moved to take possession of territories in the New World, they justified the massacre of Native American Indians (beginning during King Philip’s War) by accusing them of being devil worshippers, an echo of how women had been accused of being possessed by the devil during the European witch hunts if they resisted the enclosure movements and clung stubbornly to communal land rights.

Londonderry had once been the favorite fishing spot for the Penacook people. At Amoskeag Falls, the largest drop in the Merrimack River, the Penacook had gathered in autumn to fish for the last ten thousand years when the alewife, shad, lamprey, and salmon ran out to sea, and in spring when the fish ran upriver to spawn. Salmon return to the tiny pools where they were born to lay their eggs. Just before they die, offering their decomposing bodies for their offspring’s first food, they lay several thousand eggs. It is this incredible fecundity, says the archeologist Elizabeth Wayland Barber, that led both the Greeks and early Slavs to treat fish as totems of fertility, to use their images as decorative motifs to support the making of life, like those early string skirts worn by the Gravettian people for thousands of years. To the Atlantic salmon, the Merrimack River was life itself, so it must seem to them a bitter historical irony that their own bodies were used to entice the two consecutive waves of development on the Merrimack that proved to be their undoing: drawing in settlers who would overfish them, and then dam the river outright.

The settlers who arrived were Ulster Scots, transplanted to northern Ireland in the early seventeenth century when they were offered cheap rent on large, fertile estates as the British attempted to populate the area with Protestants. Ulster, which had a good, damp climate for flax, was a thriving center for linen.

When they arrived on the banks of the Merrimack—lured there by the promise of “more Salmon & all manner of fish than in any place in the World”—these settlers swiftly made the region famous not for salmon, but for linen. Such was the reputation of Londonderry linen

that the townsfolk demanded their name be protected from counterfeiters advertising any old linen as *Londonderry*. A resolution in the New Hampshire legislature in 1731 decried the “deceit practiced by persons travelling in this Province by selling of Foreign Linnens under pretence they were made at Londonderry.” Citizens at a 1748 town meeting demanded the creation of a seal such that “the Credate of our Manefactors may be kept up and the bayers and purchers of our linnens may Not be Imposed upon with foreign and outlandish Linnens in the name of ours.”

Although Londonderry linen was highly prized in New England, colonial linen in general was rustic and amateurish by European standards. English policy forbade commercial linen production from developing in the New World in order to protect sales of English cloth in America, so colonial American linen making did not evolve to the scale or level of specialization seen in England. While the southern colonies quickly developed tobacco and hemp as resources to trade with England for finished goods, and were able thus to keep wearing English fabric, the Massachusetts Bay colonists lacked these raw materials and thus relied on homespun yarn and handwoven fabric. Every foreign visitor who described the New England economy at the end of the seventeenth century made some mention of small-scale textile production, which to European eyes appeared retrograde.

Another thing that would have seemed odd from a European perspective was that colonial weavers were largely women. The colonists who came from East Anglia to New England in the 1630s left a sophisticated manufacturing economy where men, not women, did the weaving, and they brought this gender division of labor with them. In the New World, however, weaving would soon become, again, a female occupation as other commercial opportunities appeared for men. In New Hampshire weaving passed into the female domain in exactly the same time that the colony’s woodworking economy was maturing.

Although its commercial implications were largely submerged within household economies, spinning and weaving were still work, and sometimes the workers rebelled. At midnight on January 20, 1767, as the court’s indictment would later record, Sarah Bartlet, “spin-

ster,” of Hadley, Massachusetts, took a candle with her right hand and voluntarily, *with malice*, set fire to “a Certain Bundle of Linnen Yarn and also a certain Bundle of Flax and Tow.”

Flax, like the straw it resembles, is highly flammable. So is tow, the outer bark of the flax plant, and so too is linen thread, spun from the flax plant’s soft inner fibers. Still, we cannot be certain that Sarah *intended* to burn down her employer’s house when she set her spinning materials on fire. According to the diary of a neighbor girl, Elizabeth Porter, “Sarah Bartlet that Lived with Captain Marsh was brought to own that she willfully set his house on fire . . . to burn some yarn that she had been discovered to make false ties in.” Perhaps Sarah only meant to burn the yarn, false ties and all.

Sarah, like other New England girls from poor families, had been boarded out to live with another family, where her spinning labor paid for room and board, and sometimes allowed her to accrue extra yarn to put toward a trousseau. Spinners like Sarah were paid by the length of the thread they spun—marked off in ties. To make false ties was to defraud the employer. Records from this period show that some young women found themselves in debt to their employers even after months of work, a fate Sarah may have been trying to avoid.

The annals of early New England fabric making are littered with small acts of intransigence, not all of them so dramatic as Sarah Bartlet’s fire. In Rutland, Vermont, the angry husband of a wife who failed to be prolific in clothmaking published the following poem in the local newspaper in the early nineteenth century to announce that he would no longer pay any debts incurred by her:

*For she will neither spin nor weave,
But there she’ll sit, and take her ease;
There she’ll sit, and pout, and grin,
As if the devil had entered in;*

*She would neither knit nor sew,
But all in rags I had to go:
So, farewell Sukey: and farewell, wife!
Till you can live a better life.*

The reference to the devil entering in ought not to be taken as merely one husband's attention to meter and metaphor: it was not a century since the close of the witch hunts.

Scandals, however, are by definition exceptional. To rifle more broadly through the late-eighteenth-century American woman's diary is to hear the uninterrupted hum of industry, and also to get a sense of the enormous amount of time that went into making cloth.

Betty Foot wrote from Colchester, Connecticut, in 1775, "I have been knitting all day stiddy as a priest and so has Nab too." A week later, "I am knitting yet." Mid-March she begins spinning linen, every day but Sunday.

Betty was training to be a schoolteacher, and because of that she had some variation to her days, as when one Sunday she "stay'd at home and Learnt to read and cypher." Even with her math training one must note that in Betty's, as in all of the women's diaries, there is a wrinkle in the ciphering: the math is odd. Because women were not compensated for their labor, one must consult a man's diary from the same period to balance the equation.

Matthew Patten, a Scots-Irish farmer who lived in Bedford, New Hampshire, just across the Merrimack River from Londonderry, wrote in his accounts on July 13, 1781, "I went to Robert Spears in Goffstown and lent him 237 Dollars of Continental old money for which he is to pay me New money when he sells the fine cloath his wife is now making." Mrs. Spears's cloth could yield currency when she stood next to her husband, as though she were a cipher and he the integer, and so that by proximity she increased his value by ten.

Only unmarried women, born to well-off families, were able to earn money in colonial New England by spinning and weaving. In the 1790s, Hannah Matthews, working under her father's well-provisioned roof, kept her own accounting books. She carefully recorded debts on the left and credits on the right, in her journal, balancing her own labor in spinning, weaving, and combing worsted with goods received: corn, flax, mutton, hogs, lard, and occasional cash. She included an alphabetical index and title to the book, "The Property of Hannah Matthews Yarmouth June the 11th 1790." However, Hannah's accounts abruptly end when she marries. And rather

than waste the rest of the pages, her provident husband simply turned her journal over and began to use it to do his own accounting.

The long, unmarked hours that New England women spent by their spindles and looms burst suddenly out from the private diary and into the spotlight in the late eighteenth century, as fabric making moved center stage in the fight for national independence. In the 1760s Parliament's effort to tax the colonies provoked boycotts of British goods. Suddenly, homespun fabric became charged with political meaning. Newspapers devoted front-page spreads to spinning meetings organized by New England's "daughters of liberty."

In his 1791 *Report on Manufactures*, Alexander Hamilton argued that the United States would cement its political independence from England by become economically self-sufficient. How? By developing its textile manufacture. To do this, Hamilton argued, Americans would have to rely on their most pliable resources: water, women, and children. In a nation where "the defect of hands constitutes the greatest obstacle to success," Hamilton wrote, the new textile machinery being developed in England would make women "more useful, and the [children] more early useful."

Hamilton rejected the pastoral vision for America espoused by Thomas Jefferson, who wanted to retain an unindustrialized agrarian economy. Although Hamilton's model may indeed have been the best way for the U.S. to maintain its independence in the face of expansionist colonial powers in Europe, it is easy to see why others like Jefferson remained attached to an America where farmers dressed in flax grown and spun on the family plot. Londonderry seemed far preferable to the desolate sight of hollow-cheeked women and children bent over industrial machinery that emerged quickly from England's industrial North, as the first cotton mill in Derbyshire was joined by scores of imitators. If, as archeologists suggest, textile work was originally assigned to women because it was an activity that was safe to do with children nearby, the new logic of assigning mechanized fabric production to both women and children forwent this consideration entirely. Women and children were to enter together into factories

where *neither* would be safe: where blowing cotton destroyed lungs, ears were deafened by the sound of machinery, and belts regularly tore off scalps.

The argument Hamilton made and his willingness to exploit two cheap resources—women and nature—became ubiquitous. Cheap women’s labor and expendable land have been the foundation of the garment industry ever since.

Industrial spinning soon arrived in America, where it swiftly brought about the end of home-manufactured flax. In the early 1790s, an industrial saboteur named Samuel Slater broke the British law forbidding engineers with knowledge of the new textile machinery to emigrate, and arrived in the U.S. with working plans for a drawing frame stitched in the lining of a coat pocket. In 1793 Slater, along with investor Moses Brown, opened the first industrial cotton-spinning mill in America in Pawtucket, Rhode Island, known as the Slater Mill. The same year, Eli Whitney invented the cotton gin. The metal teeth of Whitney’s gin could process as much short staple cotton in under an hour as a team of slaves had formerly been able to process in a day. Linen was out, cotton was in, and it was big money.

Slater Mill copycats popped up quickly across New England. Townspeople in Londonderry voted in 1810 to change the town’s name to *Manchester*, after the British city by then famous for its textiles. A small mill with new spinning equipment was set up on the west side of the roaring Amoskeag Falls. In 1822, Samuel Slater received a “fine specimen of a salmon” that had been caught at the Falls to entice him to invest in the new mill. Slater was intrigued and brought in the Boston Associates, a group of investors who had made eighteenth-century shipping fortunes in the triangle of rum, slaves, and sugar, and built up factory cities at Cabot and Lowell. Together, they bought up houses, farms, and water rights, until they controlled the water down the entire length of the Merrimack. The company installed a massive, U-shaped dam on the river, and laid out an entire town around it, replete with factories, boardinghouses, family worker housing, schools, and churches—an entire city built for one reason: to make cloth.

For thousands of years, human beings had worked within the constraints of the natural environment to make cloth. Here in Manchester they had made cloth by bending the environment completely to their will. Achieving a total domination of nature, as the Boston Group had, was fantastically productive: in its heyday, Amoskeag Mill, the largest in the country, produced fifty miles of cloth an hour.

The days of homespun linen had come to an end. By 1831, the *New England Farmer* reported, “a domestic manufactured linen shirt [was] as rare as a white colt.” The historian of Hadley, Massachusetts, Sylvester Judd, wrote in 1863 that “the flax dresser, with the shives, fibres and dirt of flax covering his garments, and his face begrimed with dust, has disappeared; the noise of his brake and swingling knife has ended, and the boys no longer make bonfires of his swingling tow. The sound of the spinning wheel, the song of the spinster and the snapping of the clock-reel have all ceased.” He might have continued the dirge directly from Ecclesiastes, “And the doors are shut toward the street, when the sound of the grinding is subdued, and they rise up at the voice of the bird, and all the daughters of song are brought low.”

The salmon that used to populate Amoskeag Falls are long gone, so are the linen fairs, and the cotton factories: Manchester’s citizens no longer fish, nor make flax, nor spin cotton. Manchester is a dreary postindustrial town, where rehabs and treatment centers now flourish. I was in town to attend a local residency in the summer of 2017, and planned a visit to a museum converted from what was formerly Mill no. 3 in the historic Amoskeag Millyard. Stephanie, whom I had met in a local coffee shop, decided to come along with me. She had grown up in Manchester, but told me she had never learned about the mills in school.

At the opening of the museum’s exhibition, an interpretive text beside a grinding tool carved with the head of a deer read: “The native peoples of the Merrimack were self-sufficient. They created all the objects they needed for everyday life within the tribal

group. Although they had no metal tools, they made many kinds of stone implements—making them the first ‘industrialists’ of New Hampshire!”

A hall reconstructed Manchester in its “heyday,” with a soda shop, shoe store, and candy store. What had become of the city since the mills were shuttered in this one-industry town? The museum’s plaques acknowledged that the legendary industrial center that once belched fifty miles of cotton fabric an hour is now defunct. But they boasted that there are *dozens of small businesses* in the refurbished buildings that once housed the machinery and the workers. There are *dentists* and *hairdressers* and *restaurants*. *Coca-Cola* has built a machine to purify water in the *Third World*. The giant Lego model of the Amoskeag Mill at the children’s museum is the *Largest in North America*. The exhibit concluded with a wall of tributes to Manchester celebrities: To “the far-sighted investors who had developed the textile centers downriver at Lowell and Lawrence [and] took on the challenge of harnessing the tremendous power of the Amoskeag Falls for manufacturing.” To Revolutionary War general John Stark, “Honored Patriarch.” To the founders of McDonald’s, Richard and Maurice McDonald. To Adam Sandler.

In the gift shop I bought a T-shirt that said, “The Mill Girl, Forging a New Path for Women.” I could only imagine the skepticism with which an actual “Mill Girl” would have greeted this T-shirt.

Unlike their British counterparts, shoved off the land and into factories, New England girls often came from families who still had their farms, but their main economic function had been usurped. When New England women went to work in industrial textile mills, or as some historians have said, “followed” their work out of the house and into the factory, they found it almost as difficult to make money at it that way as they had before. “I have tended four looms nearly a year & a half & have only ninety dollars in the bank,” one young textile worker in Lowell, Massachusetts, named Deborah Hibbard would write to her sister Sarah on October 8, 1845.

Despite what Manchester’s museum curators may proclaim, in the mid-nineteenth century, observers of New England’s mills noted their oppressive conditions. Transcendentalist Orestes Brownson

wrote in the 1840s of the factory girls in Lowell: “The great mass wear out their health, spirits, and morals without becoming one whit better off than when they commenced labour. The bills of mortality in these factory villages are not striking, we admit, for the poor girls, when they can toil no longer, go home to die.”

The years a young woman spent at Lowell would traditionally have been the period in which she spun and wove, along with female relatives, a store of linens to supply herself for marriage. With the rise of industrial machinery, manufacturers tried to frame a very new situation in terms of old ideas, emphasizing the ways factory work would allow a young woman to support her family from afar, and prepare for her future marriage. But the new labor arrangements would come to threaten the very unit—the family—from which industrial employers derived their convoluted justifications for paying women so little. To maintain a source of cheap workers, employers did their best to conceal these contradictions. But as we have seen, under family economies lie stains and strains, and linens have a particular way of storing secrets. The very thing that likes to keep itself hidden: the underlinen, has a lot to reveal.